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A THEORY OF SELECTION AND RECONSTRUCTION

IN THE MINIMALIST PERSPECTIVE

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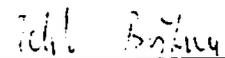A THEORY OF SELECTION AND RECONSTRUCTION

IN THE MINIMALIST PERSPECTIVE

Presented by

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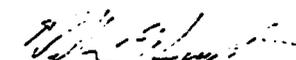

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A THEORY OF SELECTION AND RECONSTRUCTION
IN THE MINIMALIST PERSPECTIVE

Satoshi Oku

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Abstract

This study extends two ideas of the minimalist program in linguistic theory (Chomsky 1992, 1994, 1995a) (LF feature decomposition and elimination of D-structure), and explores various consequences of this extension. First, Chomsky (1995a) proposes the Move F(eature) hypothesis which implies that feature decomposition of a lexical item (or a syntactic object consisting of lexical items) is possible in covert syntax (LF). Assuming that LF Copy is a syntactic operation to construct a phonologically missing element in ellipsis structures, I propose *the subset copy principle* to the effect that a (proper) subset of the antecedent features can construct the contents of a phonologically missing element under LF Copy; the feature composition of a copy can be less than the feature composition of the original. I argue that the subset copy principle plays a significant role in LF construction and interpretation of both verbal morphology (Chapter 2) and nominal expressions (Chapter 4) in the elliptic site. A certain asymmetry in verbal morphology construction in VP-ellipsis receives a natural account under the subset copy principle, and a new theory of interpretation of nominal expressions in VP-ellipsis is developed, which gives an account of possible interpretation of VP-ellipsis when a full copy of the original cannot provide an appropriate LF representation. The second part of this work discusses the nature of Selection in the minimalist program. Selection has been stated as a D-structure property (e.g., Chomsky 1965, 1981) but it cannot be stated in such a way in the minimalist framework, since one of the characteristics of the minimalist program is its attempt to eliminate D-structure (and S-structure). Extending Bošković and Takahashi's (1998) theory of LF Lowering movement into a θ-position, I propose that selectional properties of a head are syntactic features to be checked during the derivation, and that some selectional features are weak in the sense that they can be checked in covert syntax. Some properties of Japanese null arguments receive an account based on exactly the same theory of Japanese predicates as the one proposed in Bošković and Takahashi. Consequences of the selection theory on English VP-ellipsis/VP-fronting are also explored.

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This dissertation is dedicated to the memory of my father, Tetsuo Oku (1930-1998).

Table of Contents

Chapter 1

Introduction

1.1   Goals

The goals of this dissertation are to extend implications of two minimalist claims (Move F hypothesis and elimination of D-structure) and to explore new theories of LF "reconstruction" of ellipsis and of selection based on this extension. Both reconstruction and selection have enjoyed a long and rich tradition in the history of generative grammar, but there are certain aspects which have not been explored in the recent conception of the minimalist program. The present study is an attempt to provide an explanation of some facts, old and new, concerning reconstruction and selection. In what follows in this chapter, I will briefly describe the nature of the theories I am going to explore and defend in this work.

1.2   LF Feature Decomposition

Since Chomsky (1965), it has been generally assumed in the literature of generative linguistics that a lexical item is a bundle of features. For instance, the lexical item *boy* consists of a set of features like [+N, +Det ___, +Count, +Animate, +Human, ...] (Chomsky 1965: 107). More recently, Chomsky (1995a) explicitly classifies features of a lexical item into three categories: phonological features, semantic features,

and formal (or purely syntactic) features. One innovation in Chomsky (1995a) is his Move F(eature) hypothesis that syntactic movement is actually movement of the relevant set of formal features. Let us roughly sketch the idea of Move F. At some point of derivation as in (1), only the relevant set of formal features [FF] of *what*, in principle, moves to C[wh] to check the [wh] feature of the interrogative C.

(1) [C   [you like what]]
     [wh]   [FF]

However, if this formal feature movement takes place in overt syntax (before Spell-Out applies), the result is "scattered" features of the lexical item *what*; that is, the set of formal features of *what* is attached to C and all the rest of the features of *what* stay in-situ. The PF interface cannot interpret these scattered features, and the derivation does not converge.[1] Hence, all the other features of *what* must move along with the formal features ("generalized pied-piping"), inducing the apparent movement of the whole category *what*, as in *I wonder what you like* (cf. **I wonder you like what*). On the other hand, if the formal feature movement takes place in covert syntax (i.e., in LF), no PF requirement is relevant and hence, there is no need for the generalized pied-piping. Only the relevant set of formal features moves and all the rest of the features stay in-situ.

Putting this idea differently, covert syntactic movement is an instance of LF feature decomposition of a syntactic object, a possibility which has seldom been discussed in the literature before Chomsky (1995a).[2] Assuming an LF Copy analysis of ellipsis, I extend the idea of LF feature decomposition under LF Copy operation. I propose *the subset copy principle* to the effect that a subset of the antecedent features can construct the contents of the elliptic site. Specifically, I argue that not only a full copy of the antecedent features, but also *a proper subset* of the antecedent features, can construct

the contents of a phonologically missing element. In Chapters 2 and 4, I will examine how the subset copy principle can deal with a wide range of data in VP-ellipsis structures in English. Chapter 2 discusses how the subset copy principle can naturally account for a certain asymmetry of verbal morphology observed in VP-ellipsis. For instance, it is very natural to assume that the features composing the bare form *leave* are a proper subset of the features composing the progressive form *leaving*, and therefore, a copy of a subpart of *leaving* (i.e., the bare portion *leave*) can construct the bare form *leave* in the elliptic site as in (2).

(2)   Mary is leaving, but John will not [vp e].   ([e] = leave)

However, the opposite is not possible, given that the relevant LF operation to construct the contents of the elliptic site is copying: a copy of the bare *leave* cannot provide enough features to construct the ING-form *leaving*:

(3) ?* Mary won't leave, but John is [vp e].   ([e] = leaving)

Under this conception of LF construction of the elliptic VP, I will discuss a wide range of data of verbal morphology in VP-ellipsis structures, and some consequences of the proposed LF theory of ellipsis reconstruction.[3]

It has been observed (Tancredi 1992, Tomioka 1997) that the restriction on pronominal interpretation in VP-ellipsis is identical to that in the corresponding "deaccented" non-elliptic sentences. A natural conclusion is that pronominal interpretation in both VP-ellipsis and the corresponding deaccented structure is constrained by the same theory. The general idea is that there need no special

mechanism for VP-ellipsis to account for pronominal interpretation in VP-ellipsis, such as copying of indices (Kitagawa 1991). Rather, LF Copy simply copies the features of the antecedent to construct the contents of a phonologically missing element. As a background assumption for the discussion in Chapter 4, I will review Tomioka's (1997) analysis of the restriction on pronominal interpretation in Chapter 3.

Given that a semantic/pragmatic theory of pronominal interpretation accounts for restriction on pronominal interpretation in VP-ellipsis, I will discuss in Chapter 4 how the subset copy principle functions with respect to the restriction of pronominal interpretation in VP-ellipsis. I propose that, in most cases, a full copy of the antecedent features is sufficient to construct the syntactic LF representation of VP-ellipsis, and no indices and/or λ-notation need be introduced in syntax.[4] A semantic/pragmatic theory which applies in the semantic/pragmatic component(s) after the LF interface accounts for the restriction of pronominal interpretation, commonly observed in VP-ellipsis and in "deaccented" non-ellipsis sentences. For instance, the possible interpretations in (4)a (VP-ellipsis) are identical to those in (4)b (a deaccented non-ellipsis sentence), contrary to the claim by some researchers such as Sag (1976), Williams (1977), and Fiengo and May (1994). The *small italics* in (4)b represent deaccenting.

(4) a. Bill will wash his car, and John will [e], too.

  b. Bill will wash his car, and John *will wash his car*, too.

In both (4)a and (4)b, when the first clause means that Bill will wash Bill's car, the second clause means either that John will wash John's car (the sloppy identity interpretation) or that John will wash Bill's car (the strict identity interpretation). When *his* in the first clause refers to someone other than Bill, say Tom, the second clause only

means that John will wash Tom's car. No other interpretation is available in (4)a and (4)b. I will review one of Tomioka's (1997) theories for this restriction in Chapter 3.

The idea that no indices and/or λ-notation are introduced in syntax *per se* is minimalist in the sense that it is consistent with the "inclusiveness condition" (Chomsky 1995a) which says that syntactic operations do not introduce any extra element such as indices which are not present in the numeration. However, I will adopt a slightly weaker version of the inclusiveness condition; that is, the copying of features which are already present in the phrase structure is allowed. Hence, assuming that LF Copy is a syntactic operation, LF Copy can provide the contents of a phonologically missing VP, but no indices/λ-notation are introduced in syntax. Note that the operation of copying syntactic elements will be necessary more generally than in reconstruction of the elliptic site; that is, if we assume, following Chomsky (1955), that a movement operation consists of copy and deletion, a copying operation is an essential part of any syntactic movement, and hence, if the inclusiveness condition does not allow the copying of elements that are already present in the phrase structure, there would be no syntactic movement possible under the copy and deletion conception of syntactic movement. The deletion part of syntactic movement may be governed by independent principles of grammar. As for the PF side, there would be a general PF rule which instructs the performance system (i.e., the sensory-motor system) to pronounce the head (not other members) of a chain produced by syntactic movement. As for the LF side, the situation seems to be more complex. The general idea I assume is roughly the following. If all the copies (i.e., all the members) of a chain survive at the LF interface, too many items exist at the LF interface to receive an appropriate interpretation. For verb raising, I argue in Chapter 2 that the VP-ellipsis data suggest that verb raising leaves only the category feature V, but not a full copy. As for A-movement, if movement leaves a full

copy that survives at the LF interface, the resulting structure is a violation of the Binding Condition B or C, as shown in (5)b.

(5) a. i.   John was arrested.   (PF)

     ii.   He was arrested.   (PF)

     b. i.   *John* was arrested *John*   (LF)
                         [copy]

     ii.   *He* was arrested *he*.   (LF)
                      [copy]

Therefore, a trace of an A-movement chain (whether it is the tail or intermediate) cannot be a full copy of the original, and hence there must be some mechanism of "LF deletion" under the copy and deletion hypothesis of syntactic movement to make sure that traces are not a full copy of the original:[5] deletion only in the PF side is not sufficient. This suggests that the mechanism of LF deletion after a copying operation is required on independent grounds at least for some cases of syntactic movement.[6]

Now, let us consider what happens after a copying operation has created elements in the elliptic VP as in (6). **Boldface** here indicates that the portion is constructed by LF Copy.

(6) a.   John will leave, and Mary will, too.   (PF)

     b.   John will leave, and Mary will [$_{VP}$ **leave**], too.   (LF)

                  |____ LF Copy _____↑

No independent condition requires that the original VP or the copied VP be deleted in LF; on the contrary, the selectional property of the Infl/Aux actually requires that both

contentful VP's remain at the LF interface. To sum up, in the proposed LF Copy analysis of ellipsis, the inclusiveness condition is weakened so that copying of elements already present is possible, but this is not unreasonable once we adopt the hypothesis that syntactic movement also includes copying operations as its crucial part.

Let us come back to the LF Copy analysis of VP-ellipsis. I have suggested that in many cases, a full copy of the antecedent provides the appropriate LF representation of the elliptic VP. There are some cases, however, where a full copy of the antecedent cannot provide the appropriate LF representation. For instance, the second clause in (7)a can marginally mean that John will wash John's car (the sloppy identity interpretation), but such an interpretation is not possible if a full copy of the antecedent constructs the contents of the elliptic site as in (7)b. *Italics* here indicates the anaphoric relation between the two nominal expressions.

(7) a.   *Mary* will wash *her* car, and John will, too.

     b.   *Mary* will [$_{VP}$ wash *her* car], and John will [$_{VP}$ **wash her car**], too.

                  |_____ LF Copy _____↑

Cases like (7) and others in which a full copy cannot provide an appropriate LF representation have been one of the primary motivations for the theory of ellipsis in which indices and/or λ-notation are extensively employed. I will argue that the subset copy principle (based on the idea of LF feature decomposition) gives a reasonable account of why the sloppy identity interpretation in (7)a is marginally possible, and what the source of the contrast between (4)a and (7)a is in the relevant sloppy identity interpretation. Assuming that pronouns consist of φ-features and the categorial feature D, a natural assumption, I propose that the subset copy of the features of *her* {3rd

person, singular, feminine, D} can in principle provide a set of features {3rd person, singular, D} leaving the feature {feminine} behind. This set of features is "defective" in the sense that there is no overt lexical item corresponding to this set in English. Now, the resulting defective set of features is not identical to the set of features of *his* (which we want) but is not inconsistent with it, either. Therefore, this defective set of features can function as a pronoun bound by *John* in (7)a, giving the sloppy identity interpretation. The source of marginality, I suggest, is the fact that (part of) formal features (i.e., φ-features) have been taken away from a lexical item under LF Copy. As we will see in detail in Chapter 4, the contrast between (4)a and (7)a is not predicted either in a theory employing λ-abstraction of the predicate (such as Sag (1976) and Williams (1977)) or in Fiengo and May's (1994) theory in which the recoverability/identity condition on VP-ellipsis is stated in terms of the identity of the indexical structure, and the difference in morphological realization of the items in question (*his* or *her*, etc) is irrelevant. In other words, under the proposed theory of LF construction of VP-ellipsis supplemented with the subset copy principle, not only do we not have to introduce indices and/or λ-notation, but we can also give a natural account for some facts in VP-ellipsis interpretation which the previous theories employing indices and/or λ-notation cannot account for.[7] Further, if the present analysis is on the right track, it is extremely interesting because a single principle (i.e., the subset copy principle) gives a natural account for seemingly unrelated phenomena in syntax; that is, the asymmetry in verbal morphology construction and possible interpretations of pronominal elements in VP-ellipsis.

1.3   Radical Acyclic Merge in Covert Syntax

One of the new aspects of the minimalist program is its attempt to reduce levels of linguistic representation to those which are "conceptually necessary," eliminating D-structure and S-structure as linguistically significant levels of representation. Consequently, various properties of language which have been stated as D-structure properties or S-structure properties cannot be stated in the original ways. The research program then has been to figure out how to capture the previous D-structure/S-structure properties of language in the minimalist design of the language faculty.[8]

In Chapter 5, I will explore the nature of selection, one of the previous D-structure properties. The main claim is that selectional properties of a head are syntactic features to be checked when the head merges with an appropriate element, and that radical acyclic merge is possible when the selectional feature of the head is "weak" (weak in the sense of Chomsky 1992). Bošković and Takahashi (1998) propose a novel theory of Japanese scrambling, claiming that θ-features are weak in Japanese and hence, a "scrambled" phrase can be base-generated at its surface position and lower to a θ-position to check the weak θ-feature of the predicate in LF. I will argue that Bošković and Takahashi's theory can naturally be extended to an LF Copy theory of Japanese null arguments. The contents of a phonologically empty argument can be provided by copying the features of the antecedent argument. This theory provides a new account of some properties of Japanese null arguments. For instance, the sloppy identity interpretation of a phonologically empty argument is possible in (8)a and the indefinite interpretation of a phonologically empty argument is possible in (8)b.

(8) a. Bill-wa zibun-no tegami-o   suteta;   John-mo [e] suteta

   Bill-TOP self-GEN letter-ACC   discarded; John-also [e] discarded

   'Lit. *Bill* discarded *his* letter; John discarded [e], too'

   b. Seerusuman-ga Bill-no uchi-ni kita;   [e] John-no   uchi-ni-mo   kita

   salesman-NOM Bill-GEN house-to came; [e] John-GEN house-ni-also came

   'Lit. A salesman came to Bill's house; [e] came to John's house, too'

The appropriate LF representations can be provided by LF Copy of the antecedent argument as in (9), where **boldface** represents the elements constructed by LF Copy.

(9) a. Bill-wa zibun-no tegami-o   suteta; John-mo **[zibun-no tegami-o]**

   Bill-TOP self-GEN letter-ACC   discarded; J-also **[self-GEN letter-ACC]**

   suteta

   discarded

   b. Seerusuman-ga Bill-no uchi-ni   kita;

   salesman-NOM Bill-GEN house-to came;

   [Seerusuman-ga] John-no uchi-ni-mo   kita

   [salesman-NOM]   John-GEN house-ni-also came

This LF Copy is possible in Japanese because θ-features are weak in Japanese. I will discuss consequences of this LF theory of null arguments by comparing Japanese data with Spanish and English data.

   I further argue that VP-ellipsis is possible in English because the selectional property of Infl/Aux is weak in English. A logical conclusion of this assumption is that in VP-fronting in English, the "fronted" VP can be base-generated at its surface position and lowers to the selected position in LF to check the weak selectional feature of the

remnant Infl/Aux, another instance of radical acyclic merge. I will discuss consequences of this LF lowering analysis of VP-fronting. In the last section of Chapter 5, I will discuss the technical execution of radical acyclic LF merge under the bare theory of phrase structure, another new aspect of the minimalist approach (Chomsky 1994, 1995a). I will argue that the radical acyclic LF merge is technically a reasonable possibility in the system.

1.4 General Picture of the System

   Although I am basing my theories on many aspects of the standard minimalist model of language faculty proposed in Chomsky (1992, 1994, 1995a), the whole system I propose involves radical acyclic LF merge, which is a significant departure from standard minimalist assumptions. The entire thesis is an attempt to develop and defend this new aspect of the model I propose. Also, other modifications of the standard model will be introduced, or suggested, in the course of discussion. Specifically, in Chapter 2, I suggest that the idea of multiple Spell-Out (Chomsky 1997, Uriagereka 1996) plays a role to account for a special morphological property of the perfective participle.

   Finally, a note is in order regarding the relation between syntax and semantics/ pragmatics, and the status of Binding Conditions in the present theory. Assuming the inclusiveness condition of syntactic operations, I argue that indices are not introduced during syntactic operations. However, I still assume the essence of the Binding Conditions (Chomsky 1981, 1986a) in which indices play a crucial role. Further, I assume that the interpretation of nominal elements in VP-ellipsis and deaccented structures is constrained by a semantic/pragmatic theory (as proposed in Tomioka 1997). Therefore, indexing of nominal elements is controlled by semantics/pragmatics

as well as by the standard Binding Conditions. The entire picture of the whole system I assume is something like (10).

(10)   Syntactic component →   LF interface   → Semantic/Pragmatic component

⬆   ⬆

Free Indexation &   semantic/pragmatic rules

Binding Conditions

Free indexation applies at the LF interface after all syntactic operations (including LF Copy) have applied. Then, the Binding Conditions inspect the syntactic structure at the LF interface to rule out impossible indexation. In the semantic/pragmatic component, the sentence is further inspected, and if it contains impossible indexation with respect to semantic rules, the sentence is ruled out; if it does not, the sentence is ruled in, resulting in the interpretation which satisfies both Binding Conditions and semantic/pragmatic constraints on pronominal interpretation. For example, suppose that a syntactic operation has derived (11), in which **boldface** indicates that the VP2 is constructed by LF Copy of VP1. What the syntactic LF Copy operation has done is to have provided syntactic features to construct the contents of the phonologically missing VP.

(11)   Bill will [$_{VP1}$ wash his car], and John will [$_{VP2}$ **wash his car**], too.

⌊_____ LF Copy _____⬆

Suppose then that free indexation at the LF interface gives three structures, for instance, as in (12).

(12)   a.   Bill₁ will [$_{VP1}$ wash his₁ car], and John₂ will [$_{VP2}$ **wash his₂ car**], too.

b.   Bill₁ will [$_{VP1}$ wash his₃ car], and John₂ will [$_{VP2}$ **wash his₃ car**], too.

c.   Bill₁ will [$_{VP1}$ wash his₂ car], and John₂ will [$_{VP2}$ **wash his₄ car**], too.

All the sentences in (12) satisfy the relevant Binding Condition (i.e., Condition B),[9] and hence are ruled in at this point of derivation. However, a semantic interpretation mechanism does not allow the interpretation in (12)c and hence, (12)c is not licensed as an appropriate interpretation of (11), although it does satisfy the relevant Binding Condition. This is consistent with the fact that (11) can have the interpretations in (12)a and (12)b, but not the one in (12)c. The semantic interpretation mechanism at work here is roughly the following (see Chapter 3 for a concise review of Tomioka's (1997) semantic/pragmatic theory of the restriction on pronominal interpretation in VP-ellipsis and deaccented structures). In the VP-ellipsis structure in (11), the subject *John* is focused because the rest of the clause is de-focused. A sentence with a focused element is properly licensed only when the de-focused part has an antecedent in the discourse *whose semantic interpretation is "identical" to it*. The interpretation of VP2 in (12)b is properly licensed because it has an antecedent VP1 whose interpretation is identical to it; both occurrences of *his* refer to the same individual. The interpretation of VP2 in (12)a is also properly licensed because it has an antecedent VP1 whose interpretation is "identical" to it, identical here in the sense that *his* in both VP1 and VP2 functions as a variable bound by the local subject. However, the interpretation of VP2 in (12)c is not identical to the interpretation of its antecedent VP1 because both occurrences of *his* do not function as a variable bound by the local subject and they do not refer to the same individual; hence, (12)c is not licensed as an interpretation of (11).

A technical question in this general picture in (10) is where the free indexation mechanism and the Binding Conditions locate in the system. If the free indexation mechanism belongs to the syntactic side of the LF interface, it may be regarded as a syntactic operation which violates the inclusiveness condition. Hence, the free indexation mechanism resides in the semantic side of the LF interface, and consequently, the Binding Conditions belong to the semantic component. However, the Binding Conditions are crucially contingent on syntactic configuration (specifically, c-command relation), as well as on indices, and hence, if the indexation applied in a late stage in the semantic/pragmatic component in which a syntactic structure at the LF interface has been transformed into a logical representation which has no hierarchical structure, the Binding Conditions could not apply properly. I suggest therefore that although the free indexation mechanism and the Binding Conditions belong to the semantic side of the LF interface, they apply to the immediate output of syntactic derivation at the LF interface, where all the relevant syntactic information, such as c-command relation, are present.

Notes to Chapter 1

[1] The argument that PF cannot interpret the scattered features of a lexical item is not as straightforward as it appears. That is, even after the relevant formal features overtly move to the target, all the *phonological features* definitely remain in-situ, and therefore, it is not very clear why the PF component cannot interpret a lexical item whose phonological features are all intact and not "scattered." Chomsky's (fall semester, 1995) answer to this question was that the chain of a set of formal features is an illicit PF object which the PF interface cannot interpret and no operation in the PF component can eliminate such a chain. Hence, the derivation crashes at the PF interface.

[2] Williams (1977) argues that the tense marking of a verb is a sentence operator in LF and thus, for instance, the LF representation of the sentence *Bob left* is (i), in which tense information has been extracted out of the verb *left*.

(i) $[_S$ Past $([_{NP}$ Bob] $[_{VP}$ leave])]

This can be considered as an instance of Move F or LF feature decomposition, although Williams himself does not state it in that way.

[3] Strictly speaking, the term "reconstruction" is misleading in the proposed theory of VP-ellipsis, because the phonologically empty VP is constructed (not *reconstructed*) for the first time by LF Copy operation. I will still use the term reconstruction as far as I see no risk of confusion.

[4] I assume that indices can be introduced at the LF interface after all syntactic operations have been completed. See Section 1.4 for a general picture of the model I assume in this thesis. Also I do not deny the possible use of λ-notation in the semantic component.

[5] Barss (1986) argues, on independent grounds, that the trace of A-movement retains the same properties of the moved element, and concludes that Binding Conditions are not applicable to traces of movement.

[6] The LF deletion mechanism for A'-movement seems to be more complex, and I will not discuss it in this study. See, for instance, Chomsky (1992) and references therein.

[7] Kitagawa (1991) extensively discusses the cases of VP-ellipsis which involve feature mismatch and are degraded.

[8] A fair amount of research has already been done on Binding Conditions in this respect.

[9] I will argue in Chapter 4 that the relevant Binding Condition in (12)a is actually Condition A, claiming that the locally bound genitive pronoun is an anaphor, not a pronominal. This point, however, is not crucial in the present sketchy illustration and I will follow the standard assumption (Chomsky 1986a), for ease of exposition, that genitive pronouns are exclusively pronominal and the relevant Binding Condition in (12)a is Condition B.

Chapter 2

LF Construction of Ellipsis and the Subset Copy Principle:

Verbal Morphology

Ellipsis must obey some form of recoverability/identity condition, but it is not an easy task to define the exact nature of the condition. It has been argued that the condition cannot be stated in terms of simple surface morphophonological identity. Sag (1976), for instance, claims that the condition on deletion cannot be stated in terms of formal (i.e., morphophonological) identity between the triggering element (or the antecedent) and the target element (or the elided element), but rather it must be stated in terms of LF identity, allowing some sloppy identity of the surface forms. Chomsky (1965) observes that in certain elliptic constructions, morphological sloppy identity is allowed, and argues that the difference in agreement features between the antecedent and the elided element can be irrelevant to the recoverability/identity condition. Lasnik (1995a), on the other hand, argues that as far as verbal morphology is concerned, the recoverability/identity condition is stated in terms of strict morphological identity.

The goal of this chapter is to argue that the idea of LF feature decomposition of a syntactic object provides a new insight into the nature of morphological sloppy identity which the recoverability/identity condition tolerates, and to discuss some related issues and some consequences of the proposed theory of VP-ellipsis. In Section 2.1, I will introduce and motivate the subset copy principle. In Section 2.2, I will introduce a

surprising fact of perfective participle morphology and demonstrate that an apparent counterexample to the subset copy principle actually argues for it. In Section 2.3, I will introduce a potential alternative, a PF Deletion approach proposed by Lasnik (1995a), and point out one problem with it. Section 2.4 briefly discusses the relation between participle morphology and semantic interpretation, and Section 2.5 discusses some cases of VP-ellipsis where Aux *have/be* is involved and considers the nature of head movement; the proposed LF Copy analysis of VP-ellipsis argues that head movement is a pure syntactic operation whose trace is not a full copy of the original. In Section 2.6, I discuss some problematic cases. Section 2.7 is the summary of this chapter. The main claim of this chapter is that a certain asymmetry in participle morphology under VP-ellipsis can be nicely captured by the LF Copy approach supplemented by the subset copy principle.[1]

2.1 Verbal Morphology and the Subset Copy Principle

Let us consider (1), which is a typical example of VP-ellipsis (I will use [e] to indicate the elliptic site for expository convenience, but I eventually argue that there is nothing there in overt syntax: see Section 5.4 of Chapter 5).

(1)   Mary will leave, and John will [$_{VP}$ e], too.   ([e] = leave)

The contents of the phonologically empty VP in (1) are recoverable from the VP in the first conjunct clause. This is straightforward, because what is understood in the empty VP is *leave*, which is identical to the contents of the first VP. However, it has been noted (Quirk *et al.* (1972), for instance) that the head verbs of the antecedent VP and the elliptic VP are not necessarily morphologically identical. For instance, in (2), the

antecedent verb is an ING-form, while the elliptic verb should be understood as a bare form.

(2)   Mary is leaving, but John will not [$_{VP}$ e].   ([e] = leave)

The antecedent verb and the elliptic verb are not morphologically identical, but nonetheless the sentence is grammatical. This suggests that the recoverability/identity condition on ellipsis is not necessarily exact morphological identity. Let us call this fact "morphological sloppy identity." Morphological sloppy identity, however, is not always possible. (3), where the antecedent verb is a bare form and the elliptic verb is an ING-form, is much worse than (2).[2]

(3)   ?* Mary will not leave, but John is [$_{VP}$ e].   ([e] = leaving)

In other words, there is an asymmetry in morphological sloppy identity: an ING-form can be the antecedent of a bare form but not vice versa. As a point of departure for discussion, let us look at an LF Copy analysis proposed by Oku (to appear a) to see how it accounts for this fragment of morphological sloppy identity facts.

The basic assumption here and throughout this thesis is that a lexical item is a set of features, features being phonological features, semantic features, and syntactic (or formal) features (Chomsky 1965, 1995a). To account for this asymmetry of morphological sloppy identity, I propose the subset copy principle for LF Copy operations:

(4)   *The Subset Copy Principle*
        LF Copy can copy a subset of the features of the antecedent to construct the contents of the elliptic site.

For the purpose of illustration, let us extend Chomsky's (1992) lexicalist hypothesis to participle forms and assume that an ING-form is introduced in syntactic structure in the inflected form. Given that an ING-form consists of the features of the stem (*leave*, for instance) and the features for the suffix -*ing*, the features composing a bare form of a verb are a subset of the features composing the corresponding ING-form of the verb. Hence, LF Copy takes the stem features of the antecedent ING-form and constructs the contents of the elliptic verb which is a bare form as in (5). For expository purposes, I will use **boldface** to mark a constituent which is constructed by LF Copy.

(5)   Mary is [$_{VP}$ leaving], but John will not [$_{VP}$ **leave**]

        |___ LF Copy of the stem __↑

As for (3), since the relevant operation is copying, there is no way to construct the elliptic ING-form out of the bare form antecedent verb. (3) is ruled out for the same reason that *John is leave* is ruled out. The progressive Aux *be* requires an ING-form but the requirement is not satisfied in (3), even after LF Copy.[3] Note that this requirement of the progressive Aux *be* is not a pure "surface" requirement, because the progressive Aux *be* can be properly licensed even when there is no phonologically realized VP following it, as in *Mary is leaving and John is [e], too*. Under the present hypothesis, the content of the elliptic VP is properly provided by the antecedent *leaving*.

Let us next consider cases where tensed main verbs are involved. The morphological sloppy identity is possible as shown in (6).

(6)   Mary left, and soon John will [$_{VP}$ e]   ([e] = leave)

I will suggest two ways to deal with the fact, both of which are consistent with the subset copy principle. One is to assume, following Chomsky (1992), that the tensed verb is introduced in syntax in the fully inflected form and feature checking between the verb and the Infl examines whether the tense feature of the verb matches the tense feature of the Infl. The relevant structure is (7).

(7)   Mary Infl[past] [$_{VP}$ left], and soon John will [$_{VP}$ e].
        featural

In this case, the verb of the first VP consists of the features of the bare verb *leave* and the features of the past tense, and hence the features which compose the bare form *leave* are a subset of the features which compose the inflected form *left*. Therefore, the subset copy of the antecedent VP can provide the appropriate form of the second VP. However, Lasnik (1995a) points out some problems with Chomsky's lexicalist approach, and proposes a PF affixation approach to the morphology of tensed main verbs in English. This is the other possibility I suggest here to deal with the morphological sloppy identity in (6). In this approach, the verb is bare before the affixal Infl attaches to the verb as shown in (8).

(8)   Mary Infl[past] [$_{VP}$ leave], and soon John will [$_{VP}$ e].
        affixal

Lasnik proposes that the affixation is a process in the PF component, which implies that the verb remains bare throughout a narrow syntax (from the lexical insertion to the LF interface).[4] Given this, the LF Copy of the first VP provides the appropriate contents for the second VP: a bare form *leave*. Since both approaches to the verbal morphology of tensed main verbs in English are consistent with the LF Copy analysis supplemented with the subset copy principle I have proposed and am defending, I will not discuss advantages and disadvantages of both theories here. Note, however, that the arguments for and against either approach are in principle independent of the arguments concerning the morphology of participles. I eventually argue for a non-lexicalist analysis of participles, but the analysis of perfective participles is quite different from the analysis of the passive and the progressive participles.[5] So far I have sketched the essence of the theory of the morphological sloppy identity based on the subset copy principle under the LF Copy analysis of VP-ellipsis.

The cases where an ING-form is involved clearly show that the morphological sloppy identity between the antecedent verb and the elliptic verb is not symmetrical: an ING-form can antecede the bare form but not vice-versa. The fact is naturally accounted for under the LF Copy analysis of VP-ellipsis supplemented with the subset copy principle.

2.2   An Apparent Counter Example: Perfective Participle

Let us consider cases in which a perfective participle is involved in place of a progressive participle. Suppose that a perfective participle form consists of the features of the stem and the features of the perfective affix EN. The subset copy principle correctly predicts that (9) is good, because the verb to be constructed at the elliptic site is

a bare form *leave* and thus its features are a subset of the features of the antecedent verb *left* (which consists of features of the stem *leave* and the features of the EN affix).

(9)   Mary has [$_{VP}$ left], and soon John will [$_{VP}$ e]   ([e] = leave)

However, in contrast to the progressive participle example in (10)b (= (3)), (10)a is also good.

(10)   a.   Mary will [$_{VP}$ leave], and John already has [$_{VP}$ e]   ([e] = left)

        b.   ?* Mary will not leave, but John is [$_{VP}$ e]   ([e] = leaving)

(10)a is an apparent counterexample to the LF Copy analysis of ellipsis, because it appears that the features of the elliptic verb are a proper superset of the features of the antecedent verb: the antecedent verb is bare, while the elliptic verb consists of the stem and the EN affix. To avoid this problem, I will argue now that a copy of a bare form can satisfy the LF requirement of the Aux *have* and thus (10)a is not a real counterexample to the LF Copy analysis. As independent evidence, I will present striking data which suggest that the Aux *have* does not necessarily require an EN form under certain circumstances.

Oku (1996a, 1996b) and Urushibara (1997) independently observe that in the VP-fronting structure, the head verb can be a bare form even when the associated Aux is the perfective *have*:[6]

(11)   a.   Mary once predicted that John would pass an exam eventually, and

              pass one he now has.

        b.   We thought someone would fail the exam, and fail it plenty of people

              have.   (Emonds 1976:31)

        c.   We thought she would lose her temper, and lose it she has.

                                                    (Emonds 1976:115)

        d.   He claimed he would take first place, and take first place he has.

                                                    (Oku 1996b:283)

        e.   They said John would study linguistics and study linguistics he has.

                                                    (Urushibara 1997:138)

Notice here that the head verb of the fronted VP is bare in all the sentences in (11), even though the associated Aux is the perfective *have/has*. Let us assume, following Takano (1995) and Heycock (1994, 1995), among others, that the fronted predicate must be reconstructed in LF. After the reconstruction, the Aux *have* and the bare head of VP are in the local head-head relation at the LF, but nonetheless the sentence is good. This strongly suggests a descriptive generalization like (12).

(12)   At LF the selectional requirement of the perfective Aux *have* can be satisfied by a

        bare verb.

If (12) is true, (10) is not a real counterexample to the proposed LF Copy analysis of VP-ellipsis based on the subset copy principle, but rather it is consistent with it: LF Copy of the bare verb *leave* can satisfy the LF selectional requirement of the perfective Aux *have*. I will assume that (12) is true and discuss some of its implications on participle morphology and semantic interpretation in Section 2.4. Note that the proposed theory predicts that an ING-form can be the antecedent of the perfective, but not vice versa. The prediction is correct: the sentence *John is leaving but he hasn't*

[vp e], yet is good, while the sentence **Mary has left, and now John is *[vp e]* is bad.

An immediate question is how we can rule out a sentence like (13), if the Aux *have* does not necessarily require the properly inflected participle form in LF.

(13) *John has leave.

The discussion about the VP-fronting and VP-ellipsis we have seen suggests that (13) will be ruled out by some "surface" requirement, not by an LF requirement: in other words, in (13) there is nothing wrong with the LF side, but something is wrong with the PF/Morphology side. Observing the same kind of data, Urushibara (1997) claims that the perfective participle form is produced by a word formation rule in the morphological component after Spell-Out: a verb is spelled out as the perfective participle form if the perfective Aux *have* and the verb are *string-adjacent* in the PF/Morphology component.[7] Urushibara's proposal implies that the verb is bare throughout the derivation from the lexical insertion to the LF interface. She proposes that the relevant condition of this word formation rule is string-adjacency between the Aux *have* and the head verb of the VP. Urushibara's idea is consistent with what we have observed so far: in the VP-fronting cases, after Spell-Out, the head verb of the fronted VP and the Aux *have* are not string-adjacent in the morphological component and hence the verb remains uninflected. Although it is not very clear what kind of theory of VP-ellipsis she is assuming, Urushibara's idea is also consistent with the LF Copy theory of VP-ellipsis we are exploring, because her analysis crucially implies that the verb that is associated with the Aux *have* stays in a bare form throughout the pure syntax (i.e., from the lexical insertion to the LF interface). Hence, the verb associated with Aux *have* is always bare in syntax, and thus a copy of a bare verb satisfies the selectional property of Aux *have*.

However, although the data suggest that the relevant condition is not an LF condition, but rather is a "surface requirement" of some sort, data like (14) demonstrate that Urushibara's string-adjacency is not the right condition:

(14) a.   * John has not leave.

(cf. John has not left)

b.   * Has John leave?

(cf. Has John left?)

In the sentences in (14), the verb is not string-adjacent to the Aux *have* but it still has to be properly inflected; the bare form is not allowed. Now, the task is to account for the fact that some kind of displacement (e.g., the head movement of Aux *have* as in (14)) requires the associated verb to be inflected, while some other kind of displacement (e.g., VP-fronting as in (11)) does not.

The general idea I suggest is the following: in VP-fronting as in (11), there is no point of derivation in overt syntax in which Aux *have* and the verb are in the relevant local relation, although they would be in the local relation after the LF reconstruction of the VP. In verb movement as in (14), on the other hand, there is such a point of derivation in which the appropriate inflection is induced. However, under the minimalist assumption, the syntactic computation is assumed to be uniform from the lexical insertion to the LF interface and there is no linguistically significant level of representation corresponding to "S-structure," and therefore it is not possible to say that Aux *have* does not require the associated verb to be inflected in *covert* syntax, while it does in *overt* syntax. To account for the difference between verb raising and VP-fronting, let us first consider the exact execution of both operations.

I will assume that syntactic movement is a process of two operations: copy and deletion (Chomsky 1955). As far as the pronunciation is concerned, I crucially assume that the deletion part is a PF rule which applies after the morphological word formation rule. Therefore, the verb movement leaves a full copy as its trace first, and then a later PF rule tells you to pronounce the highest copy but not the others. For (14)a, then, the structure before the verb movement is (15)a, and the one after the copy and before the deletion is (15)b.

(15)   a.   John [$_I$ [not [$_{VP1}$ has   [$_{VP2}$ leave]]]

     b.   John [$_I$ has   [not [$_{VP1}$ has   [$_{VP2}$ leave]]]

         ↑_____|

If (15)b is an input to the PF/Morphology component, *has* and *leave* satisfy the string-adjacent condition and hence the word formation rule applies to make the verb into the properly inflected form *left*.¹ Note that the cases in which an intervening adverb is involved are of particular interest. If the so-called VP-adverb *completely* is adjoined to the VP projection of Aux *have* in the original position as shown in (16), the adverb does not intervene between the verb and the lowest copy of Aux *have*; hence, the verb is properly inflected.

(16)   John [$_I$ has   [completely [$_{VP1}$ has [$_{VP2}$ solved it]]]]

        ↑_____|

However, even if the Aux *have* is not tensed and does not overtly raise to Infl, the adverb *completely* can still intervene between *have* and the verb without blocking the participle inflection:

(17)   a.   John should have completely solved it.

     b.   * John should have completely solve it.

It is not very plausible to assume that even in (17), the Aux *have* is base-generated below the adverb and thus adjacent to the verb, and then raises to its surface position above the adverb.⁹ Bobaljik (1994), for instance, has noted the fact that an intervening adverb, or an intervening adjunct in general, does not block some morphological process which usually requires linear (string) adjacency, and suggests that an adjunct is "invisible" for the purpose of PF adjacency. Why an adjunct, but not other syntactic objects, is invisible to PF processes is a serious research issue. One possible way to deal with this property of adjuncts, I suggest, is to appeal to the timing of the adjunct linearization. For instance, the adverb *completely* is attached to VP2 in syntax as in (18) (which is necessary because the semantic scope of this type of adverb is the lowest instance of VP and thus the semantics of the adverb interpretation would be problematic if it were not attached to an appropriate VP constituent in syntax):

(18)   [completely]
                     |
     John should [$_{VP1}$ have [$_{VP2}$ solved it]]]

Supposing that syntax itself is insensitive to linear order, it is not implausible to assume that the adjunct is attached to the VP in a three-dimensional way. If we assume that the linearization of the adverb comes after the morphological process in the PF/Morphology

component, the existence of the adverb does not block the string-adjacency between the Aux *have* and the verb *solved* at the relevant point of derivation, even if the adverb is eventually pronounced between *have* and *solved*.[10]

Coming back to the VP-fronting case, if the VP is base-generated in the complement position of the Aux *have*, and moves to its surface position, the structure after the copy part of the movement operation and before the deletion part is (19). The string-adjacency is satisfied between the tail of the chain (*has, has*) and the tail of the chain (*leave, leave*).

(19)   [$_{VP}$ leave], John has [$_{VP}$ has [$_{VP}$ leave]]

It is generally assumed that a chain is a single syntactic unit and if an operation affects one member of a chain, it must uniformly affect all other members of the chain. Hence, the verb in the head of the chain (*leave, leave*) in (19) must be properly inflected, and we cannot get the bare form: *Leave, John has*. As one possible way out, I suggest (20).

(20)   The "fronted" VP is base-generated in its surface position and lowers to the complement position of the Aux/Infl in the LF component, to satisfy the selectional property of the Aux/Infl.

Given (20), in the derivation from the Numeration through Spell-Out to the PF/Morphology component, the Aux *have* and the head verb of the fronted VP stay apart. No relevant local relation is established between them in the PF/Morphology component, and hence, the word formation rule does not apply and the verb stays bare. I will provide in Chapter 5 evidence to support the idea that the so-called fronted

predicates are actually base-generated at their surface position. However, even though I have proposed that the fronted VP is base-generated in its surface position, an alternative derivation may still be possible; that is, the fronted VP is base-generated in the complement position of Aux *have* and overtly moves to its surface position. Since there is topicalization or focus movement (and hence, syntactic features to derive such overt movements) such as English topicalization, the overt raising should be a possible option. If such an overt movement derivation is another option for deriving VP-fronting structure, the inflected form should be a free option when the remnant Aux is the perfective *have*. However, most speakers I have consulted find (21)b is bad, or at least worse than (21)a; (20)b is not a free option.

(21)   a.   They said John would leave, and leave he has.
        b.?*/?? They said John would leave, and left he has.

I suggest therefore that LF Lowering is the only option for VP-fronting, and overt raising option is not available. One possible account for this will be that LF movement is more economical than overt movement (Chomsky 1992), and hence, whenever LF movement option is available (i.e., the relevant selectional feature is weak), it is the only permissible derivation to obtain the VP-fronting structure. The reason for this may be economy of derivation. For example, in the overt raising option, there need be an extra feature to derive the overt movement, while in the LF Lowering option, no such feature is necessary. If adding an extra feature is considered to be more costly than having no such feature to derive exactly the same surface order, LF lowering is always more economical than overt raising. Note that I assume that LF Lowering is motivated by the selectional feature of the Infl/Aux and such a feature is necessary in any event to ensure the selection, and so the selectional feature to motivate LF Lowering of the fronted VP is

not an extra feature (see more discussion on this matter in Section 5.4 in Chapter 5).[11] I assume therefore that whenever either LF Lowering or overt raising movement is available in principle, the former is only the permissible option, other things being equal.

To sum up so far, we have seen that as far as participle morphology is concerned, the subset copy principle works nicely to account for some asymmetries of VP-ellipsis reconstruction, and that an apparent counterexample is not a real counterexample to the subset copy principle. In the rest of this chapter, I will discuss three things related to verbal morphology in VP-ellipsis. First, I will briefly review a strong alternative, a PF Deletion approach, to see how it deals with the asymmetry observed between the antecedent verbal morphology and the elliptic verbal morphology. Second, I will discuss the nature of participle affixes and their semantic interpretation. Third, I will discuss more facts about VP-ellipsis when the Aux *have/be* is involved as the antecedent and the elliptic elements, and discuss the nature of head movement.

2.3 A Potential Alternative: PF Deletion and An Affix Hopping Approach

Of the many deletion analyses of VP-ellipsis, I will discuss here Lasnik (1995a) since he is the first, to my knowledge, who suggests a potential solution to the contrast between ING-form deletion and EN-form deletion. Lasnik (1995a) has noted the contrast between the progressive participle and the perfective participle as in (3) and (10), repeated here as (22) and (23).

(22) ?* Mary will not leave, but John is [$_{VP}$ e].   ([e] = leaving)

(23)   Mary will [$_{VP}$ leave], and John already has [$_{VP}$ e]   ([e] = left)

Lasnik argues that participle morphology is derived by PF affixation, and that VP-ellipsis is derived by PF Deletion under the condition of strict morphological identity between the verb of the antecedent VP and the verb of the elliptic VP. He posits structure (24) for (22) at a point of derivation before PF Deletion and Affix Hopping.

(24)   Mary will not [$_{VP}$ leave], but John is ING [$_{VP}$ leave]

If Affix Hopping applies first, making the verb form *leaving*, VP Deletion cannot apply since the verb in the antecedent VP and the verb in the elliptic VP are no longer morphologically identical. On the other hand, if VP Deletion applies first under the strict identity condition, the affix ING is left stranded this time, which violates some version of the stranded affix filter (e.g., Lasnik 1981) and this derivation is ruled out, too. Hence, Lasnik's analysis correctly predicts that there is no way to derive (22).

As Lasnik notes, however, (23) is a potential problem in this approach, too. Consider structure (25) which is a structure before VP Deletion and Affix Hopping.

(25)   Mary will [$_{VP}$ leave], and John already has EN [$_{VP}$ leave]

Now, if Affix Hopping applies first, the verbs are not identical and hence VP Deletion is not possible. On the other hand, if VP Deletion applies first under the strict identity condition, the affix EN is left stranded in the same way as in (24). The theory, as it stands, incorrectly predicts that (23) is as bad as (22), contrary to fact. To account for this difference between ING-forms and EN-forms, Lasnik suggests something like (26).[12]

(26)   A stranded EN affix has the last resort option that it realizes as phonologically
        zero, while a stranded ING affix does not have such an option.

Given (26), after VP Deletion under the strict morphological identity condition in (25),
the stranded EN is realized as phonologically zero and thus there is no stranded affix
filter violation. The sentence is correctly predicted to be good.

Although Lasnik does not discuss the VP-fronting case, Lasnik's analysis can
naturally be extended to the striking morphological fact in the VP-fronting case as well.
Recall that the head verb of the fronted VP can be bare even when the associated Aux is
the perfective *have*:

(27)   They said that John would leave town, and leave town he has.

Now, let us assume that the relevant structure before VP-fronting is (28).

(28)   ... and he has EN [$_{VP}$ leave town]

After VP-fronting, the affix EN is left stranded, but given (26), there is no violation of
the stranded affix filter and the sentence is correctly predicted to be good. This sharply
contrasts with the progressive participle:

(29)   a.   Mary predicted that her husband would enjoy a night out, and
              *enjoy/enjoying it he is!   (Akmajian and Wasow 1975)
        b.   They said that John would leave town, and *leave/leaving town he is
              now.

Suppose that in (29)b, for instance, the structure is (30) before VP-fronting.

(30)   ... and he is ING [$_{VP}$ leave town]

Here, if the VP *leave town* is fronted before Affix Hopping, the ING is left stranded.
There is no phonologically zero realization option for ING; hence, it violates the
stranded affix filter and the sentence is correctly predicted to be bad.

There is, however, one potential difficulty with Lasnik's analysis of the contrast
between the perfective participle and the progressive participle. Lasnik attributes (26) to
the morphophonological property of the affix EN. Notice, however, that the
morphophonological realization of the passive affix EN is usually identical to that of the
perfective affix EN.[13] Then, a natural prediction is that the passive affix EN also has the
morphological zero realization option. The prediction is not borne out, however. Let us
consider the VP-fronting paradigm of a passive sentence:

(31)   Mary said that they would criticize John, and ...
        a.   * criticize he was.
        b.   (?) criticized he was.

Although (31)b might sound slightly degraded to some speakers, probably because the
voice has been changed between the preceding sentence and the VP-fronting sentence,
the bare form counterpart (31)a is entirely unacceptable, which sharply contrasts with
perfective sentence cases as in (32).

(32)   Mary said that they would criticize John, and criticize him they have.

If Lasnik's (26) is a pure morphophonological property of the affix EN itself, the contrast between (31)a and (32) is mysterious. We would have to assume that passive EN and perfective EN are different with respect to the zero realization option, even though they are identical in all other morphophonological respects. It seems very hard to provide a principled reason why the situation is the one shown in (33), insofar as both (33)a and (33)b are morphophonological properties of English affixes.

(33)   a.   zero realization option: {perfective EN} vs. {passive EN, ING}

        b.   other morphophonology: {perfective EN, passive EN} vs. {ING}

Our original analysis in Section 2.2 provides a natural way to make sense of the dichotomy {perfective} vs. {passive, progressive}. The special property of the perfective participle is attributed to a property of the Aux *have* whose selectional properties are satisfied by the bare form at LF.   Along the same line of reasoning, we may suggest that the progressive *be* requires an ING form at LF and the passive *be* requires an EN form at LF. Let us next consider what this situation suggests for the theory of morphology and semantic interpretation.

2.4   Participle Morphology and Semantic Interpretation

Chomsky (1965) claims that only features inherent to the lexical item are considered in determining legitimacy of deletion. Inflectional features, for instance, which are not inherent to the lexical item but "added by agreement transformation,"[14] are "not considered in determining whether the item in question is strictly identical with

some other item" (p. 180). Therefore, differences in inflectional features between the antecedent and the elliptic site do not block deletion.

Elaborating Chomsky's claim in terms of the LF Copy analysis we have been exploring, let us suggest that the reason why inflectional features are irrelevant in determining legitimacy of ellipsis is that they have no semantic import and thus can be ignored at LF. It can be argued then that a feature responsible for the morphological realization of the perfective EN-form (call it an 'EN-feature') is a pure instance of inflectional features; it can be ignored at LF. Put differently, the operation Spell-Out strips away all the features which are irrelevant to the semantic interpretation.[15] The arguments in this section and Section 2.3 imply that the semantics of the perfective is sufficiently encoded in the Aux *have*. The associated verb is a bare form with no information of the semantics of the perfective, as far as LF is concerned.

The progressive participles and the passive participles are different from the perfective participles in this respect. The facts about VP-ellipsis and VP-fronting we have discussed above suggest that the features which are responsible for the morphological realization of an ING-form (call it 'ING-feature') are not an instance of inflectional features but rather convey some semantic import and thus cannot be ignored at LF.   The LF construction (by LF Copy) of a phonologically missing VP after the progressive *be* always requires an ING-form as the head of the VP. In other words, the semantics of the progressive is not sufficiently encoded in the Aux *be* but the ING-feature plays a significant role in LF interpretation of the verb phrase. It is not very easy, however, to show that the ING-morpheme actually has some semantic import quite independently of the progressive Aux *be*. The following kind of sentence, for instance, suggests that the ING-morpheme actually contributes the semantic/functional change of the bare verb, independently of the progressive Aux *be*:

(34) a.   John did his homework, watching TV.

  b.   * John did his homework, watch TV.

Likewise, the features which are responsible for the morphological realization of the passive participle (call it a 'passEN-feature') are not an instance of inflectional features but rather convey some semantic import and thus cannot be ignored at LF. The semantics of the passive is not sufficiently encoded in the passive Aux *be*, and the passEN-feature plays a significant semantic role at LF. The claim that the passEN-feature has an LF function is supported by the analysis of passive which proposes that it is this passive EN which alters the argument structure of the corresponding active verb. See Jaeggli (1986) and Baker, Johnson, and Roberts (1989) for discussion that passive EN itself is an argument.

As the last topic on verbal morphology under VP-ellipsis, let us now turn to the cases where Aux *be/have* is the antecedent verb and elliptic verb. At first sight, the paradigm appears to be problematic for the subset copy principle. I will suggest several possible solutions to it. The discussion consequently leads us to the nature of head movement.

2.5 Aux *Have/Be* and the Nature of Head Movement

Warner (1986) observes an interesting fact about the verbal morphology of Aux *have* and *be* in English VP-ellipsis: Tensed Aux *have/be* cannot be the antecedent of non-tensed Aux *have/be* as shown in (35).[16]

(35) a.   * Mary was here, and John will [$_{VP}$ e], too. ([e] = be here)

  b.   * Mary has left, but John shouldn't [$_{VP}$ e]. ([e] = have left)[17]

(35)a shows that *was here* cannot be the antecedent of *be here*, and (35)b shows that *has left* cannot be the antecedent of *have left*. In other words, morphological sloppy identity is not possible when the verbs involved are Aux *have/be*. This sharply contrasts with the cases where main verbs are involved. Recall that morphological sloppy identity is possible in (6), repeated here as (36).

(36) Mary left, and soon John will [$_{VP}$ e] ([e] = leave)

Noting this difference between Aux *have/be* and main verbs, Lasnik (1995a) proposes the following theory.[18] Main verbs are introduced in the bare form in the derivation, and hence the exact formal identity is maintained between the head verbs of the antecedent VP and of the elided VP before PF affixation produces the inflected form. Aux *have/be*, on the other hand, are introduced in the fully inflected form in the derivation, and hence there is no point in the course of the derivation in which the head verb of the antecedent VP and the head verb of the elided VP are formally identical in sentences like (35). VP-ellipsis is not possible in these cases, because the relevant recoverability condition Lasnik maintains is the strict morphological identity.

Roberts (1998) proposes (37) to account for the difference between Aux *have/be* and main verbs, assuming that Aux raises, while a main verb does not in English (Emonds 1978, Pollock 1989, Chomsky 1991).

(37)　[$_{VP}$ [$_V$ e] X](where X may be null) cannot antecede VP-ellipsis.

(Roberts 1998: 118)

In the same spirit, Potsdam (1997) proposes (38), under the same assumption that Aux raises, while a main verb does not.

(38)　A trace of verb movement cannot serve as part of a VPE[llipsis] antecedent.

(Potsdam 1997: 362)

Both (37) and (38) account for the difference between Aux *have/be* and main verbs we have seen, to the extent that Aux has escaped out of the VP and main verbs remain in-situ at the relevant point of derivation. However, as Oku (to appear a) points out, (37) and (38) are both too strong. McCloskey (1991) provides Irish examples in which the VP whose head V has moved out can serve as the antecedent of VP-ellipsis as in (39)a with structure (39)b.

(39)　a.　Dúirt mé go　　gceannóinn　é　agus　cheannaigh

said　I　COMP　buy[Condit:S1]　it　and　bought

'I said that I would buy it and I did'

b.　Dúirt mé go [$_r$ gceannóinn$_1$ [$_{VP_1}$ t$_1$ é]]

said　I　COMP　buy[Condit:S1]　it

·　agus　[$_r$ cheannaigh$_2$ [~~$_{VP_2}$ t$_2$ é~~]]

and　　bought

McCloskey (1991) argues that (39)a is actually an instance of VP-ellipsis, not of the null object structure. We see in (39)b that headless VP$_1$ serves as the antecedent of VP$_2$.

Doron (1990) provides Hebrew examples which show the same point: the structure she assumes for (40)a is (40)b where the headless VP$_1$ is the antecedent of the phonologically empty VP$_2$.

(40)　a.　at　saragt　et　　ha- sveder　ha-ze; lo, ima　Seli　sarga

you　knit　ACC　the sweater　this; no, mother　mine　knit

'Did you knit this sweater?'　　'Lit. No my mother knit'

b.　at　　[$_r$ saragt$_2$　[$_{VP_1}$ t$_2$　[$_{NP}$　et　ha- sveder　ha-ze]]]

you　　knit　　　　　　　　ACC　the sweater　this

lo, ima　　Seli　[$_r$ sarga　　[$_{VP_2}$ e]]

no, mother　mine　knit

McCloskey's argument and Doron's argument show that both Roberts' condition (37) and Potsdam's condition (38) are too strong as they stand, because Irish and Hebrew have examples in which a VP whose head has escaped out of it can serve as the antecedent of an elliptic VP. Further, there is evidence that English has instances of VP-ellipsis in which the head verb of the antecedent VP has escaped out of the VP. Let us first look at (41), which strongly suggests that there is no NP-ellipsis, AP-ellipsis, nor PP-ellipsis.[19]

(41)　a.　* You seem a good teacher, and John seems [$_{NP}$ e], too.

([e] = a good teacher)

(Cf. You are a good teacher, and John is, too.)

b.　* They sound intelligent, and John sounds [$_{AP}$ e], too.　　([e] = intelligent)

(Cf. They are intelligent, and John is, too.)

c.   * Mary looks in good shape, and John looks [_PP_ e], too.

([e] = in good shape)

(Cf. Mary is in good shape, and John is, too.)

Given that there is no NP/AP/PP-ellipsis, the most natural source of the second sentences in (42) is VP-ellipsis with the indicated structure.

(42)   a.   You [_I_ are₁ [_VP1_ t₁ [_NP_ a good teacher]]], and
       ↑_____|

       John [_I_ is₂ [_VP2_ t₂ [_NP_ **a good teacher**]]], too.
       ↑_____|

       b.   They [_I_ are₁ [_VP1_ t₁ [_AP_ intelligent]]], and
       ↑_____|

       John [_I_ is₂ [_VP2_ t₂ [_AP_ **intelligent**]]], too.
       ↑_____|

       c.   Mary [_I_ is₁ [_VP1_ t₁ [_PP_ in good shape]]], and
       ↑_____|

       John [_I_ is₂ [_VP2_ t₂ [_PP_ **in good shape**]]], too.
       ↑_____|

It is clear here that the VP1 headed by the trace *can* antecede the elliptic VP2, again showing that (37) and (38) are too strong, incorrectly ruling out some grammatical sentences.

Notice, however, that there is a big structural difference between the good cases, (39), (40) and (42), and the bad cases, (35)a and (35)b; in the good cases, the elliptic VP is also headless as well as the antecedent VP, while in the bad cases, the head verb of the elliptic VP stays in-situ. Therefore, a more precise generalization would be (43), which correctly captures the difference between (35) and (39)/(40)/(42).[20]

(43)   A VP whose head has escaped cannot be the antecedent of an elliptic VP whose head stays in-situ.

Under the LF Copy analysis of VP-ellipsis we are exploring, (43) can be stated in the following way:

(44)   A VP whose head has escaped cannot provide enough features to construct the contents of the corresponding elliptic VP whose head stays in-situ.

Let us discuss the nature of (44) in more detail. If we assume that the trace of the raised verb is a full copy of the original in the LF component, we would have a structure like (45) for the ungrammatical sentence *Mary was here, and soon John will*.

(45)   Mary [_I_ was [_VP1_ was here], and soon John [_I_ will [_VP2_ e]]   ([e] = be here)
       ↑_____|

What we would like to construct in VP2 is a verb phrase *be here*. It is natural to assume that the verb *was* consists of bare form *be* and the tense/agreement features. If this is the case, the features of *be* are a subset of the features of *was*, and thus the subset copy principle incorrectly predicts that the sentence *Mary was here, and soon John will* is good. This suggests that a trace of a head movement is never a full copy of the original head. This might be what Roberts (1998) and Potsdam (1997) intend, although they are not very explicit about this. Notice also that I-bar in the first clause in (45) cannot be the antecedent of VP2 in the second clause. Structural parallelism is required in the construction of the elliptic VP. This is also implicitly assumed in Roberts (1998) and

Potsdam (1997). This structural parallelism requirement is most clearly demonstrated by the following example:

(46)   *The men have left, but the women shouldn't [$_{VP}$ e]   ([e] = have left)

(Lasnik 1995a)

Here, the Aux in the first clause and the Aux in the second clause are morphologically identical, although the first one is tensed and the second one is infinitive. The structure of (46) is (47).

(47)   The men [$_I$ have$_1$ [$_{VP_1}$ t$_1$ [left]], but the women [$_I$ shouldn't [$_{VP_2}$ **have left**]]

If I-bar could be the antecedent structurally to construct the VP₂, the sentence must be good, because the features composing the second Aux *have* (i.e., bare form) is surely a subset of the features composing the first Aux *have* (i.e., stem and tense feature).

Given that the trace of verb movement is not a full copy of the original, what is its exact property? Suppose first that verb movement literally leaves nothing behind:

(48)   Verb movement leaves nothing in the original position.

If (48) is true, after the verb movement there would be a VP that is completely headless. This would be problematic under the bare phrase structure theory (Chomsky 1994, 1995a), because the VP *was here* in *John was here*, for instance, is a complex of *was* and *here*, and if *was* raises leaving nothing behind, the VP loses one of the two constituents that compose the VP. It is not very clear what kind of syntactic object the

headless VP is. The situation is depicted as a tree structure in (49)a and as a set-theoretic notation in (49)b.[21]

(49)   a.
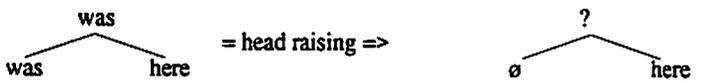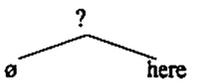
b.   {was {was, here}}   = head raising =>   {? {ø, here}}

To preserve the original syntactic structure after verb movement, I suggest that verb movement leaves the category feature V, and therefore after verb movement, the original VP structure is maintained whose head is simply a category feature V:[22]

(50)   Verb movement leaves the category feature V.

Both (48) and (50) are consistent with the claim that the trace of a head movement cannot provide enough information to construct the in-situ head in the elliptic VP. I tentatively assume (50), based on the conceptual argument I have just given under the bare phrase structure hypothesis, although I do not see at the moment any strong empirical evidence to support (50) over (48).

Finally, let us consider how the proposed theory of head movement interacts with the proposed theory of the perfective participle morphology. Recall that when I discussed the striking morphological property of the perfective participle, I proposed that a head movement of Aux *have* leaves its full copy in the PF/Morphology component as shown in (51), where the string-adjacency condition between *has* and *leave* is satisfied and *leave* is correctly inflected as *left* by the word formation rule.

(51)   John [ᵣ has [not [ᵥₚ₁ ̶h̶a̶s̶ [ᵥₚ₂ leave]]]]

        ↑_____⎦

Notice, however, that this proposal (i.e., verb movement leaves a full copy) and the proposal I have just made concerning VP-ellipsis (i.e., verb movement does not leave a full copy) appear to be a contradiction. Take (52) as a specific example to demonstrate how these two claims contradict each other.

(52)   *The men have not left, but the women should [ᵥₚ₄ e]   ([e] = have left)

For the purpose of participle inflection in the first clause in (52), the structure must be (53) at the relevant point of derivation, where the string-adjacency is satisfied between *have* and *leave*, inducing the proper inflection.

(53)   The men [ᵣ have [not [ᵥₚ₁ have [ᵥₚ₂ leave]]]]

        ↑_____⎦

For the purpose of VP-ellipsis, on the other hand, the antecedent VP₁ should not be able to provide the sufficient information to construct *have left* in the elliptic VP, since sentence (52) is bad in the relevant reading. This has lead us to the conclusion that verb movement does not leave a full copy. Therefore, the structure must be (54), where tᵥ indicates the trace of the raised *have*, which consists of the category feature V alone, not the full copy of the original.

(54)   The men [ᵣ have [not [ᵥₚ₁ tᵥ [ᵥₚ₂ leave]]]], but the women should [ᵥₚ₄ e]

However, this apparent contradiction can be resolved if we carefully consider the components in which these two requirements on verb movement apply. The full copy is required in the PF/Morphology component, while the full copy is excluded in the pure syntax (especially in the covert syntax where LF Copy of the VP applies). In other words, what we want is a theory in which verb movement does not leave a full copy in the pure syntax, while there is a full copy in the original position in the PF/Morphology component.

I will suggest the following way to fulfill these two requirements simultaneously. First, I assume that syntactic verb movement always leaves only the category feature V and never leaves a full copy of the original. This satisfies the requirement that the trace of verb movement cannot provide enough features to construct the in-situ head of the elliptic VP. Secondly, I assume "multiple Spell-Out" that gives syntactic information to the PF/Morphology component step by step (Uriagereka 1996, Chomsky 1997). That is, at a point of derivation where Aux *have* is merged to the VP headed by *leave*, the whole structure is sent off to the PF/Morphology component where the adjacency condition is satisfied between *have* and *leave*; thus the word formation rule applies and *leave* becomes *left* as in (55)a.

(55)   *Pure syntax*   *PF/Morphology*
    a.   [have [leave]]   =Spell-Out=>   have left
    b.   [not [have [leave]]]   =Spell-Out=>   not have left
    Aux *have* raises
    c.   [have [not [tᵥ [leave]]]]   =Spell-Out=>   have not have left

In the pure syntax, the verb movement of Aux *have* leaves only the category feature and the whole structure is sent off to the PF/Morphology component and superimposed on the already-sent-off structure as shown in (55)c. I assume that the process of superimposition works in the way that at each position, a word which has more features wins over the corresponding word which has less features. For instance, at the stage in (55)b when *leave* is superimposed on *left*, *left* takes over *leave* because the former has more features (i.e., the stem *leave* and EN-features) than the latter. Likewise, at the stage in (55)c where t_V is superimposed on *have* in the lower (original) position, *have* takes over t_V because the former has more features than the latter: recall that I have proposed that t_V is the categorial feature V which is also part of the features of *have*. This would be a natural process of superimposition, although it is not very explicit whether Uriagereka (1996) and/or Chomsky (1997) actually gives this assumption. In the later stage in the PF/Morphology component, a general PF rule tells you to pronounce the highest member of the chain of the verb movement, not the other members of the chain, and hence the whole sentence is pronounced as *(the men) have not left*. As is seen in (55), in the pure syntax, what is left in the original position of Aux *have* is not a full copy but the category feature, while in the PF/Morphology component, the string-adjacency condition is satisfied between *have* and *leave*, inducing the proper inflection of the verb.

A consequence of this argument is that verb movement is an operation in the pure syntax, not an operation in the PF component, the latter being suggested by Chomsky (1997). Under the present analysis, if verb movement applies in the PF component, the structure of (52) is (56), rather than (54), in the LF component, because no verb movement applies in the pure syntax.

(56)   The men [$_\Gamma$ [not [$_{VP1}$ have [$_{VP2}$ leave]]]], but the women should [$_{VP4}$ e]

If (56) is the structure in LF, LF Copy of VP1 should be able to construct the appropriate contents of the phonologically missing VP4, and thus the sentence is predicted to be good, contrary to fact. As far as the proposed LF Copy analysis of VP-ellipsis is on the right track, it argues that verb movement is a pure syntactic operation.

2.6   Some Problematic Cases

Finally in this chapter, I will discuss slightly more complicated cases of VP-ellipsis in which Aux *have/be* is involved. The generalization so far is that a tensed Aux *have/be* cannot be the antecedent of non-tensed Aux *have/be*. Following the general assumption that tensed Aux *have/be* raises to Infl, I proposed that the trace of verb movement leaves only its category feature V, not a full copy, and hence it cannot provide sufficient features to construct the contents of the in-situ Aux *have/be*. However, some researchers report that even non-tensed Aux *be* cannot be the antecedent of non-tensed Aux *be* when they are not morphologically identical:

(57)   a.   ?*The children have been very good here. I wish they would [$_{VP}$ e] at
                home.   ([e] = be very good)
                                                                            (Warner 1986: 154)

        b.   * John was being obnoxious, and Mary will [$_{VP}$ e], too.
                                                                            ([e] = be obnoxious)
                                                                            (Lasnik 1995a: 264)

Under the proposed LF Copy analysis, in (57)a, the set of features of *be very good* is a proper subset of the set of features of the antecedent *been very good*, and hence the sentence is predicted to be as good as (58) in which the relevant VP is headed by a main verb *behave*.

(58) ?The children have behaved very well here. I wish they would at home.

(Lasnik 1995a: 264)

Lasnik (1995a) argues that the sentences in (57) are another instance to show that ellipsis of a VP whose head is Aux *have/be* are possible only when the *have/be* is morphologically identical to the antecedent Aux *have/be*. Roberts (1998), in contrast, claims that (57)a and (57)b "are in fact cases of Akmajian and Wasow's (1975) BE-shift operation; that is, they are cases where *be* appears to have raised" (p. 117). This leads Roberts to propose his condition (37), repeated here as (59).

(59) [$_{VP}$ [$_V$ e] X](where X may be null) cannot antecede VP-ellipsis.

(Roberts 1998: 118)

However, Akmajian and Wasow's actual proposal is that *be* which is first generated under VP shifts to Aux only when there is no other auxiliary verb under the Aux node. Hence, the sentences in (57) are not examples in which Akmajian and Wasow's BE-shift is involved. Quite contrary, Akmajian and Wasow (1975) actually argue that (60)b is bad because *being* does not shift to Aux.

(60) a. Sam is being noisy, and Bill is [$_{VP}$ e], too.

b. Sam is being noisy, and Bill is being [$_{VP}$ e], too.

(Akmajian and Wasow 1975: 227)

As far as I can see, therefore, Roberts' argument about (57) is not very convincing. I will suggest different treatments of (57)a and (57)b. For (57)a, I assume that it is not a representative example with respect to verbal morphology. Observe that (61) is good, which is identical to (57)a in the relevant respect.[23]

(61) The children have been very good here. I said they would [$_{VP}$ e]

([e] = be very good)

Therefore, I take (61) as basic data and conclude that LF Copy of the antecedent *been very good* can actually construct *be very good* in the elliptic site. If there is a real contrast between (57)a and (61), I suspect that the contrast has nothing to do with the sloppy identity of verbal morphology, and should be attributed to something else, although the exact source of the degradation of (57)a is not clear to me at the moment.

The problem in (57)b under the subset copy theory is why *be obnoxious* cannot be constructed by a copy of *being obnoxious*, the features of the former appearing to be a subset of the features of the latter. For this problem, I suggest that although *be* in *be obnoxious* is a simple copula with no lexical semantics, *be* in *being obnoxious* is not a simple copula but it is a verb with richer lexical semantics, meaning something like *act*. This instance of *be* has a special selectional property which a simple copula *be* does not. That is, it takes an individual level predicate and the whole complex becomes a stage level predicate as in (62)a, while it cannot take an inherently stage level predicate as its complement as shown in (62)b.

(62) a. John was being obnoxious.

  b. * John was being ill.

Compare (62) with (63) in which the copula *be* can freely take either an individual level predicate or a stage level predicate.

(63) a. John was obnoxious.

  b. John will be obnoxious.

  c. John was ill.

  d. John will be ill.

Further, there is another piece of data which suggests that *be* as in *being obnoxious* is not a pure copula, but rather it is more like a main verb. Recall that ellipsis is possible after Aux, but not after a main verb. Now, consider (64)a first where copula *be* is a remnant as well as the modal *will*.

(64) a. Bill will be very good, and John will be [e], too. ([e] = very good)

  b. Bill will be very good, and John will [e], too. ([e] = be very good)

The second *be* in (64)a might sound slightly redundant (especially, compared with (64)b), but the sentence is fairly acceptable.[24] Now, compare (64)a with (65) which is ungrammatical.

(65) * Bill was being obnoxious, and John was being [e], too. ([e] = obnoxious)

(Cf. Bill was being obnoxious, and John was [e], too. ([e] = being obnoxious))

(65) behaves in the same way as when the progressive verb is a main verb as in (66).

(66) *Bill was acting obnoxious, and John was acting [e], too. ([e] = obnoxious)

Given that *be* in *being obnoxious* is not a simple copula but is more like a main verb with richer semantics, I suggest that the ungrammaticality of (57)b is accounted for by (67).

(67) A (subset) copy of a lexical item cannot provide the contents of a semantically different lexical item.

Hence, a copy of *being obnoxious* cannot construct *be obnoxious*, because even after the ING-feature has been taken away from *being*, *be* in the first conjunct in (57)b is not a pure copula *be*. (67) seems to be a natural assumption, because even when it is reasonable to assume that semantic features of a lexical item A are a proper superset of the semantic features of another lexical item B, LF Copy of A will not provide B. For instance, it is reasonable to assume that semantic features of the verb *giggle* are a proper superset of semantic features of the verb *laugh*, but (68)b can never mean that Mary laughed even if everyone knows that Mary never giggles and only laughs.

(68) a. Sally giggled and/but

  b. Mary did.

    (Cf. Sally giggled and/but Mary laughed)

The only possible interpretation for (68)b in this context is that Mary giggled, which is obtained if *too* or *as well* is added to make the discourse natural.

Let us discuss another example which appears to be problematic for our subset LF copy theory of VP-ellipsis.[25] It is actually problematic in any theory of VP-ellipsis which assumes some version of the recoverability/identity condition. (69) seems to be very bad in the relevant interpretation.[26]

(69) ?* Mary should have left, and John should [vp e], too.   ([e] = have left)

    (cf. Mary should have left, and John should have [vp e], too.

For this problem, I suggest that Aux *have* raises to Infl even when it is not tensed, and hence, the structure of (69) is (70) when LF Copy applies.

(70)   Mary [I should + have2 [VP2 t2 [VP1 left]]]

        ↑_____|

It is clear from (70) that LF Copy of the antecedent VP2 cannot construct the contents of the VP *have left* (recall that I have proposed that Aux *have/be* raising does not leave a full copy trace). However, the timing of this *have* raising is still problematic. It cannot be in overt syntax or in the PF component, because another element, such as Neg *not*, can intervene between *should* and *have* as shown in (71).

(71)   Mary should not have left.

The raising of Aux *have* to Infl cannot be later than LF Copy, either. Therefore, the raising must be in covert syntax but before LF Copy to construct the elliptic site. This timing will be captured if we assume that operations within a sentence precede operations across sentences, the idea which Williams (1977) calls "strict utterance." *Have* raising to Infl in covert syntax (an operation within a sentence) must precede LF Copy to construct the elliptic site (an operation across sentences). Finally, two more assumptions are necessary under a last resort view of movement that syntactic movements are motivated by feature checking; that is, that non-tensed Aux *have* has a weak feature to be checked against Infl and that Procrastinate is operative. Non-tensed Aux *have* has to move to Infl but the raising *can* take place in covert syntax because the relevant feature is weak, and Procrastinate specifies that the raising *must* take place in covert syntax. Given all these, the mysterious status of sentences like (69) receives an account.

2.7 Summary of Chapter 2

In this chapter, assuming an LF Copy theory of VP-ellipsis constructions, I argued that the subset copy principle explains the asymmetry in verbal morphology between the antecedent verb and the elliptic verb; that is, the features of the elliptic verb can be a subset of the features of the antecedent verb, but they can never be a proper *superset* of them. The perfective participle appears to be a counterexample to the subset copy analysis of LF construction of verbal morphology in VP-ellipsis, but I argued that there is evidence that the perfective participle is not a real counterexample. Under this conception of verbal morphology in VP-ellipsis, I discussed the nature of verb raising of English Aux *have/be*, concluding that the overt verb raising is a syntactic operation (not an operation in the PF component) which leaves the category feature V in its trace.

The subset copy principle is based on the idea that LF feature decomposition of a syntactic object is possible; an idea which was made explicit first in Chomsky's (1995a) Move F hypothesis. In Chapter 4, the very same idea of the subset copy principle also provides a new theory to account for a range of facts about interpretation of nominal elements in VP-ellipsis constructions.

Notes to Chapter 2

[1] The basic idea of this chapter and Chapter 4 was originally proposed in Oku (to appear a). I am grateful to the audience at the Open Linguistic Forum, University of Ottawa, for useful comments and suggestions.

[2] There are some speakers who find (3)-type ellipses not very bad. See Sag (1976) and Potsdam (1997). However, the contrast between the ING case and the perfective EN case still seems to be substantial. See the discussion below.

[3] As an alternative to the lexicalist hypothesis of participle forms, it may be assumed that ING is a syntactically independent lexical item, and Affix hopping in the PF component gives the correct surface form. The general argument remains the same in either assumption: an ING-form can be the antecedent of the bare form, but not vice versa.

[4] Note that Lasnik (1995a) proposes a PF Deletion analysis of VP-ellipsis, which I will discuss in Section 2.3.

[5] Ausín (1997) points out some problems (both empirical and conceptual) of Lasnik (1995a), and proposes a lexicalist analysis of the morphology of tensed main verbs, which is free from the problems in Chomsky's lexical analysis.

[6] Although Emonds employs the sentences in (11a-c), he did not note nor discuss this surprising morphological fact. Some other researchers have presented this kind of example, but also without noting this special morphological property. For instance, Roberts, using (i), argues that the subjacency effect of VP-fronting is weaker than an "ECP violation," and Pesetsky (1995), using (ii), argues that "Heavy NP Shift" out of the fronted VP is marginally possible.

(i)   ?... and win the race I wonder whether John could have.   (Roberts 1990:388)
(ii)   ... and [give ___ to John]$_i$ he has [$_{VP}$ t$_i$] every item of clothing he bought during his trip to Italy.   (Pesetsky 1995:254)

Neither of them, however, mentions the striking fact that the fronted verb is bare even though the Aux is the perfective *have/has*.

[7] The exact statement of the word formation rule in Urushibara (1997) is the following, where "perf. p." stands for perfective participle and "MS" stands for Morphological Structure in the sense of Halle and Marantz (1993) which is a level of representation:

(i)   perf. p.: Spelled out as *have perf. p.*
                   iff string-adjacent at MS/PF

[8] Note that it is another issue whether movement leaves a full copy of the original (i.e., no deletion applies) in the pure syntax (and therefore at the LF interface). I will discuss the exact process of head movement in pure syntax, and will revise the mechanism of PF/Morphology inflection in Section 2.5, to account for a broader range of ellipsis facts.

[9] See Akmajian and Wasow (1975) for a related discussion of "HAVE-Shift."

[10] See Ochi (1998) for another way to derive this "invisible" effect of adjuncts, based on the multiple spell-out system (Uriagereka 1996, Chomsky 1997).

[11] Although I assumed that the "fronted" VP is base-generated at its surface position, I will keep using the terms "VP-fronting" and "fronted VP" for ease of exposition. A note is in order on the bare/inflected contrast of the perfective participle in VP-fronting. The situation may be slightly more complicated, once we take into consideration the variation of the data/judgments: Oku (1996b) reports that the speakers may prefer the inflected form when the verb in the corresponding VP in the previous sentence is the inflected form as in (ib), and suggests that some condition is at work to the effect that the speaker prefers the same form in the fronted verb as the form of the corresponding verb in the preceding VP.

(i)   a.   They said that John would take first place, and take/??taken first place he had.

        b.   They said that John had taken first place, and ??take/taken first place he has.

(Oku 1996b)

Urushibara (1997) reports that the inflected form becomes better when the corresponding verb in the previous discourse is the inflected form, but still the bare form is preferred as in (iib), and suggests that some factor called "echo effect" is involved.

(ii)   a.   They said John would study linguistics and study/*studied linguistics he has.

       b.   They said John has studied linguistics and study/(?)studied linguistics he has.

(Urushibara 1997)

It may be argued then that since the VP-fronting structure is highly discourse-oriented, the fronted VP may simply be reduplicated from the corresponding VP in the preceding sentence ("VP-reduplication"), and thus the inflected form is provided without appealing to the word formation rule that requires the adjacency condition in the PF/Morphology component. If the speaker prefers VP-reduplication to lexical insertion of a new (bare) verb for the generation of the fronted VP, we obtain the pattern (i). If the speaker prefers lexical insertion of a new (bare) verb to VP-reduplication for the generation of the fronted VP, we obtain the pattern (ii). There is another (small) group of speakers, however, who freely accept both bare and inflected forms, regardless of the existence of the preceding VP. I have no suggestion for the pattern of this third group. The point of the current discussion in the text, however, is that the bare form is fairly acceptable for most cases, which sharply contrasts with the cases in which the progressive Aux *be* and the passive Aux *be* (see the next section, Section 2.3) are involved.

[12] "Descriptively, it is as if stranded *en* is spelled out as zero, much as stranded Infl is spelled out as a form of *do*." "... stranded *ing* lacks the first possibility." (Lasnik 1995a: 272)

[13] Urushibara (1997) reports several cases in which the morphophonological realization of the perfective participle and the morphophonological realizations of the passive participle are different:

(i)   a.   Mother has clothed/*clad the baby in white.

      b.   The girl was clad/(?)clothed in a black mackintosh.

(ii)   a.   John has struck/*stricken everyone as pompous.

       b.   John is stricken/*struck by debts.   (Urushibara 1997: 143)

However, as far as I am aware, the forms that can be used as the perfective participle can also be used as the passive participle:

(iii)   The woman was clothed in silk.

(iv)   They were struck by terror.

The forms that can be used only as the passive participle sound archaic/poetic, and thus I assume that they are stored in the lexicon as they are with the special semantic properties and not derived by the regular affixation process. I will therefore maintain that the morphophonological realizations of the passive EN and the perfective EN are identical.

[14] More recently, Chomsky (1995a) suggests, as one possibility, that inflectional features of verbs which are not inherent to them "are chosen optionally as the item enters the numeration" (p.236).

[15] See Stjepanović (1998a) who shows that difference in agreement feature on verbs can be ignored in VP-ellipsis in Serbo-Croatian.

[16] Some of Warner's (1986) actual examples are given (i).

(i)   a.   ?* John has probably kissed his grandmother good night, but Paul won't [$_{VP}$ e] yet.   ([e] = have kissed his grandmother good night)

       b.   * Have you seen one yet? You should [VP e] by now if they're really there.   ([e] = have seen one)
                                          (Warner 1986: 156)

In the text, I have simplified the examples, keeping the relevant abstract properties constant, for ease of exposition.

[17] Note the intended reading in (35)b. If the phonologically empty VP is understood as [$_{VP}$ *leave*], the sentence is grammatical, which is consistent with our discussion of the perfective participle. *Left* in the first VP of (35)b is actually the bare form *leave* throughout syntax and its copy provides the appropriate form for the contents of the second VP in (35)b.

[18] Note that the primary motivation for Lasnik's (1995a) theory concerns the tense/agreement morphology in English: in [Infl - *not* - *leave*], for instance, *not* blocks the affixation of Infl onto *leave* and hence *John not left* cannot be derived, a desirable conclusion. There is no relevant formal feature on *leave* which induces the raising to Infl; hence, *John left/leave not* cannot be derived, either. The only way to save the otherwise stranded affix Infl is a last resort operation *do*-support, which gives the correct output *John did not leave*. Tensed Aux *have/be*, on the other hand, are introduced with the relevant formal feature to induce raising to Infl, and hence, *John was not here* is correctly derived form *John Infl not was here*.

[19] Howard Lasnik (personal communication) informed me of other examples to show the same point: there is no AP/NP-ellipsis:

(i)   a.   * John finds Susan attractive, and Mary finds Bill [$_{AP}$ e].

                                    ([e] = attractive)

    b.   * Mary considers Susan a good teacher, and John considers Bill [$_{NP}$ e].

                                    ([e] = a good teacher)

[20] Although it is not very explicit in both Roberts (1998) and Potsdam (1997) whether something like (43) is what they actually have in mind, Potsdam's following argument implies that he assumes VP-ellipsis in the sentences in (42). Look at the following pair of sentences which is grammatical in British English:

(i)   Have you a good dentist?   No, but my cousin has.

Potsdam uses (i) to show that VP-ellipsis is possible when the traces of the corresponding X^0 are the same in the antecedent and target clauses. In other words, the structure for (i) must be (ii).

(ii)   Have2 you [t2 [$_{VP2}$ t2 [$_{NP}$ a good dentist]]]?
         No, but my cousin [has3 [$_{VP3}$ t3 [$_{NP}$ a good dentist]]].

Given that what is involved in (ii) is VP-ellipsis, not NP-ellipsis, it is clear that a trace of verb movement (i.e., t2 in VP2) serves as part of VP-ellipsis antecedent. Potsdam's discussion here apparently contradicts his proposal (38). The most reasonable conjecture then is that Potsdam does not really mean (38), but what he actually has in mind is something like (43).

[21] In a set-theoretic notation of phrase structure such as {X {Y, Z}}, Y and Z are syntactic objects to be combined, and X is the label of the complex object that consists of Y and Z.

[22] It is natural to ask whether (50) can be generalized to all categories as in (i).

(i) X^0 movement leaves the category feature X.

I have no empirical evidence at the moment, however, which shows that a head movement of other categories should not leave a full copy.

[23] (61) was brought up by Howard Lasnik in a class seminar (1996, spring, at University of Connecticut), who attributed it to David Pesetsky.

[24] Note incidentally that (64)a provides evidence that non-tensed copula be raises to a functional head. Recall that we have seen that there is no AP-ellipsis like (i).

(i)   * Bill will look very good, and John will look [e], too.

Therefore, it is reasonable to assume that what is elided in (64)a is a VP after *be* has raised out of it.

[25] I thank William Snyder for bringing these data to my attention.

[26] Lasnik (1995a: 264) reports that (i), identical to (69) in the relevant respects, is basically acceptable, giving it one question mark.

(i)   ?John should have left, but Mary shouldn't.

As far as I can see, many speakers find (i) and (69) very bad.

Chapter 3

Rooth/Tomioka Approach to Pronominal Interpretation

In Chapter 2, I claimed that syntactic LF construction of VP-ellipsis is a subset of the antecedent features. I will claim further in Chapter 4 that LF Copy does not introduce new elements that are not in the numeration, such as indices and/or λ-notation which have traditionally been employed to account for restrictions on pronominal interpretation of VP-ellipsis, and that the restrictions on pronominal interpretation are accounted for by a general semantic/pragmatic theory which applies commonly to VP-ellipsis and deaccented structures. In this chapter, as a plausible candidate for such a general theory of pronominal interpretation in VP-ellipsis and deaccented structure, I will review Tomioka's (1997) analysis which is based on Rooth's (1992a, 1992b) *alternative semantics for focus.*[1] The discussion in the next chapter presupposes the Rooth/Tomioka type approach to pronominal interpretation. Note that in the following discussion, new entities like indices and operators are introduced in the semantic/ pragmatic component and are meaningful entities in the semantic theory I am going to review here, not devices for expository convenience. However, they are introduced by "semantics rules" which apply to syntactic representations at the LF interface. The syntactic operations still maintain the inclusiveness condition.

Let us consider the following set of sentences. Having (1) as its discourse antecedent, both (2)a, which contains VP-ellipsis, and (2)b, which contains the

corresponding deaccented phrase, are good continuations (where *small italics* indicate deaccented elements).

(1)   Bill thinks that he is smart, and ...

(2)   a.   John does [$_{VP}$ e], too.

        b.   John *thinks that he is smart*, too.

Recall that restrictions on pronominal interpretation are identical in (2)a and (2)b; that is, when *he* in (1) is intended to be anaphoric to *Bill*, both (2)a and (2)b mean either that John thinks that Bill is smart (a strict identity interpretation) or that John thinks that John is smart (the sloppy identity interpretation). When *he* in (1) is intended to refer to some individual other than Bill, say Tom, (2)a and (2)b mean that John thinks that Tom is smart (anther strict identity interpretation). No other interpretation is possible for (2)a and (2)b in this context. Hence, it is most natural to assume that the semantic representation of (2)a is identical to the LF representation of (2)b, and that the same theory of pronominal interpretation applies to both. Note first that the subject *John* in (2)a and (2)b is focused, which plays a significant role in the semantic interpretation of the de-focused part of the sentence as we will see in this chapter.[2] I also assume that this focus has some phonological/prosodic effect as well. Given that the focus on the subject *John* has some effect both on prosody and on semantics, I assume that the subject *John* in (2)a and (2)b is introduced in the derivation with a feature [Focus]. Therefore, the LF representation of (2)b is (3), in which [F] represents the focus feature. For (2)a, after LF Copy of the antecedent VP provides the contents of the elliptic site, the LF representation of (2)a is (3), identical to the LF representation of (2)b.[3]

(3)   John thinks that he is smart, too.   (LF representation of (2)a and (2)b)
         [F]

The job of syntax is done at this point, and the relevant semantic/pragmatic theory of pronominal interpretation applies to (3) in the semantic/pragmatic component after the LF interface.

3.1 Rooth (1992a, 1992b): Alternative Semantics for Focus

Rooth (1992a, 1992b) claims that sentences with a focused element must be licensed in a special way so that they are used in an appropriate discourse context. Very intuitively, Rooth's idea is the following. A sentence with a focused element implies that there is another corresponding sentence in the discourse context whose denotation corresponding to the non-focused part is "identical" to the denotation of the non-focused part and whose denotation corresponding to the focused part is different from the denotation of the focused element. Therefore, a sentence with a focused element is licensed only if it appears in such an appropriate discourse context. For instance, (3), where the subject *John* is focused, is licensed only if there is another sentence whose denotation corresponding to the non-focused part in (3) is identical to the denotation of the non-focused part in (3) (i.e., [[thinks that he is smart]]) and whose denotation corresponding to the focused part in (3) is different from the denotation of the focused part (i.e., [[John]]). (1) satisfies these two requirements and therefore, (2)a and (2)b are correctly licensed when they have (1) as a discourse antecedent. Having given Rooth's general idea very informally, let us take a look at the exact machinery of his theory.

First, focusing elicits a set of alternatives to the denotation of the focused element. For instance, (4) has a semantic representation in (5) where the subject *John* is focused, which elicits a set of alternative individuals to *John*; at the sentence level, what is elicited is a set of propositions of the form 'x left early' as in (6).

(4)   John *left early*, too

(5)   [John]$_F$ left early (too)

(6)   {p: ∃x (p = λw. left early (x)(w))}

Let us call (6) the focus value of the sentence in (4). Now, Rooth proposes that focusing triggers a two-place operator ~, the arguments of which are the focused phrase (or some phrase containing the focused phrase) and a focus anaphor *p*.

Rooth assumes that ~ is right-adjoined to IP, and hence, if φ is a sentence which contains a focused element, the semantic representation after the introduction of the focus anaphor *p* is (7).

(7)   [$_{IP}$ [$_{IP}$ φ] ~ p]

Applying this notation to (5), we get (8).

(8)   [$_{IP}$ [$_{IP}$ [John]$_F$ left early] ~ p] (too)

Let [α]^0 be the ordinary value of α and [α]^f the focus value of α. First, Rooth proposes that the ordinary value of (7) is the ordinary value of φ, and the focus value of (7) is a set of propositions that is elicited by focusing:

(9)   a.   [φ ~ p]^0 = [φ]^0

        b.   [φ ~ p]^f = {[φ]^0}

Next, Rooth proposes that when the focus anaphor *p* denotes a non-set, the following are the presuppositions:[4]

(10)   a.   [p]^0 ∈ [φ]^f

        b.   [p]^0 ≠ [φ]^0

That is to say, the ordinary value of the focus anaphor *p* is (i) a member of the focus value of φ, the sentence in question, and (ii) not identical to the ordinary value of φ, the sentence in question. Applying this to (8), we get (11).

(11)   a.   [p]^0 ∈ {p: ∃x (p = λw. left early (x)(w))}

        b.   [p]^0 ≠ [| John left early |]

Now, the focus anaphor *p* must be linked by means of indexation with an appropriate antecedent which matches the properties of *p* represented in (11). A sentence like (12) is an appropriate antecedent of *p*, because the denotation of (12) is (i) a member of a set of proposition {p: ∃x (p = λw. left early (x)(w))} and (ii) not identical to the denotation of *John left early*.

(12)   Bill left early.

The semantic representation is something like (13), where the index 3 indicates that the first sentence is an antecedent of the focus anaphor p in the second sentence.

(13)   [Bill left early]3. [$_{IP}$ [$_{IP}$ [John]$_F$ left early] ~ p3] (too)

Therefore, sentence (4) is properly uttered when it has a sentence like (12) as its discourse antecedent. Exactly the same argument holds for the VP-ellipsis sentence in (14), because the relevant semantic representation of (14) is identical to (8), the semantic representation of (4), in the relevant respects.

(14)   John did [$_{VP}$ leave early], too.

Note that it seems that the way of licensing VP-ellipsis in this theory is satisfied trivially under the main claim in this thesis that the elliptic site is constructed by LF Copy of the antecedent VP. However, this licensing mechanism is still necessary to account for the restrictions on pronominal interpretation of VP-ellipsis (as well as deaccented structures). This is the topic of the next section.

3.2   Pronominal Interpretation under Alternative Semantics for Focus

Let us examine now how Rooth's mechanism can properly constrain pronominal interpretation in VP-ellipsis and deaccented structures. Consider (15) and (16), the latter involving VP-ellipsis and the former being its antecedent.

(15)   Bill thinks that he is smart, and

(16)   John does [$_{VP}$ e], too.

Since the subject John is focused in (16), and focusing triggers the introduction of the focus operator and the focus anaphor p, the relevant semantic representation is (17).

(17)   [$_{IP}$ [$_{IP}$ [John]$_F$ thinks that he is smart] ~ p]

Suppose that he in (17) is intended to refer to Bill. The focus value of (17) is a set of propositions in the form of 'x thinks that Bill is smart':

(18)   {p: ∃x (p = λw. thinks that Bill is smart (x)(w))}

Following the presuppositions in (10), the ordinary value of the focus anaphor p in (17) must be a member of (18) and cannot be identical to the denotation [[John thinks that Bill is smart]]:

(19)   a.   [p]^0 ∈ {p: ∃x (p = λw. thinks that Bill is smart (x)(w))}

        b.   [p]^0 ≠ [[John thinks that Bill is smart]]

When the pronoun he is intended to refer to Bill in (15), the denotation of (15) is [[Bill thinks that Bill is smart]], and it is (i) a member of a set of proposition in (18) and (ii) not identical to the denotation [[John thinks that Bill is smart]]. Hence, (15) can be the antecedent of the focus anaphor p in (17). Thus, sentence (16) is properly licensed

when (15) is its discourse antecedent and the intended interpretation is (20); this is the strict identity interpretation.

(20)   Bill thinks that Bill is smart, and John thinks that Bill is smart, too.

Likewise, if (16) is intended to mean that John thinks that Tom is smart, it is licensed only when *he* in (15), the discourse antecedent to (16), also refers to Tom; again, this is the strict identity interpretation. The focus value of (16) this time is {p: ∃x (p = λw. thinks that Tom is smart (x)(w))}, and if *he* in (15) refers to someone other than Tom, the denotation of (15) cannot be a member of {p: ∃x (p = λw. thinks that Tom is smart (x)(w))}, and hence (16) cannot be properly licensed. Therefore, the reference of *he* must be the same in (15) and (16) when *he* in (15) refers to someone other than Bill.

Next, when (16) is intended to mean that John thinks that John himself is smart, the focus value of the sentence is (21) where *he* is interpreted as a variable bound by the subject.

(21)   {p: ∃x [p= λy. λw. thinks that y is smart (y)(w)](x)}

By λ-conversion by which all occurrences of *y* are replaced by *x*, we get (22).

(22)   {p: ∃x [p= λw. thinks that x is smart (x)(w)]}

Now, following the presuppositions in (10), the ordinary value of the focus anaphor *p* in (17) is (i) a member of a set of propositions in (22) and (ii) not identical to the denotation of John thinks that John is smart:

(23)   a. $[p]^0 \in$ {p: ∃x (p = λw. thinks that x is smart (x)(w))}

        b. $[p]^0 \neq$ [[John thinks that John is smart]]

When (15) is the discourse antecedent of sentence (16), and the intended interpretation of (15) is that Bill thinks that Bill is smart, (15) can be a plausible antecedent of the focus anaphor *p* in (17) in the intended interpretation of *he* in (16)/(17). That is, the denotation of (15) in the intended interpretation is (24), which is (i) a member of the set of proposition in (22) and (ii) not identical to the denotation of John thinks that John is smart.

(24)   λw. thinks that Bill is smart (Bill)(w)

Therefore, (16) can mean that John thinks that John himself is smart only when (15) means that Bill thinks that Bill himself is smart; that is, the sloppy identity interpretation.

It is clearly predicted in this theory that no other interpretations of the pronouns are possible. For instance, if the intended interpretation of (16) is that John thinks that John himself is smart, (25) cannot be the antecedent of the focus anaphor *p* in (17) because it is clearly not a member of the set of propositions in (22).

(25)   λw. thinks that Tom is smart (Bill)(w)

Hence, the continuation of (15) and (16) cannot mean that Bill thinks that Tom is smart and John thinks that John himself is smart.

The theory explicitly accounts for the facts of pronominal interpretation in (26) and (27) which I stated at the onset of this chapter.

(26)   Bill thinks that he is smart, and ...

(27)   a.   John does [$_{VP}$ e], too.

        b.   John *thinks that he is smart*, too.

When *he* in (26) is intended to be anaphoric to *Bill*, both (27)a and (27)b mean either that John thinks that Bill is smart (the strict identity interpretation) or that John thinks that John is smart (the sloppy identity interpretation). When *he* in (26) is intended to refer to some individual other than Bill, say Tom, both (27)a and (27)b mean that John thinks that Tom is smart. No other interpretation is possible for (27)a and (27)b in this context.

Finally, the restriction on pronominal interpretation based on Rooth's *alternative semantics of focus* must be supplemented by pragmatics. To illustrate this point, let us consider (28), where *small italics* indicate deaccenting.

(28)   a.   Mary thinks that people call her a Republican, and Sally *thinks that she has been insulted*, too.

        b.   Mary thinks that people call her a Republican, and Sally *thinks that people call her a Republican*, too.

In (28)a, interpretation of *she* in the second clause is constrained in the same way as interpretation of *her* in the second clause in (28)b. That is, if the first *her* is anaphoric to

Mary, both *she* in the second clause of (28)a and *her* in the second clause of (28)b refer to either Mary or Sally; if the first *her* refers to some third party, say Sue, both *she* in (28)a and the second *her* in (28)b must refer to Sue. No other interpretation is possible. The fact in (28)b is straightforwardly accounted for by the Rooth/Tomioka theory as we have just reviewed, but it is not clear why the same restriction applies in (28)a as well. Suppose that *she* refers to Sue. The relevant semantic representation of the second clause in (28)a is (29).

(29)   [$_{IP}$ [$_{IP}$ [Sally]$_F$ thinks that Sue has been insulted] ~ p4]

Now, the focus anaphor *p4* induces a set of propositions in the form of (30) and it must be licensed by having an antecedent sentence which is (i) a member of (30) and (ii) not identical to [[Sally thinks that Sue has been insulted]].

(30)   {p: ∃x (p = λw. thinks that Sue has been insulted (x)(w))}

It is obvious, however, that the first sentence in (28)a is not a member of the set in (30), and hence, it is incorrectly predicted that the first clause in (28)a is not a possible antecedent of the focus anaphor *p4*, and that the deaccenting is not possible in (28)a. For this problem, Rooth (1992b) argues that a semantic representation like (31) is deduced from the first clause in (28)a (Rooth calls this "implicational bridging").

(31)   Mary thinks that she has been insulted.

Now, when *she* refers to Sue, (31) is (i) a member of the set in (30) and (ii) not identical to [[Sally thinks that Sue has been insulted]]; the focus anaphor *p4* in (29) is properly

licensed with an appropriate antecedent. Hence, the restriction of the pronominal interpretation is accounted for in the usual way as we have reviewed above. It is clear that this implicational bridging is partly based on pragmatic knowledge; for instance, this particular deduction we have just seen is not possible in a world in which the word *Republican* carries no bad connotation. This is the reason why I have called the relevant theory "semantic/ pragmatic," which constrains possible pronominal interpretations in phonologically reduced structures (e.g., VP-ellipsis and deaccented structures).

Notes to Chapter 3

[1] Rooth (1992a, 1992b) is one of the semantic theories that Tomioka reviewed and applied to account for restrictions on pronominal interpretation in VP-ellipsis and deaccented structures. Further, although Tomioka (1997) argues, with Tancredi (1992), that ellipsis and the corresponding deaccented structure follow the same restriction on pronominal interpretation, Rooth (1992b) himself argues that there are cases in which pronominal interpretation is different between VP-ellipsis and the corresponding deaccented structure. I will not go into Rooth's discussion here.

[2] Note that Aux *does* in (2)a is a remnant, but it is not focused here. I will also put aside the function of *too* in this discussion, for simplicity of exposition.

[3] I will not discuss what this focus feature does in syntax *per se*. One may argue that this feature induces syntactic movement (overt or covert), but for our purposes here, it suffices that only the subject *John* is marked as focused at the syntactic LF representation, to distinguish it from other LF representations which have identical lexical items and structure, but a different focus assignment.

[4] Rooth classifies the focus anaphor into two types; one denotes a set and the other denotes a non-set. Since only the non-set focus anaphor is relevant in the present discussion, I will not discuss cases in which the focus anaphor denotes a set.

Chapter 4

LF Construction of Ellipsis and the Subset Copy Principle:

Identity and Nominal Interpretation

4.1 Introduction

The primary concern of most studies of VP-ellipsis is the interpretation of pronominal and/or bound elements which are understood in the elliptic VP. The classic example is the Sag/Williams-type approach based on λ-abstraction of the predicate (Sag 1976 and Williams 1977). More recently, Kitagawa (1991) and Fiengo and May (1994) propose an analysis in which no λ-notation is employed. Kitagawa (1991) tries to account for the possible interpretation of the elliptic VP, appealing to indexing and Binding Theory of Chomsky (1981, 1986a). Fiengo and May (1994) propose a complex index system to account for a wide range of the interpretative facts about the referential and pronominal/anaphoric elements understood in the elliptic VP. In this chapter, I will explore a "minimalist" analysis of the LF construction of the phonologically missing VP. Two characteristics of the proposed analysis are (i) that no extra elements such as indices and λ-notation are introduced at the syntactic LF representation of the elliptic VP, and (ii) that the subset copy principle plays a role in constructing the LF representation of the elliptic VP when a full copy of the antecedent will not provide an appropriate LF representation. Let us first review a basic fact about

the interpretation of pronominal elements in VP-ellipsis. Consider possible interpretations of (1) where the second clause involves VP-ellipsis.

(1)   a.   Bill will wash his car, and

        b.   John will $[_{VP}$ e], too.

Suppose first that *his* in (1)a is coreferential with the subject *Bill*. There are two possible interpretations for (1)b: John will wash Bill's car (a strict identity interpretation) or John will wash John's car (the sloppy identity interpretation). No other interpretation of (1)b is possible, once *Bill* and *his* in (1)a are understood to be coreferential. Suppose next that *his* in (1)a refers to some third party, say Tom, who is salient in the discourse. This time, (1)b allows only one interpretation; that is, John will wash Tom's car (another strict identity interpretation). Suppose that the LF representation of (1)b is (2), where the phonologically missing VP is a full copy of the antecedent VP. Here and throughout this chapter, the VP which is phonologically empty and is constructed by LF Copy is represented in **boldface**, for ease of exposition.

(2)   John will $[_{VP}$ **wash his car**]

The possible interpretation of *his* in the elliptic VP, then, is restricted, as summarized in (3).

(3) a. *his* in (1)a = Bill

     (i) *his* in (2) = Bill (a strict identity interpretation)

     or

     (ii) *his* in (2) = John (the sloppy identity interpretation)

  b. *his* in (1)a = Tom

     (iii) *his* in (2) = Tom (a strict identity interpretation)

It has been generally assumed since the early stages of VP-ellipsis studies (e.g., Sag 1976 and Williams 1977) that this restriction on the possible interpretation of pronominal elements is a unique property of ellipsis structures, and one of the primary concerns of research has been how to characterize this restriction.

However, Tancredi (1992) and Tomioka (1997), among others, challenge this general assumption and argue that the restriction is not unique to ellipsis but is also common in non-ellipsis structures when the relevant portion of the structure is "deaccented." Consider possible interpretations of *his* in (4)b, in which no ellipsis is involved.

(4) a. Bill will wash his car, and

  b. John will wash his car, too.

Notice that when the VP in (4)b is deaccented and receives no special stress/focus, the possible interpretation of (4)b is identical to that in the corresponding VP-ellipsis case in (1).[1] I will use the term "phonologically reduced structures" as a cover term for ellipsis and deaccented structures. Given this observation, Tomioka (1997), for instance, proposes a semantic/pragmatic theory of pronominal interpretation in phonologically reduced structures. If there is a theory which accounts for the restriction on the

interpretation of *his* in (4)b (when the VP is deaccented), no special theory is necessary to account for the restriction on the interpretation of *his* in the elliptic VP in (2). What we need for the appropriate interpretation of VP-ellipsis is a mechanism which gives an LF representation like (2), which is interpreted identically to that of the corresponding sentence with no VP-ellipsis. Assuming that the Tancredi/Tomioka-type approach is correct, I propose that the necessary mechanism to provide the appropriate LF representation of VP-ellipsis is a syntactic LF Copy operation which copies the antecedent VP and constructs the contents of the phonologically missing VP. In many cases, a full copy of the antecedent gives the proper LF representation (without appealing to indices and λ-notations). There are some cases in which a full copy of the antecedent cannot provide the appropriate LF representation of the elliptic VP. These cases have been the primary motivation for proposing complex theories of VP-ellipsis reconstruction making extensive use of indices and/or λ-notations. After reviewing some aspects of previous analyses, I discuss the cases they were designated to address, and I develop a theory in which copying of a subset of the features of the antecedent provides the appropriate LF representation of the elliptic VP when the full copy cannot. The present study is "minimalist" in the sense that it tries to conform to the "inclusiveness" condition of syntax (i.e., syntactic operations do not introduce any extra elements such as indices and λ-notation which are not in the numeration). Recall that the definition of inclusiveness has been slightly weakened in this study so that making a copy of elements that already exist in the phrase structure is possible (see the discussion in Section 1.2 of Chapter 1). The present study also makes use of one insight of the minimalist approach which has not been employed before in a way I am using it, as far as I am aware. Chomsky's (1995a) Move F(eature) hypothesis makes it explicit that "LF feature decomposition" of syntactic objects is possible. Extending the insight of this hypothesis, I claim that LF Copy can copy part of the features of a lexical item

and/or a syntactic object to construct phonologically missing elements, another instance of LF feature decomposition. We have already seen instances of the LF subset copy in Chapter 2. We will see more instances of the LF subset copy throughout this chapter.

Following this introduction, Sections 4.2, 4.3, and 4.4 review previous analyses and discuss some problems with them. Section 4.5, the main part of this chapter, explores a minimalist theory of LF Copy. Section 4.6 is the summary of this chapter.

4.2 The Predicate Abstraction Approach: Sag (1976) and Williams (1977)

Sag (1976) argues that the relevant recoverability/identity condition on VP-ellipsis must be stated in "Logical Form" in terms of alphabetic variance of λ-expression between the antecedent VP and the elliptic VP (pp. 104-106):[2]

(5) VP-deletion is possible when the logical form of the target sentence is an alphabetic variant of the logical form of the antecedent sentence

(6) *Alphabetic Variance* (Sag 1976: 104)

  a.   For two λ-expressions, $\lambda x(A)$ and $\lambda y(B)$ to be alphabetic variants, every occurrence of x in A must have a corresponding instance of y in B, and vice versa.

  b. · If there are any variables in A that are bound by some quantifier outside of $\lambda x(A)$, then the corresponding variable in $\lambda y(B)$ must be bound by the same operator in order for alphabetic variance to obtain.

For example, when (7) means that Bill will wash Bill's car, it may have a logical form as in (8).[3]

(7)   *Bill* will wash *his* car.

(8)   Bill will, λx (x wash x's car)

When (9) means that John will wash John's car, it may have a logical form as in (10).

(9)   *John* will wash *his* car.

(10)   John will, λy (y wash y's car)

Given that the identity condition on VP-ellipsis is stated in terms of alphabetic variance defined in (6), logical forms (8) and (10) are alphabetic variants, because every occurrence of x in the domain of the λ-operator (x wash x' car) in (8) has a corresponding instance of y in the domain of the λ-operator (y wash y's car) in (10), and vice versa. Hence, VP-ellipsis is possible when (7) is the antecedent sentence and (9) is the target sentence; (11) can mean that Bill will wash Bill's car and John will wash John's car (the sloppy identity interpretation).

(11)   Bill will wash his car, and John will, too.

As for the strict identity interpretation, the other available reading for (11), there is another logical form representation as in (12), where the indices are intended to show that *his* refers to Bill in both clauses.

(12)   a.   Bill2 will, λx (x wash his2 car)

          b.   John3 will, λy (y wash his2 car)

(12)a and (12)b are again alphabetic variants; hence, VP-ellipsis is possible. Therefore, (11) may also mean that Bill will wash Bill's car and John will wash Bill's car (the strict identity interpretation). This is the essence of Sag's theory of the identity condition on VP-ellipsis based on abstracted predicates and their alphabetic variance.

One of the common arguments for the predicate abstraction approach to VP-ellipsis is the "missing ambiguity argument." Consider (13), whose first conjunct may have two possible interpretations in terms of the relative scope of the universal quantifier and the existential quantifier. (14)a represents the interpretation in which the existential quantifier takes wide scope over the universal quantifier, and (14)b represents the interpretation in which the relative scope has been inverse (Sag 1976: pp. 107-108).

(13)   Someone hit everyone, and (then) Bill did [$_{VP}$ e].

(14)   a. $(\exists x)[x, \lambda y ((\forall z) [y \text{ hit } z])]$

          b. $(\forall z)(\exists x) [x, \lambda v (v \text{ hit } z)]$

The second conjunct in (13) before deletion, on the other hand, has only one logical form (15).

(15)   Bill, $\lambda w ((\forall u) [w \text{ hit } u])$

Now, the abstracted predicate in (14)a is an alphabetic variant of the abstracted predicate in (15) because after the λ-operator, the variables y and z in (14)a correspond to the variables w and u in (15), respectively. The abstracted predicate in (14)b, on the other

hand, is not an alphabetic variant of the abstracted predicate in (15) because there is no one-to-one variable correspondence between them. Therefore, VP-ellipsis is possible only when the first conjunct of (13) is interpreted as (14)a, the narrow scope interpretation of the universal quantifier. Sag then claims that the "pure syntactic theory" (i.e., a theory which does not employ logical form identity in terms of λ-expressions) "says nothing about what readings can be assigned to the left conjunct [in (13)], for on either reading, there exists the appropriate syntactic identity for deletion to take place (p. 107)". Hence, Sag (1976) implies that the scope fact observed in (13) is a fact of VP-ellipsis.

However, more recently, Fox (1995) proposes an economy-based account of the same scope fact. Although Fox's (1995) specific statement concerns ellipsis, he notes that "almost of the points about ellipsis ... could be carried over to constructions involving phonological deaccenting." Actually, as Tomioka (1997) points out, the undeleted version corresponding to (13) is also scopally unambiguous:

(16)   a.   Someone hit everyone, and (then)

          b.   Bill hit everyone.

In (16), the first conjunct can be only interpreted as the existential quantifier taking wide scope, although in isolation, it is scopally ambiguous, allowing the wide scope reading of the universal quantifier as well. Therefore, the missing ambiguity is not a unique property of VP-ellipsis. What is happening here is something more general in parallel structures. Lasnik (1972), for instance, proposes the Parallel Principle stating that co-ordinated structures receive parallel interpretation.[4] Let us consider how Fox (1995) would account for the fact in (16). Fox's (1995) economy-based approach goes as

follows. (16)a may potentially have two LF representations, hence the potential scope ambiguity:

(17) a.   [everyone]₁ [someone hit t₁]

      b.   [someone [ᵥₚ [everyone]₁ [ᵥₚ hit t₁]]]

QR of *everyone* to the front of the sentence (17)a gives the wide scope interpretation of *every*, while QR of *everyone* adjoining to VP (17)b gives the narrow scope interpretation of *every*. The LF representation of (16)b also may potentially have two LF representations as in (18).

(18) a.   [everyone]₁ [Bill [ᵥₚ hit t₁]]

      b.   [Bill [ᵥₚ [everyone]₁ [ᵥₚ hit t₁]]]

Here, "long" QR (18)a has no semantic effect which makes the interpretation different from the one given by "short" QR (18)b. Due to economy of derivation, (18)b is only an admissible LF representation for (16)b. Due to a parallelism requirement, when (16)b allows only (18)b as its LF representation, (16)a also allows only (17)b as its LF representation which is structurally parallel to (18)b. Hence, (16)a is scopally unambiguous when it is conjoined with (16)b.

If the missing ambiguity is a general property of parallel structures, the missing ambiguity argument does not exclude a theory of VP-ellipsis which does not appeal to λ-expressions and their alphabetic variance. Specifically, as far as there is a theory which accounts for the parallelism requirement in (16), it is sufficient for the theory of VP-ellipsis if the theory provides an LF representation of (13) which is identical to the representation in (16). The LF Copy analysis of VP-ellipsis we are exploring claims

that what is constructed for (13) in the LF component is (16) (putting aside the position of supportive *did*, which is presumably irrelevant to LF interpretation); λ-expressions need not be introduced to ensure the missing ambiguity property of VP-ellipsis. How to characterize the general parallelism requirement which is at work for both (13) and (16) is another (non-trivial) issue. As a representative of such a theory, I have summarized the relevant portion of Tomioka (1997) in Chapter 3 (which is based on Rooth (1992a, 1992b)), to which I will refer the reader.

Very interestingly, the same parallelism requirement seems to be at work when an overt movement alters possible interpretation. Yatsushiro (1996) observes that with Japanese unergative verbs, when both the subject and the locative phrase are quantificational, the subject-locative word order gives the rigid (unambiguous) scope interpretation, the subject taking wide scope, while the locative-subject word order derived by Scrambling makes the sentence scopally ambiguous (I have slightly modified Yatsushiro's original example. cf. Yatsushiro 1996: 319):

(19) a.   Dono gakusei-mo   dokoka-ni   suwatta
            every student   somewhere-Loc   sat
            'Every student sat somewhere'
            (every > some; *some > every)

      b.   Dokoka-ni   dono gakusei-mo   suwatta
            somewhere-Loc   every student   sat
            'Lit. Somewhere, every student sat'
            (every > some; some > every)

(19)b is scopally ambiguous in principle, while (19)a is not. In other words, the locative phrase in (19)b may be interpreted either at its original position or at its surface

position with respect to the quantifier scope, assuming that the scope interaction is determined by the structural configuration of the two quantifiers in question. However, if (19)b is followed by another sentence with the same verb phrase in which the corresponding quantificational locative phrase is scopally unambiguous, one of the two scope interpretations in (19)b is no longer available. Note that the verb phrase in (20)b [$_{VP}$ *dokoka-ni suwatta*] 'somewhere sat' is phonologically reduced.[5]

(20) a Dokoka-ni   dono gakusei-mo   suwatta   node ...

           somewhere   every student   sat   because ...

    b.   Yamada sensei-mo   dokoka-ni   suwatta

           teacher-also   somewhere   sat

'Lit. Because somewhere every student sat, Mr. Yamada also sat somewhere'

Conjoined with (20)b, (20)a is interpreted only as the subject taking wide scope, even though the locative phrase in (20)a has been scrambled to sentence initial position. It seems to me that the same kind parallelism requirement we have seen in (13) and (16) is at work here, too. The locative phrase in (20)b may QR either to the sentence-initial position or to a VP-adjoined position. Since the subject of (20)b is not a quantificational element, two types of QR of the locative phrase has no different semantic effect. Due to economy of derivation, only the short QR is the possible LF representation for (20)b. Due to the parallelism requirement, the locative phrase in (20)a is also interpreted in the VP-adjoined position, not in its surface position, and therefore it cannot take wide scope over the subject. Importantly, the phonological reduction is deeply related to the parallel interpretation. For instance, if the verb *suwatta* 'sat' in (20)b is changed to *itta* 'went,' the sentence in (20)a becomes ambiguous. The verbs contrast and are focused, and hence, the phonological reduction is not possible. The verb phrases are no longer

parallel and hence, the scope interpretation in the one sentence no longer affects the scope interpretation of the other.

Let us now review Williams' (1977) analysis, another representative theory of VP-ellipsis based on λ-abstraction of the predicate. Although Sag (1976) proposes a deletion analysis of VP-ellipsis (conditioned by identity requirement at Logical Forms), Williams proposes an LF Copy analysis of VP-ellipsis. Williams' analysis of (21), for instance, goes as follows.

(21)   Bill will wash his car, and John will, too.

The underlying structure of (21) is just as it is, except that there is an empty VP after the modal *will* in the second conjunct.[6] Predicate abstraction (Williams' Derived VP Rule) applies, giving (22)a. Then, the optional Pronoun Rule may apply, making *his* into a variable bound by the λ-operator as in (22)b. An LF Copy rule (Williams' VP Rule) applies and copies the first VP to construct the contents of the second VP, giving (22)c, which is an appropriate LF representation of the sloppy identity interpretation.

(22)   a.   *Derived VP Rule*

    Bill will [$_{VP1}$ λx [x wash his car]], and John will [$_{VP2}$ e], too

    b.   *Pronoun Rule*

    Bill will [$_{VP1}$ λx [x wash x's car]], and John will [$_{VP2}$ e], too

    c.   *VP Rule (LF Copy of VP1 to construct VP2)*

    Bill will [$_{VP1}$ λx [x wash x's car]], and John will [$_{VP2}$ λx [x wash x's car]], too

If the optional Pronoun Rule does not apply, on the other hand, *his* in the first conjunct stays as it is (not turning to a variable bound by the λ-operator), and VP Rule gives the LF representation in (23).

(23)   Bill will [$_{VP1}$ λx [x wash his car]], and John will [$_{VP2}$ λx [x wash his car]], too

Williams claims that (23) is the LF representation for the strict identity interpretation, in which *his* refers to the same individual Bill in both VP's. Williams notes that when *his* in the first conjunct in (21) refers to a third party, say Tom, *his* in the second clause also must refer to the same individual (another instance of strict identity interpretation, which I noted at the onset of this chapter). Williams suggests, noting this as a potential problem for his analysis, that when *his* in (21) is assigned an index, the same index is preserved under LF Copy to construct the contents of the elliptic VP, ensuring that *his* refers to the same person in both VP's. Recall again, however, that this restriction on pronominal interpretation is observed in the corresponding non-deleted sentence as well. A more general theory of phonologically reduced structures (such as Tancredi 1992 and Tomioka 1997) will account for the relevant restriction on pronominal interpretation in VP-ellipsis as well as other non-deletion structures, and therefore a special mechanism such as copying of indices under LF construction of the elliptic VP is redundant (if not inconsistent with the fact). I claim therefore that what the LF Copy operation has to do is just construct an LF representation of (21) which is identical to the LF representation of sentence (24).

(24)   Bill will wash his car, and John will wash his car, too.

One of the well-cited arguments for λ-expression analysis of VP-ellipsis is the locality effect on the sloppy identity interpretation. Take a representative example (25) from Sag (1976), where it is supposed that *him* is anaphoric to *John*.

(25)   a.   *John* said Mary hit *him*, and Bill did, too.

        b.   *John* said Mary hit *him*, and Bill said she did, too.

While the second conjunct in (25)a easily allows the sloppy identity interpretation (i.e., Bill said Mary hit Bill, too) as well as the strict identity interpretation, Sag (1976) claims, and Williams (1977) predicts, that the second conjunct in (25)b does not allow the sloppy identity interpretation. For the sake of illustration, let us look at how Williams' theory works here.[7] For (25)a, Derived VP Rule and Pronoun Rule apply, giving (26)a. Then, the LF Copy of VP1 to construct the contents of VP3 provides the LF representation in (26)b, which gives the relevant sloppy identity interpretation.

(26)   a.   John [$_{VP1}$ λx [x said Mary [$_{VP2}$ λy [y hit x]]]], and Bill did [$_{VP3}$ e], too.

        b.   John [$_{VP1}$ λx [x said Mary [$_{VP2}$ λy [y hit x]]]], and
              Bill did [$_{VP3}$ λx [x say Mary [$_{VP4}$ λy [y hit x]]]], too.

The LF derivation for (25)b, on the other hand, goes as follows. Derived VP Rule and Pronoun Rule give (27)a, where it is crucially assumed that each application of Derived VP Rule introduces a new variable bound by the λ-operator. Next, the LF Copy of VP2 to construct the contents of VP4 gives the LF representation in (27)b.

(27) a.   John $[_{VP1}$ λx [x said Mary $[_{VP2}$ λy [y hit x]]]], and

    b.   Bill $[_{VP3}$ λz [z said she did $[_{VP4}$ e]]], too.

    b.   John $[_{VP1}$ λx [x said Mary $[_{VP2}$ λy [y hit x]]]], and

    Bill $[_{VP3}$ λz [z said she $[_{VP4}$ λy [y hit x]]]], too.

Now, the variable x in VP4 is left unbound, and hence (27)b is not a legitimate LF representation. Therefore, the sloppy identity interpretation is not available in (25)b.

However, many researchers have cast doubt on the locality effect of the sloppy identity interpretation in VP-ellipsis, providing many examples which abstractly have the same LF representation as in (27)b but nonetheless are fairly good on the relevant sloppy identity interpretation (Kitagawa 1991, Hardt 1993, and Fiengo and May 1994, for instance). The most convincing example can be found in Hardt (1993). In (28)b with (28)a as its discourse antecedent, the only possible interpretation is the sloppy identity interpretation, which is surely available here.

(28) a.   Did *anyone* admit that Mary had bribed *him*?

    b.   John admitted that she had.   (Hardt 1993: 12)

Let us consider what Williams' analysis predicts about (28)b. Derived VP Rule and Pronoun Rule give (29).

(29) a.   Did anyone $[_{VP1}$ λx [x admit that Mary had $[_{VP2}$ λy [y bribed x]]]]

    b.   John $[_{VP3}$ λz [z admitted that she had $[_{VP4}$ e]]]

The LF Copy of VP2 to construct the contents of VP4 gives the LF representation in (30).

(30) a.   Did anyone $[_{VP1}$ λx [x admit that Mary had $[_{VP2}$ λy [y bribed x]]]]

    b.   John $[_{VP3}$ λz [z admitted that she had $[_{VP4}$ λy [y **bribed** x]]]]

The variable x in (30)b is unbound in the same way as in (27)b, and hence, the theory incorrectly predicts that the sloppy identity interpretation of sentence (28)b should be as bad as in (25)b. This shows that the theory of VP-ellipsis based on λ-expression is too strong, since it incorrectly excludes some possible interpretation. Note, however, that it is another non-trivial issue why the locality effect is found for most speakers in some examples as in (25)b which are identical to (28) in the relevant respect of LF representation. I will not pursue this issue here. See Fiengo and Mary (1994: footnote 11, pp.106-107) for some discussion.[8]

We have seen that a theory of VP-ellipsis based on λ-abstraction of the predicate as in Sag (1976) and Williams (1977) is not desirable in two respects. First, although it correctly accounts for some restrictions on pronominal interpretation and on scope interpretation in elliptic VP, such restrictions are actually not unique to VP-ellipsis but rather are general restrictions which apply to phonologically reduced structures (i.e., ellipsis and deaccented structures). Given a general theory of the restriction on the pronominal and scope interpretation of phonologically reduced structures (such as those of Tancredi 1992 and Tomioka 1997), the Sag/Williams-type approach redundantly specifies the restriction. Second, we have seen that the Sag/Williams-type theory is too strong as a theory of the locality effect of the sloppy identity interpretation. I will discuss one case in Section 4.5.4 which Hoji (1998) brings up and for which no one seems to cast any doubt on the locality effect of the sloppy identity interpretation.

4.3 The Predicate Abstraction Analysis vs. Kitagawa's (1991) Analysis

4.3.1 A Contrast between Reflexive Pronouns and Pronouns

It has been noted (Williams 1977, Kitagawa 1991, Fiengo and May 1994, etc.) that in a sentence like (31)b with (31)a as its discourse antecedent, the strict identity interpretation (i.e., that John will admire Bill, too) is hard to get (and impossible for some speakers; Williams 1977).

(31) a. Bill will admire himself, and

b. John will $[_{VP}$ e], too.

This sharply contrasts with (1) and (25)a, for instance, repeated here as (32) and (33), respectively, in which the strict identity interpretation is easily available for all speakers (as well as the sloppy identity interpretation).

(32) *Bill* will wash *his* car, and John will $[_{VP}$ e], too.

(33) *John* said Mary hit *him*, and Bill did $[_{VP}$ e], too.

The second clause in (32) can easily mean that John will wash Bill's car, and the second clause in (33) can easily mean that Bill said Mary hit John. Recognizing this contrast, Williams (1977) proposes the following theory. Recall first that he claims that Pronoun Rule is optional: *his* in (32) and *him* in (33) may or may not change to a variable bound by the λ-operator. If the rule applies to (32), for instance, LF representation (34)c is derived, which gives the sloppy identity interpretation.

(34) a. *Derived VP Rule*

Bill will $[_{VP} \lambda x$ [x wash his car], and John will $[_{VP}$ e], too

b. *Pronoun Rule*

Bill will $[_{VP} \lambda x$ [x wash x's car], and John will $[_{VP}$ e], too

c. *VP Rule*

Bill will $[_{VP} \lambda x$ [x wash x's car]], and John will $[_{VP} \lambda x$ [x wash x's car]], too

On the other hand, if Pronoun Rule does not apply to (32), LF representation (35)b is derived which, Williams (1977) claims, gives the strict identity interpretation (see the discussion in Section 4.2 above).

(35) a. *Derived VP Rule*

Bill will $[_{VP} \lambda x$ [x wash his car], and John will $[_{VP}$ e], too

b. *VP Rule (LF Copy)*

Bill will $[_{VP} \lambda x$ [x wash his car]], and John will $[_{VP} \lambda x$ [x wash his car]], too

For (31), Williams claims that Reflexivization is obligatory which changes a reflexive pronoun into a variable bound by the λ-operator. The derivation is illustrated in (36), and (36)c is an LF representation for the sloppy identity interpretation.

(36) a. *Derived VP Rule*

Bill will $[_{VP} \lambda x$[x admire himself]] and John will $[_{VP}$ e], too.

b. *Reflexivization*

Bill will $[_{VP} \lambda x$[x admire x]] and John will $[_{VP}$ e], too.

c. *VP Rule (LF Copy)*

Bill will [$_{VP}$ λx[x admire x]] and John will [$_{VP}$ λx[x admire x]], too.

In other words, Williams claims that sentences like (32) and (33) are ambiguous between the sloppy and the strict identity interpretations because Pronoun Rule is optional, while a sentence like (31) allows only the sloppy identity interpretation because Reflexivization is obligatory.[9] As Kitagawa (1991) points out, however, Williams' assumption is a sheer stipulation; there seems to be no principled basis for the assumption that Pronoun Rule is optional and Reflexivization is obligatory. Kitagawa (1991) proposes an alternative analysis to the predicate abstraction analysis of VP-ellipsis. One of his claims is that we can get rid of the stipulation Williams has to make to account for the contrast, once we assume, under the LF Copy analysis of VP-ellipsis, that Chomsky's (1981, 1986a) Binding Theory and indexation apply in the LF component. Let us review this aspect of Kitagawa's theory.

Suppose first that for (32), after LF Copy to construct the contents of the elliptic VP, indices as in (37) are assigned. Since *his* is pronominal, both (37)a and (37)b satisfy Condition B of Binding Theory under the definition of the relevant local domain proposed in Chomsky (1986a).

(37) a.   Bill$_1$ will wash his$_1$ car, and John$_2$ will [$_{VP}$ wash his$_2$ car]

    b.   Bill$_1$ will wash his$_1$ car, and John$_2$ will [$_{VP}$ wash his$_1$ car]

(37)a corresponds to the sloppy identity interpretation, and (37)b to the strict identity interpretation. The theory, therefore, correctly predicts that (32) is ambiguous. Suppose next that for (31), after LF Copy, indices as in (38) are assigned.

(38) a.   Bill$_1$ will admire himself$_1$, and John$_2$ will [$_{VP}$ admire himself$_2$]

    b.   Bill$_1$ will admire himself$_1$, and John$_2$ will [$_{VP}$ admire himself$_1$]

Now, although (38)a satisfies Condition A, (38)b does not: *himself* in the elliptic VP is not locally bound. The theory, therefore, correctly excludes the strict identity interpretation. Hence, insofar as Chomsky's Binding Conditions are well-motivated, Kitagawa's theory is better than the Sag/Williams-type theory in that the contrast between (31) and (32)/(33) is explained by independently motivated conditions, without recourse to any extra stipulation.

4.3.2   Identity Preservation and Copying of Indices

We have seen that if a pronoun in the antecedent sentence refers to someone other than the subject NP, the corresponding pronoun in the elliptic VP must refer to the same individual ("identity preservation"). Recall that Williams (1977) notes this fact and suggests that in such a case, the antecedent pronoun is assigned an index and the index is preserved under LF Copy to construct the contents of the elliptic VP. Kitagawa (1991) more explicitly develops the same idea, to account for the identity preservation fact. Kitagawa (1991) assumes that indexation applies in the LF component freely before or after VP Copy. He notes (footnote 6, p.502) that "if coindexation takes place before VP Copy, the result will be strict identity." For instance, if indexation takes place before VP Copy as in (39)a and makes sure that *his* refers to a third party, say Tom, who is salient in the discourse, the LF representation after VP Copy as in (39)b gives the relevant strict identity interpretation. (39)b is a well-formed LF representation because it does not violate any of the Binding Conditions.

(39) a.   Bill₁ will wash his₃ car, and John₂ will [$_{VP}$ e], too.

   b.   Bill₁ will wash his₃ car, and John₂ will [$_{VP}$ wash his₃ car], too.

Kitagawa's theory, however, is problematic in one respect and redundant in another. First, if indexation may apply freely after VP Copy and the condition on indexation is the Binding Conditions alone, nothing would prevent an LF representation like (40), where both occurrences of *his* in (40) satisfy Condition B.

(40)   Bill₁ will wash his₃ car, and John₂ will [$_{VP}$ wash his₄ car], too.

The interpretation represented in (40), however, is not possible for (32). The theory as it stands incorrectly allows some impossible interpretations. Second, as we have repeatedly discussed, the same restriction on pronominal interpretation as is observed in VP-ellipsis holds in the corresponding non-ellipsis sentences as well. If *his* in the first conjunct in (41) refers to Bill, the second *his* must refer to Bill or John but cannot refer to Tom. If *his* in the first clause refers to someone other than Bill, say Tom, the second *his* must refer to the same person Tom and it cannot refer to any other individual.

(41)   Bill will wash his car, and John will wash his car, too.

This is exactly the same fact observed in (32) above, the VP-ellipsis counterpart of (41). The strict identity interpretation as in (39) is not a property which is uniquely observed in VP-ellipsis, and hence, any theory which claims that this interpretation is a result of copying the index along with the VP will miss a generalization.

4.4 Fiengo and May (1994)

Fiengo and May (1994) propose an elaborated theory of index system and identity to account for a wider range of facts in ellipsis and reconstruction. I will briefly review their claim on the restriction of pronominal interpretation. The index system which Fiengo and May (chapter 2) propose consists of two kinds of indices. One is an indexical type governed by Dependency Theory and the other is an indexical value sensitive to the standard Binding Theory (Chomsky 1981, 1986a). They are assigned independently of each other, but interact with each other in principled ways.

The essence of Dependency Theory is the following. A nominal expression may be independent of, or dependent on, another linguistic expression in the same phrase marker. If it is dependent, it bears a β-occurrence, and if it is independent, it bears an α-occurrence. α and β are indexical types and are written as a superscript to the nominal expression in question. The other kind of indices, indexical value, are numerals (1, 2, 3, etc.) written as a subscript to the nominal expression, and the Binding Conditions refer to this indexical value. For example, the pronoun *his* in (42) may have three kinds of indexical representation as in (43).

(42)   John saw his brother.

(43) a.   John$^{\alpha}_1$ saw his$^{\beta}_1$ brother

   b.   John$^{\alpha}_1$ saw his$^{\alpha}_1$ brother

   c.   John$^{\alpha}_1$ saw his$^{\alpha}_2$ brother

Expressions bearing β-occurrences must be coindexed with some other expression in the same phrase marker, because their reference is only determined through some other linguistic expression in the phrase marker (Fiengo and May 1994: 62). If an expression with β-occurrences is not coindexed with some other expression in the same phrase marker, specification by Dependency Theory and specification by Binding Theory conflict. Thus, while (43)a is a well-formed LF representation, (44), for instance, is an ill-formed LF representation, because *his* is a dependent expression but is not coindexed with any other element in the same phrase marker.

(44)   John$^\alpha_1$ saw his$^\beta_2$ brother

Specification by Dependency Theory says that the reference of *his* in (44) must be determined through some other linguistic expression in the same phrase marker, while specification by Binding Theory says that *his* is not anaphoric to any of the expressions in the phrase marker. This leads to a contradiction. (43)a expresses that the reference of *his* is "only determined indirectly, mediated through a structural relation to some other expression [i.e., *John* in this case], which itself can directly refer [to a person in the discourse]"(p. 63). Since *his* in (43)a is coindexed with an expression in the same phrase marker (i.e., *John*), specifications by Dependency Theory and Binding Theory do not conflict. (43)b expresses that the reference of *his* "is determined directly, independently of syntactic position" (p. 63). Specifications by Dependency Theory and Binding Theory in (43)b do not conflict, because although *his* is anaphoric to *John* (which is specified by the same indexical value 1), *his* can directly refer to the person John, establishing its reference independently of any other linguistic expressions in the phrase marker, in just the same way as the subject *John* directly refers to the person

John. We will see shortly that (43)a and (43)b induce some difference once VP-ellipsis is taken into consideration, although they are, in isolation, truth-conditionally identical. Note that (43)b still expresses that the speaker's intention is the coreference between *John* and *his*, because they are coindexed. (43)c, on the other hand, expresses that *John* and *his* are not (linguistically) coreferential.[10]

Fiengo and May (1994) propose a recoverability/identity condition of nominal expressions in VP-ellipsis with specific reference to indices. For instance, if a pronominal expression bears α-occurrences in the antecedent VP, the corresponding pronoun in the elliptic VP also must bear the identical indexical type and value. This is illustrated in (45)a and (45)b, both of which are instances of the strict identity interpretation; *his* in (45)a refers to Bill in both VP's and *his* in (45)b refers to the same third party in both VP's.

(45)   a.   Bill$_1$ will [$_{VP}$ wash his$^\alpha_1$ car], and John$_2$ will [$_{VP}$ **wash his$^\alpha_1$ car**], too.

        b.   Bill$_1$ will [$_{VP}$ wash his$^\alpha_3$ car], and John$_2$ will [$_{VP}$ **wash his$^\alpha_3$ car**], too.

Fiengo and May claim that "there is no way in which pronouns in distinct structures that bear α-occurrences of different indices can be judged nondistinct" (p.99). Hence, VP-ellipsis is possible only when the VP's are identical down to indexical values of pronominal expressions. If a pronoun in the antecedent VP bears β-occurrences, on the other hand, the corresponding pronoun in the elliptic VP can bear a different indexical value (sometimes it must bear a different indexical value for independent reasons, as we will see momentarily). For example, VP-ellipsis is possible in (46) because, under Fiengo and May's definition, these two pronouns are considered nondistinct.

(46)   Bill1 will [$_{VP}$ wash his$^\beta_1$ car], and John2 will [$_{VP}$ wash his$^\beta_2$ car], too.

Fiengo and May claim that "Dependency Theory provides the criterion by which pronouns bearing β-occurrences are nondistinct even though they are not coindexed." (p.96) Put differently, the idea is that *his*$^\beta_i$ and *his*$^\beta_j$ are considered to be nondistinct regardless of indexical value assigned, due to the fact that they are both dependent expressions in the structure marked by the index type β. Thus, the two VP's are nondistinct and VP-ellipsis is possible, giving the sloppy identity interpretation. Note that *his* in the second VP in (46) must actually be coindexed with *John*; otherwise, it would conflict with the requirement of Dependency Theory; pronouns with β-occurrences must be referentially dependent on other nominal expression in the same phrase marker. Further, VP-ellipsis is not possible in (47), because the VP's are not nondistinct, *his* referring to different persons in the first and the second VP's.

(47)   a.   * Bill1 will [$_{VP}$ wash his$^\alpha_1$ car], and John2 will [$_{VP}$ wash his$^\alpha_3$ car], too.

        b.   * Bill1 will [$_{VP}$ wash his$^\alpha_3$ car], and John2 will [$_{VP}$ wash his$^\alpha_4$ car], too.

With respect to pronominal interpretation of VP-ellipsis, Fiengo and May's claim is summarized in (48).

(48)   Two VP's, VP1 and VP2, are nondistinct if they are structurally identical and

        a.   [$_{VP1}$... pronoun$^\alpha_i$ ...] = [$_{VP2}$ ... pronoun$^\alpha_i$ ...]

        b.   [$_{VP1}$... pronoun$^\beta_i$ ...] = [$_{VP2}$ ... pronoun$^\beta_j$ ...]   (i and j can be different)

Either VP1 or VP2 in (48)a-b can be an elliptic VP, having the other as its antecedent, since Fiengo and May (1994) assume that reconstruction is a symmetric relation.

Fiengo and May's theory is consistent with the facts about the restrictions on pronominal interpretation of VP-ellipsis. However, they explicitly claim that "if elided material is overt, then a representation comparable to [(47)b] is well formed." (p. 99) In *Bill will wash his car and John will wash his car*, for instance, "the pronouns can perfectly well refer deictically to different persons." (p. 99) This is the claim which has often been assumed, but has been challenged by Tancredi (1992) and Tomioka (1997), among others. If Tancredi and Tomioka are correct (I believe they are), and there is a general theory of the restrictions on pronominal interpretation in phonologically reduced structures in general, Fiengo and May's theory redundantly specifies the restrictions on VP-ellipsis reconstruction. Again, I claim that what is reconstructed by LF Copy at the syntactic LF representation is the syntactic phrase structure (virtually) identical to the antecedent, without any indices introduced.[11]

4.5   Cases of Non-identity: a Minimalist Approach

So far I have discussed how a full copy of the antecedent VP can give the appropriate LF representation of the elliptic VP, and no extra elements such as indices or λ-expression need be introduced in pure syntax. In this section, I will discuss several cases in which a full copy of the antecedent VP cannot give the appropriate LF representation of the elliptic VP, and propose a theory of LF reconstruction which gives a possible account for the facts under LF Copy theory supplemented by the subset copy principle.

4.5.1 Feature Mismatch and "Vehicle Change"

As for nominal expressions involved in VP-ellipsis, Fiengo and May's (1994) theory of the recoverability/identity condition on VP-ellipsis is stated in terms of invariance of indices, as we have just reviewed in Section 4.4. Fiengo and May then explicitly state that "in a reconstruction, a nominal can take any syntactic form so long as its indexical structure (type and value) is unchanged (modulo identity for β-occurrences)" (p.218). For instance, the sloppy identity interpretation of (49)a is represented as in (50)a, and the sloppy identity interpretation of (49)b is represented as in (50)b.

(49) a. *Bill* will wash *his* car, and John will, too.

     b. *Bill* will wash *his* car, and Mary will, too.

(50) a. Bill_1 will $[_{VP_1}$ wash his^δ_1 car], and John_2 will $[_{VP_2}$ **wash** $\textbf{his}^\delta_2$ **car**], too.

     b. Bill_1 will $[_{VP_1}$ wash his^δ_1 car], and Mary_2 will $[_{VP_2}$ **wash** $\textbf{her}^\delta_2$ **car**], too.

In (50)b, even though the syntactic form of the corresponding pronouns are different, they are considered nondistinct because their indexical structures are nondistinct, in the same way as in (50)a (see (48)b). Therefore, VP-ellipsis is possible, giving the sloppy identity interpretation. This is one instance of a phenomenon Fiengo and May (1994) call "vehicle change." However, it has been reported (e.g., Sag 1976 and Kitagawa 1991) that (49)b is less acceptable than (49)a on the relevant reading. In other words, if there is a gender feature mismatch between the antecedent VP and the elliptic VP, the sentence is degraded.[12]

The same kind of degradation is observed when there is a number feature mismatch or a person feature mismatch. The sloppy identity interpretation is less available in (51)b and in (51)c than in (51)a.

(51) a. *John* said that *he* was going to France, and Bill did $[_{VP}$ e], too.

     b. *John* said that *he* was going to France, and Bill and Mary did $[_{VP}$ e], too.

     c. *John* said that *he* was going to France, and you did $[_{VP}$ e], too.

For (51), Fiengo and May's theory gives the LF representations in (52), where the corresponding pronouns do not have the identical syntactic form, although their indexical structures are nondistinct.

(52) a. John_1 said that he^δ_1 was going to France, and

       Bill_2 did $[_{VP}$ **say that** $\textbf{he}^\delta_2$ **was going to France**], too.

     b. John_1 said that he^δ_1 was going to France, and

       Bill_2 and Mary_3 did $[_{VP}$ **say that** $\textbf{they}^\delta_2 + {}^\delta_3$ **were going to France**], too.

     c. John_1 said that he^δ_1 was going to France, and

       you_2 did $[_{VP}$ **say that** $\textbf{you}^\delta_2$ **were going to France**], too.

Although Fiengo and May (1994) note that people's judgments for the sloppy identity interpretation varies when there is a gender feature mismatch between the antecedent and the elliptic site, they do not discuss what the source of the judgment variation is.

Further, as we will see later in this section, not all the instances of Fiengo and May's vehicle change induce the degradation, and hence, we cannot make a general claim under Fiengo and May's system that a VP-ellipsis sentence is degraded when there is vehicle change in a reconstruction.

Let us now consider what we can say about the facts under the LF Copy analysis without appealing to an index system. Burzio (1991) proposes that a pronoun is a set of φ-features, a very natural assumption. Extending Burzio's proposal, I propose that a pronoun is a set of φ-features and the categorial feature D. The latter is probably related to the referential property of pronouns. Then, *his* and *her* in English, for example, consist of the following features (putting aside phonological features and Case feature which are irrelevant here):

(53) a. *his* = {3rd person, masculine, singular, D}

      b. *her* = {3rd person, feminine, singular, D}

As is easily seen from the feature composition in (53), neither set of features is a subset of the other set. Hence, LF Copy of *his* can never give the full features of *her*, and vice versa. Why, then, is (49)b on the sloppy interpretation even marginally possible? The idea I suggest is the following: under the subset copy principle, LF Copy of *his* {3rd person, masculine, singular, D} can, in principle, give a set of features {3rd person, singular, D} without the feature {masculine}, because the latter is a proper subset of the former. Now, the resulting set of features is not identical to the set of features of *her* (i.e., {3rd person, feminine, singular, D}), but it does not conflict with it, either. Therefore, I claim that the "defective" set of feature {3rd person, singular, D} can function as a pronoun bound by *Mary* at LF shown in (54), although there is no overt pronoun corresponding to this feature specification in English.

(54) Bill will wash his car, and Mary will [$_{VP}$ **wash {3rd person, singular, D} car**], **too**.

Note that although the set of features {3rd person, singular, D} is "defective" in the PF component in English in that there is no overt word corresponding to this set of features, it may not be defective in the LF component, because there are languages in which some instances of pronouns are commonly used gender-free. For instance, Spanish genitive pronoun *su* 'his, her, their, its' is a 3rd person genitive pronoun which is gender/number free. Also, English pronouns *they* and *we* are gender-free, and *you* is gender/number free. If we assume that the interpretive faculty of human mind is universal at the LF interface, the presence of this set of features without the feature {masculine} may not be problematic at that point; such a defective set of features may properly function as a pronoun at LF. An extreme case is something like (55) in which the shared feature between the antecedent pronoun and the pronoun in the elliptic site is only the category feature {D}.

(55) a. *She* will wash *her* car, and we will [$_{VP}$ e], too.

      b. *They* will wash *their* cars, and I will [$_{VP}$ e], too.

Given that LF Copy can provide the LF representation in (54) for the sloppy identity interpretation of (49)b, for instance, I will examine two possible sources of the degradation. One is the fact that part of the antecedent features is taken away under LF Copy, and the other is the fact that the resulting set of features is "defective" in the sense that there is no overt realization of the set of features:

(56)   *Source of Degradation*

    a.   part of the antecedent features is taken away

    b.   the resulting set is defective

(56)a and (56)b look similar but they are actually quite different; there may well be cases in which the features constructed at the elliptic site are not all but only part of the antecedent features, but still the resulting set is not defective. Recall, for instance, that we discussed in Chapter 2 that an ING-form can be the antecedent of the corresponding bare form, thus sentence (57) is good.

(57)   Mary is [$_{VP}$ leaving], but John will not [$_{VP}$ e].   ([e] = leave)

The set of features in the elliptic site is part of the antecedent features, but it is not defective because it has the corresponding overt word, *leave*. This argues for (56)b as the source of the degradation observed in (49)b. We will see later in this section another instance of the subset copy which also argues for (56)b.

However, there is a case which cannot be accounted for only by (56)b and suggests that a more elaborate version of (56)a is also necessary. Most speakers find that (58) in the sloppy identity interpretation is worse than (49)b.

(58)   Mary will wash her car, and John will [$_{VP}$ e], too.

Under the conception of the subset copy principle, the copy of *her* {3rd person, feminine, singular, D} may give a set of features {3rd person, singular, D}, which is again not identical to the features of *his* but at the same time does not conflict with them,

either. Therefore, at the LF this defective set of features can be interpreted as a pronoun bound by *John*, giving the relevant sloppy identity interpretation. If the observed degradation is simply attributed to the fact that the resulting set of features is defective, there is no way to account for the contrast in question; that is, the sloppy identity interpretation is harder to get in (58) than in (49)b. To give an account for this contrast, I suggest that taking the feature {masculine} out of the φ-features is easier than taking the feature {feminine} out of the φ-features under LF Copy. This is a stipulation, but it may not be groundless. Let us consider (59), in which the intended interpretation is that the pronoun is bound by the matrix subject.

(59)   a.   *Every student* thinks that *he* is smart.

        b.   *Every student* thinks that *she* is smart.

(59)a can be naturally uttered even when there are female students in the body of the students under the discussion, while (59)b strongly implies that all the students in the discourse are female. In other words, it is relatively easy to get rid of the feature {masculine} from *he* in LF interpretation, while it is much harder (or impossible) to get rid of the feature {feminine} from *she*. This observation will provide a reasonable basis for the stipulation above that taking the feature {masculine} away from the φ-features of *his* is easier than taking the feature {feminine} away from the φ-features of *her*; hence, the contrast between (49)a and (58).

I suggest that the same analysis applies to (52)b, (52)c, and (55) where the sloppy identity interpretation is degraded because there is a feature mismatch between the antecedent pronoun and the pronoun understood in the elliptic site. In (52)b, for instance, the subset copy of the features of *he* {3rd person, masculine, singular, D} may be a set of features {3rd person, D}. This is not identical to the set of features of the

pronoun *they*, but not inconsistent with it, either. Hence, it can be interpreted as a pronoun bound by the matrix plural subject, marginally giving the sloppy identity interpretation. Likewise, in (55)a, the subset copy of the features of *her* {3rd person, feminine, singular, D} can be a set of feature {D}. This is not identical to the set features of *our* {1st person, plural, D}, but not inconsistent with it, either. Hence, it can be interpreted as a pronoun bound by the subject *we*, marginally giving the sloppy identity interpretation.[13] The source of the degradation is the fact that the resulting set of features is defective and probably the fact that (part of) φ-features are taken away under LF Copy.

It is interesting to note that PRO in English seems to have no φ-feature specification. Observe the contrast between (60)a, which is degraded in the sloppy identity interpretation, and (60)b, in which PRO appears in the subject of the infinitival clause and no degradation is observed.

(60) a. Mary wants only herself to be a candidate, and John does [$_{VP}$ e], too.

  b. Mary wants PRO to be a candidate, and John does [$_{VP}$ e], too.

The sloppy identity interpretation in (60)a requires the change from *herself* to a defective reflexive pronoun with no gender feature, which I claim is the cause of the degradation. To get the strict identity interpretation in (60)a, the reflexive *herself* has to change to the pronoun *her*. As I will discuss in detail in Section 4.5.2, this change also induces some degradation, and hence, the strict identity interpretation is not very good, either. Now, if PRO in (60)b has a gender feature specification, there would be a feature mismatch between the antecedent VP and the elliptic VP under the intended sloppy identity interpretation. The facts that sentences like (60)b are perfect in this interpretation strongly suggests that PRO has no φ-feature specification. A question remains: the

argument suggests that PRO consists of the categorial feature {D}, and then this feature specification is not inconsistent with the features of *him*, for instance. If this is true, then, why can't (61)b even marginally mean (61)a?

(61) a. Bill wants to be a candidate, and John wants him to be a candidate, too.

  b. Bill wants to be a candidate, and John does [$_{VP}$ e], too.

For this problem, I simply stipulate that PRO has some extra feature which other overt pronouns do not. The more detailed discussion of the property and the distribution of PRO is beyond the scope of the present work, and I will not address it, simply referring to Martin (1996), a theory of PRO in the recent minimalist framework.[14]

The reader may think that for the relevant degradation in the case of feature mismatch, Fiengo and May (1994) can simply claim that whenever there is a vehicle change, the sentence is degraded, although Fiengo and May (1994) themselves do not make such a claim. However, the claim cannot give an account for the contrast between (49)a and (58) as we have just discussed. Further there are actually some other instances of Fiengo and May's vehicle change which do not make the sentence degraded. Hence, it is not a correct generalization that whenever there is a vehicle change, the sentence is degraded. Let us look at some instances of vehicle change which cause little or no degradation:

(62) Mary will admire *John*, and *he* thinks that Sally will [$_{VP}$ e], too.

Suppose that *he* is anaphoric to *John* in (62). The sentence is virtually perfect. Notice, however, that if the antecedent VP is copied as it is, to construct the contents of the elliptic VP, we get the LF representation in (63).

(63)   Mary will admire *John*, and *he* thinks that Sally will [$_{VP}$ admire John], too.

Fiengo and May argue that this representation violates Binding Condition C, and thus it is incorrectly predicted that the relevant coreference interpretation in (62) is as bad as the coreference interpretation between *he* and *John* in the sentence **He thinks that Sally will admire John*.[15] What we want as the LF representation for (62) is something like (64), in which *John* in the antecedent VP has changed to the corresponding pronoun *him*.[16]

(64)   Mary will admire *John*, and *he* thinks that Sally will [$_{VP}$ admire *him*], too.

To account for this fact, Fiengo and May propose that an R-expression (that is, a nominal expression with the feature [-pronoun]) can change into [+pronoun], as long as the indexical structures remain identical; this is another instance of vehicle change. The way Fiengo and May state this vehicle change effect is very stipulative, however. For example, it is not clear why there is no instance of vehicle change which changes an R-expression into the corresponding reflexive pronoun. If there were such an instance of vehicle change, (65)a would be good in the relevant coreferential reading with the LF representation in (65)b.

(65)   a.   * Mary will admire *John*, and *he* will [$_{VP}$ e], too.

        b.   Mary will admire *John*, and *he* will [$_{VP}$ admire *himself*], too.

I will argue now that the subset copy principle provides a principled basis for this instance of the vehicle change effect, given a natural assumption about the feature composition of R-expressions and pronouns. I continue to assume, extending Burzio's

(1991) idea, that a pronoun is a bundle of ϕ-features and the categorial feature D. Now, Burzio (1991) further proposes that an R-expression consists of ϕ-features and other information. I will represent this "other informatio" as "R-feature" for expository convenience, following Franks and Schwartz (1994). I again modify Burzio's claim and suggest that an R-expression consists of ϕ-features, R-features, and the categorial feature D.

(66)   a.   R-expression;   {ϕ-features, R-features, D}

        b.   pronoun;   {ϕ-features, D}   (Cf. Burzio 1991)

Given the basic assumption we have adopted here that a syntactic object (a lexical item or an object composed from lexical items) is a set of features, it is very natural to assume that the set of features composing the word *John*, for instance, contains ϕ-features such as {3rd person, masculine, singular, D} which are common to the corresponding pronoun *he*.[17] Therefore, the set of features composing the pronoun *he* is a subset of features composing the word *John*. It does not matter for our present purposes what the exact identity of R-features of *John* is: I simply suggest that they would be purely semantic features of the word *John*. Given the feature specification in (66), it can be easily seen that a subset copy of an R-expression {ϕ-features, R-features, D} gives a set of features of the corresponding pronoun {ϕ-features, D}. Note that I crucially claim that the feature {±pronoun} is not a primitive feature in syntax, but rather is a descriptive cover term. That is, a nominal expression composed only of ϕ-features and the D-feature derivatively has the property of [+pronoun], and a nominal expression composed of ϕ-features, R-features, and the D-feature derivatively has the property [-pronoun], which will be relevant with respect to the Binding Conditions. I will discuss the case of reflexive pronouns below. In this system, we do not have to

stipulate that the feature [-pronoun] can change into the feature [+pronoun]. The change from [-pronoun] to [+pronoun] is an epiphenomenon derived from the change from a set {ϕ-features, R-features, D} into a corresponding set {ϕ-features, D}.

The reader may have noticed that the change from *John* to *him* in (75) is "forced" for an independent reason, to avoid a Condition C violation when the coreference is intended between the object *John* in the first clause and the subject *he* in the second. I will show now that the change from an R-expression to the corresponding pronoun under LF Copy causes no degradation even when the change is not forced by some independent reasons. First consider (67), which involves no ellipsis.

(67) Bill saw a picture of himself, and John saw a picture of himself, too.

The interpretation of (67) is surely the sloppy identity interpretation. Now, let us examine sentence (68), which involves VP-ellipsis.

(68) Bill saw a picture of himself, and John did [$_{VP}$ e], too.

(68) may surely mean (67), the sloppy identity interpretation, which is easily represented in LF; a full copy of the antecedent constructs the contents of the elliptic VP as in (69).

(69) Bill saw a picture of himself, and John did [$_{VP}$ **see a picture of himself**], too.

Notice, however, that (68) can also mean that Bill and John saw the same picture, a picture of Bill. But if (69) is the only available LF representation for (68), the same

referent interpretation should not be obtained, just as in the non-ellipsis counterpart in (67). What we want is an LF representation comparable to (70)a or (70)b, to give the same referent interpretation.

(70) a. Bill saw a picture of himself, and John saw it, too.

b. Bill saw a picture of himself, and John saw the picture, too.

We have a way to derive an LF representation comparable to (70)a; an R-expression *a picture of himself* can change into the corresponding pronoun *it* under LF Copy, which gives (71).

(71) Bill [$_{VP1}$ saw a picture of himself], and John did [$_{VP2}$ see it], too.

|_____ LF Copy _____|

Very importantly, it is crucial here that this same referent interpretation is available with no difficulty in (68); the speaker can easily utter sentence (68) with the intention that Bill and John saw the same picture.[18] The generalization in terms of Fiengo and May's analysis is therefore that instances of vehicle change which involve a change of person/gender/number feature(s) cause some degradation of the sentence, while instances of vehicle change which involve a change from the feature [-pronoun] to the feature [+pronoun] cause no degradation. This shows that we cannot generally say that a sentence is degraded whenever it involves vehicle change.

Under the subset copy principle, the generalization is stated in a different way. When we take away part or all of ϕ-features (which is necessary to obtain the sloppy identity interpretation when there is a ϕ-feature mismatch), the sentence is degraded (the

degree of degradation also depends on the nature of the feature taken away), while when the ϕ-features are maintained and only R-features are taken away, the sentence is not degraded. In other words, the recoverability/identity condition on VP-ellipsis is not sensitive to difference with respect to R-features between the antecedent and the elliptic site, while the condition is sensitive to difference with respect to ϕ-features. I will give one speculation of why this is so in the end of Section 4.5.2. Another conjecture I have suggested above is that when the resulting set of features has a corresponding overt word in the language, the sentence is not degraded, while if the resulting set of features is defective in the sense that there is no overt word corresponding to that set of features in the language, the sentence is degraded. An instance of the former is the change from an R-expression to the corresponding pronoun as I have just discussed, and an instance of the latter is the case in which some ϕ-feature mismatch is involved. I have argued, however, that this conjecture is not sufficient once we take into consideration the contrast between (72)a and (72)b on the relevant sloppy identity interpretation.

(72) a.   *Bill* will wash *his* car, and Mary will [$_{VP}$ e], too.

      b.   *Mary* will wash *her* car, and John will [$_{VP}$ e], too.

To get the sloppy identity interpretation, the LF representation of the elliptic VP contains a defective set of features in both (72)a and (72)b, but (72)b is much worse than (72)a. This suggests, as we have discussed above, that we have to take into consideration what feature(s) among ϕ-features are taken away under LF Copy. In the next subsection, I will discuss another case in which the sentence is degraded even though the resulting set of features has a corresponding overt word. Note that it appears that LF Copy operation in (71) involves a drastic "change" in syntactic structure; an DP with a complex internal structure becomes a simplex pronoun. However, in the LF feature decomposition

hypothesis, this change under LF Copy is a natural consequence. That is, what is copied out of the antecedent DP is a set of features {ϕ-features, D} which must be attached to the verb *see*. This set of features is equal to a set of feature of the pronoun *it*; hence, the resulting VP is identical to [$_{VP}$ *see it*].

I have presupposed that in the LF representation in (71), a picture Bill saw and a picture John saw are the same referent, because the overt counterpart of (71), which is (73), has such an interpretation, assuming that the second VP is deaccented.

(73)   Bill [$_{VP1}$ saw a picture of himself] and John [$_{VP2}$ saw it], too.

A deeper question is why this is so. Under Rooth/Tomioka analysis I reviewed in Chapter 3, the deaccenting or ellipsis of VP2 in (73) is possible only when VP1 and VP2 are semantically identical (roughly speaking). However, *a picture of himself* is a quantificational expression, while the pronoun *it* is not, and then in what sense can a DP *a picture of himself* and a DP *it* are considered to be semantically identical? I suggest that indefinite DP's can be referential (see Kratzer 1995), identifying an individual (a certain picture of Bill in (73)), and the pronoun *it* as a free variable can be assigned the same individual (the same picture of Bill) as its value. Therefore, both DP's refer to the same individual and hence, they are regarded as semantically identical; VP-ellipsis or deaccenting of VP$_2$ is possible in (73).[19]

4.5.2 Reflexive to Pronoun

I have discussed in Section 4.3 that when a reflexive pronoun is involved in the antecedent sentence, the strict identity interpretation is hard to get and the sloppy identity interpretation is much preferred:

(74)   Bill hit himself, and John did [$_{VP}$ e], too.

Williams (1977) proposes an LF Copy theory of VP-ellipsis which predicts that only the sloppy identity interpretation is available in (74) (see Section 4.3 above). It has been reported, however, that the strict identity interpretation is marginally available in sentences like (74) for at least some speakers. Reporting a wide range of variation of judgments on the strict identity interpretation of sentences like (74), Kitagawa (1991) suggests that the LF Copy of a reflexive can be the corresponding pronoun. Under the subset copy analysis of VP-ellipsis, it is not surprising that *himself*, for instance, becomes *him* under LF Copy, because it is natural to assume that the set of features composing *him* is a subset of the set of features composing *himself* (i.e., the features for the *him-* portion and the features for the *-self* portion). Putting this more precisely, suppose that *-self* is the phonological realization of the feature {anaphoric}; then the feature composition of a reflexive pronoun is (75)a, which is a proper superset of the feature composition of the corresponding pronoun in (75)b. Further, given the feature specification of an R-expression as in (75)c, neither the features of an R-expression nor the features of the corresponding reflexive pronoun are a subset of the other.[20]

(75)   a.   reflexive;   {φ-features, anaphoric feature, D}

       b.   pronoun;   {φ-features, D}

       c.   R-expression;   {φ-features, R-features, D}

The idea that reflexive pronouns have an extra feature which the corresponding pronouns do not have is supported by some analyses of reflexive pronoun licensing (as well as by the morphological make-up of reflexive pronouns in English). Chomsky

(1992), for instance, proposes that a reflexive pronoun is licensed by LF cliticization of (part of) the reflexive pronoun to the local verb. If the movement is feature-driven, and pronouns in English do not have comparable LF movement, a reflexive pronoun must have some feature which the corresponding pronoun does not have.[21] The most plausible candidate for the relevant feature is the feature {anaphoric}. Recall also that we have seen above that LF Copy of an R-expression cannot be the corresponding reflexive pronoun. In (65)a, repeated here as (76)a, the coreference interpretation between *John* and *he* is not possible, which means under LF Copy analysis of VP-ellipsis that *John* cannot change into *himself* when the antecedent VP is copied to construct the contents of the elliptic VP; LF representation (76)b cannot be derived by LF Copy.

(76)   a.   * Mary will admire *John*, and *he* will [$_{VP}$ e], too.

       b.   Mary will admire *John*, and *he* will [$_{VP}$ admire *himself*], too.

No matter what part of *John* is copied, it is not possible to provide the features of *himself*. Fiengo and May (1994) would have to stipulate that [-pronoun, -anaphor] (i.e., an R-expression) can change to [+pronoun, -anaphor] (i.e., a pronoun), while it cannot change to [-pronoun, +anaphor] (i.e., an anaphor).[22]

Given the feature specification in (75), the subset copy principle also predicts (77).

(77)   A pronoun cannot be the antecedent of the corresponding reflexive pronoun in the elliptic site.

(77) is generally attested, because in (78), for instance, *him* and *John* cannot be coreferential (in the usual self-oriented interpretation in which the second clause mean that John blamed himself).[23]

(78)   Bill blamed him, and John did, too.   (him ≠ John)

In other words, (79) is not a possible LF representation for the second conjunct in (78).

(79)   ... and John did [vp **blame himself**], too.

A reflexive pronoun cannot be constructed out of the corresponding pronoun in the antecedent VP.

However, there are apparent counter examples to the subset copy principle in English binding facts, reported and discussed by Dalrymple (1991) and Fiengo and May (1994). Consider the sentences in (80) and (81).

(80)   I shaved *John* because *he* wouldn't.   (Fiengo and May 1994: 224)

(81)   a.   Luther Martin defended *Burr* against the accusation better than *he* could have.

         b.   Barbara voted for *him*, but *Bush* didn't.

         c.   Mary believes *him* to be heroic, and *Max* does, too.

                                      (Fiengo and May 1994: 213, Dalrymple 1991)[24]

Fiengo and May (1994) claim that the sentences in (80) and (81) are all good in the relevant coreferential reading and argue that they are instances of reconstruction of the reflexive out of a pronoun or an R-expression, as shown in (82) and (83).

(82)   I [vp shaved *John*] because *he* wouldn't [vp shave *himself*].

(83)   a.   Luther Martin [vp defended *Burr* against the accusations] better than *he* could have [vp defended *himself* against the accusations].

         b.   Barbara [vp voted for *him*], but *Bush* didn't [vp vote for *himself*].

         c.   Mary [vp believes *him* to be heroic], and *Max* [vp believes *himself* to be heroic], too.

If this is the case, they are serious counter examples to our subset copy principle, because the reflexive feature (realized as -*self*), which is not present in the first conjunct, is added when the VP in the second conjunct is constructed.

Let us consider the relevant examples more closely to see if they are actually counter examples. First, the LF representation of (80) is not necessarily (82). For *shave/wash* type verbs, (84)a with no antecedent VP is completely well-formed and therefore LF representation (84)b is sufficient to get the relevant coreferential reading in (80); there is no need to assume that *John* changes to *himself*. Hence, sentences like (80) are not real counter examples to the subset copy principle.

(84)   a.   John didn't shave.

         b.   I shaved *John* because *he* wouldn't shave.

         (Cf. *John didn't hit/*I hit *John* because *he* wouldn't hit.)

How about the sentences in (81), then? Kitagawa (1991) worries about the same kind of paradigm as (81). His examples are those in (85).

(85)   a.   Many people blamed *him*, and *Bill* did, too.

        b.   Many people blamed *Bill*, and *he* did, too.

Kitagawa claims that to make sentences in (85) good, stress is added on the subject of the second conjunct; otherwise, these sentences are seriously degraded. Then, he gives the sentences in (86) which do not involve VP-ellipsis and claims that if stress is put on the subject of the second conjunct, the sentences are as good as those in (85). The noun with a stress is represented with CAPITALS.

(86)   a.   Many people blamed *him*, and *BILL* blamed *him*, too.

        b.   Many people blamed *Bill*, and *HE* blamed *Bill*, too.

              (Kitagawa 1991. See also Evans 1980 for relevant discussion)

Therefore, (85) patterns just like (86). Why the stress makes these sentences good is another non-trivial issue,[25] but for our purpose here, the parallelism between (85) and (86) is sufficient; it shows that to get the relevant coreferential reading in (85), we do not necessarily need a reflexive in the LF representation of the elliptic VP in the second conjunct. The same argument applies to explain the coreferential reading in (81), without appealing to LF representations in (83). To the extent that Kitagawa's claims for (83) and (85) are correct, then, they are not real counter examples to the subset copy principle, which predicts that a pronoun or an R-expression cannot change into the corresponding reflexive.

Let us now review Fiengo and May's analysis of cases in which a reflexive pronoun is involved. Fiengo and May also assume that a reflexive pronoun consists of a pronoun portion and a *-self* portion, and propose that the relevant portion of reconstruction of a reflexive pronoun is the pronoun portion. In other words, the *-self* portion is irrelevant to the recoverability/identity condition on VP-ellipsis. The only relevant information of the identity condition is the indexical structure on the pronoun portion. Therefore, both (87)a and (87)b are cases in which the recoverability/identity condition is satisfied and hence the change from a reflexive pronoun to the corresponding pronoun is possible, just in the same way that the cases in (48), repeated here as (88), satisfy the recoverability/identity condition on VP-ellipsis.

(87)   Two VP's, VP1 and VP2, are nondistinct if they are structurally identical and

     a. $[_{VP1}\ldots \text{pronoun}^\alpha_i + \text{self} \ldots] = [_{VP2} \ldots \text{pronoun}^\alpha_i \ldots]$

     b. $[_{VP1}\ldots \text{pronoun}^\beta_i + \text{self} \ldots] = [_{VP2} \ldots \text{pronoun}^\beta_j \ldots]$

        (i and j can be different)

(88)   Two VP's, VP1 and VP2, are nondistinct if they are structurally identical and

     a. $[_{VP1}\ldots \text{pronoun}^\alpha_i \ldots] = [_{VP2} \ldots \text{pronoun}^\alpha_i \ldots]$

     b. $[_{VP1}\ldots \text{pronoun}^\beta_i \ldots] = [_{VP2} \ldots \text{pronoun}^\beta_j \ldots]$

        (i and j can be different)

Note that nondistinctness is a reflexive property and hence, in Fiengo and May's theory, either VP1 or VP2 can be the elliptic VP, having the other as the antecedent VP in (87) as well as in (88). Notice that I have argued that this point is different in our approach in which the construction of the phonologically missing VP is by LF Copy operation;

hence, a VP containing a reflexive can marginally be the antecedent of the elliptic VP in which the corresponding pronoun is understood, but a VP containing a pronoun cannot be the antecedent of the elliptic VP in which the corresponding reflexive pronoun is understood. Fiengo and May argue that the source of the degradation in (74), for instance, has nothing to do with the fact that the LF Copy loses some portion of the antecedent features. Rather, their argument is the following. Following Fiengo and May, let us call "α-reflexive" a reflexive pronoun which bears α-occurrences as in (87)a and "β-reflexive" a reflexive pronoun which bears β-occurrences as in (87)b. In general, a β-reflexive is natural because specification by Dependency Theory and specification by Binding Theory are both satisfied:

(89)   Bill$_1$ hit him$^\beta_1$ self

In the representation in (89), Dependency Theory specifies that the reference of the object NP is determined through the reference of another nominal expression in the same phrase marker; the subject *Bill* is the only nominal expression that the object NP can be dependent on in (89). Binding Theory specifies that the object NP is anaphoric to the subject NP in (89). Under the identity condition proposed in Fiengo and May, the indexical structure must be preserved in the reconstruction and hence, if (89) is the antecedent sentence and the elliptic VP contains a pronoun, not a reflexive, LF reconstructions that are allowed under the recoverability/identity condition stated in (87) are either (90)a or (90)b.

(90)   a.   Bill$_1$ hit him$^\beta_1$ self, and John$_2$ did [$_{VP}$ hit him$^\beta_1$]

b.   Bill$_1$ hit him$^\beta_1$ self, and John$_2$ did [$_{VP}$ hit him$^\beta_2$]

Now, (90)a is ruled out because specification by Dependency Theory conflicts with specification by Binding Theory in the second clause; the first specifies that *him* must be referentially dependent on another nominal expression in the same phrase marker (i.e., *John*), while the latter specifies that *him* is not anaphoric to *John*. (90)b is ruled out because the second clause involves a Condition B violation, and in any event, (90)b does not represent the strict identity interpretation even if we put aside the Binding Condition violation.

The LF representation in (91) is the only possible way to represent the strict identity interpretation of (74) in Fiengo and May's system.

(91)   Bill$_1$ hit him$^\alpha_1$ self, and John$_2$ did [$_{VP}$ hit him$^\alpha_1$]

Fiengo and May then argue that the source of the degradation in the strict identity interpretation is the fact that an α-reflexive, rather than a β-reflexive, is used in the first conjunct in (91). With verbs like *hit*, the complement position (as well as the subject position) carries an existential presupposition. An α-reflexive also carries an existential presupposition because a nominal expression bearing α-occurrences must have a referent independently of any other linguistic expression. Therefore, "with verbs like *hit*, a presupposition once established need not be reiterated, as it would be with an α-reflexive, which would be independently valued" (Fiengo and May 1994: 212). β-reflexives, on the other hand, do not carry such an existential presupposition, because a nominal expression bearing β-occurrences is referentially dependent on some other linguistic expression. "α-reflexives therefore will be marked in this circumstance

relative to β-reflexives, given that speakers use the least redundant forms relative to context" (Fiengo and May 1994: 212). This is the way in which Fiengo and May (1994) account for the fact that the strict identity interpretation of (74) is extremely hard to get.

Fiengo and May (1994) then present three types of cases in which the strict identity interpretation is relatively easier to get than in (74) even when the object argument in the antecedent VP is a reflexive pronoun. Let us look at how Fiengo and May argue for these cases, and discuss what our theory of LF Copy can say about them. The first case is something like (92).

(92)   a.   Who hit Bill?

       b.   Bill hit himself, but

       c.   John didn't [$_{VP}$ e].

Fiengo and May (1994: 211) claim that with (92)a and (92)b in the preceding discourse, (92)c can only mean that John didn't hit Bill, the strict identity interpretation. They argue that because a β-reflexive is incompatible for *himself* in (92)b in this discourse context, the only option for *himself* is an α-reflexive, which is required in this discourse regardless of the verb involved. Hence, the LF representation of (92)b is something like (93).

(93)   Bill₁ [$_{VP}$ hit him^{α}₁ + self]

When (93) is the antecedent of (92)c, the LF representation of (92)c is either (94)a or (94)b, because the indexical structure must be preserved under Fiengo and May's definition of the recoverability/identity condition.

(94)   a.   John₂ didn't [$_{VP}$ hit him^{α}₁]

       b.   John₂ didn't [$_{VP}$ hit him^{α}₁ + self]

(94)b is, however, ruled out, because it violates Binding Condition A. The only permissible LF representation is (94)a, giving the strict identity interpretation of (92)c.

However, there is another, probably simpler, way to obtain the relevant strict identity interpretation under the LF Copy analysis without recourse to the complex indexical system. Notice that both (92)b and (92)c are responding to question (92)a, and therefore it seems to be most natural to assume that the antecedent VP to construct the contents of the elliptic VP in (92)c is the VP in question (92)a, not the VP in (92)b. If this is the case, the fact that the strict identity interpretation is the only option for (92)c naturally follows because the LF representation of (92)c is simply (95)a, or if the change from an R-expression *Bill* to the corresponding pronoun *him* applies, it is (95)b (recall that we have seen that this change can apply freely with no cost under the LF Copy operation).

(95)   a.   John didn't [$_{VP}$ hit Bill]

       b.   John didn't [$_{VP}$ hit him]

The second case which is better than (74) in the relevant strict identity interpretation is subordination contexts. Fiengo and May claim that the strict identity interpretation is equally available to the sloppy identity interpretation in (96) (see Hestvik 1992b for strict reflexive phenomena in subordination).

(96)   Bill hit himself before John did

Given that *himself* in (96) can only bear a β-occurrence, (97)a and (97)b are the LF representations of (96) which satisfy Fiengo and May's recoverability/identity condition.

(97)   a.   Bill$_1$ hit him$^\beta_1$ self before John$_2$ did [$_{VP}$ hit him$^\beta_1$]

          b.   Bill$_1$ hit him$^\beta_1$ self before John$_2$ did [$_{VP}$ hit him$^\beta_2$+ self]

(97)b is a representation for the sloppy identity interpretation and both specifications by Dependency Theory and Binding Theory are satisfied; a well-formed LF representation. Fiengo and May (1994: 206) argue that (97)a is also a well-formed representation, giving the strict identity interpretation; the second occurrence of *him* bearing a β-occurrence can be dependent on the matrix subject *Bill* because the second clause is subordinate to the matrix clause (hence, the second *him* and *Bill* can be counted as in the same phrase marker).   This contrasts with the comparable coordination as shown in (90)a, repeated here as (98).

(98)   Bill$_1$ hit him$^\beta_1$ self, and John$_2$ did [$_{VP}$ hit him$^\beta_1$]

The structure of (97)a and the structure of (98) are identical, including indexical structure, except that the former involves subordination and the latter involves coordination. For the second *him* in (98), Fiengo and May argue that specification by Dependency Theory is not satisfied, because *him* bearing a β-occurrence is not dependent on any other nominal expression *in the same phrase marker*, which is the second clause in (98), the first clause in (98) being not counted as the same clause in

which the second *him* appears. I have no alternative to Fiengo and May's analysis for the contrast between coordination and subordination with respect of the availability of the strict identity interpretation.

Although Fiengo and May (1994) claim that (96) "allows both readings [i.e., strict and sloppy] equally well," some speakers still prefer the sloppy identity interpretation to the strict identity interpretation even in the subordination context as in (96). Assuming that it is true that the sloppy identity interpretation is still preferred even in the subordinate context, I maintain that the change from a reflexive to the corresponding pronoun causes some degradation. In terms of our LF Copy analysis under the subset copy principle, I claim that partial copy of *himself* to construct *him* is possible, although leaving the anaphoric features behind under LF Copy costs to some extent.

The third case which Fiengo and May discuss is types of verb. As we have seen above, they argue that the object argument position of verbs like *hit* carries an existential presupposition and hence, using an α-reflexive in the object position, instead of a β-reflexive, redundantly conveys the same existential presupposition. Therefore, with such a verb, α-reflexives are a marked option relative to β-reflexives, resulting in the degradation of the strict identity interpretation. Fiengo and May then argue that with verbs whose complement may be nonextensional, using an α-reflexive in the object position is not a marked option, because with such verbs, the object position itself may carry no existential presupposition so that the existential presupposition which the α-reflexive conveys is not redundant information in this circumstance. Among verbs whose complement may be nonextensional are *defend*, *vote for*, *believe*, and so on. Therefore, Fiengo and May claim that "[i]t now follows that in neutral contexts nonextensional predicates of this class ... will allow not only for unmarked β-reflexives, but also for unmarked α-reflexives, and hence will allow strict as well as sloppy

reflexive readings" (p. 212-213). Fiengo and May (1994) claim that (99)a and (99)b, for instance, may be readily understood on the strict identity interpretation.

(99) a.   Aaron Burr defended himself, and Luther Martin did, too.

(Fiengo and May 1994: 211)

b.   Bush voted for himself, but Barbara didn't.

(Fiengo and May 1991: 213)

It seems, however, that even speakers who find the strict identity interpretation available in sentences like (99) still prefer the sloppy identity interpretation. Therefore, Fiengo and May's claim about the availability of the strict identity interpretation based on predicate-type may not be the whole story. I suggest, again, that LF Copy of the antecedent which leaves the anaphoric feature (hence, loses the exact parallelism in terms of the feature make-up) to construct the elliptic site causes some kind of degradation.

To sum up the points of the discussion so far, we have seen the following three types of cases in which the set of features of the elliptic site is a proper subset of the set of features of the antecedent.

(100) a.   a φ-feature is left out (person/gender/number mismatch cases)

b.   R-features are left out (an R-expression to the corresponding pronoun)

c.   the anaphoric feature is left out (a reflexive to the corresponding
      pronoun)

We have seen that (100)a and (100)c result in some degradation, while (100)b does not. An immediate question is why this is so. One speculation I suggest is that both φ-features and the anaphoric feature are formal features (although they are probably

interpretable) which are deeply related to some formal syntactic phenomena such as agreement and the locality of binding, while R-features are purely semantic features and have nothing to do with formal syntax. Then, a syntactic LF Copy operation requires the full identity of the antecedent and the elliptic site in terms of interpretable formal features, but losing purely semantic R-features under LF Copy does not affect the parallelism requirement of the LF Copy operation.[26]

4.5.3   Two Types of Strict Identity

I have argued that the change from a reflexive pronoun to the corresponding pronoun induces some degradation under LF Copy, although the degree of the degradation may depend on several factors such as what type of verb is employed and whether the clauses are subordinated or coordinated. For the sake of discussion in this subsection, I will put ?? on the strict identity interpretation when the antecedent contains a reflexive pronoun:

(101)   Bill will admire himself, and John will [$_{VP}$ e], too.   (√sloppy; ??strict)

As we have seen in Section 4.5.1, however, there are cases in which a reflexive pronoun is involved but the strict identity interpretation is nonetheless easily available. Most speakers (even those who find the strict identity interpretation in (101) impossible) find the strict identity interpretation of (102) perfect or near perfect. The sloppy identity interpretation is easily available as well.

(102)   Bill will admire a picture of himself, and John will [$_{VP}$ e], too. (√sloppy; √strict)

Recall that on the strict interpretation readily available in (102), what John will admire is the same picture of Bill that Bill will admire. Let us call this "definite strict interpretation." I have argued that the subset copy of an R-expression *a picture of himself* can be the corresponding pronoun *it* for free, which gives the appropriate LF representation of the strict identity interpretation of (102):

(103)   Bill will admire a picture of himself, and John will [$_{VP}$ **admire it**], too.

However, there is actually another imaginable "strict interpretation" in (102); namely, what John will admire is a picture of Bill, not necessarily the same picture of Bill that Bill will admire. Let us call this "indefinite strict interpretation." The indefinite strict interpretation, however, is much harder to get in (102). In this subsection, I will discuss this low availability of the indefinite strict interpretation in (102).

First of all, the sloppy identity interpretation is obtained by a full copy of the antecedent VP, which gives the LF representation in (104).

(104)   Bill will admire a picture of himself, and

John will [$_{VP}$ **admire a picture of himself**]

This is straightforward. Next, I suggest that if the anaphoric feature (*-self*) of the reflexive pronoun is left out under LF Copy, we get the LF representation in (105), which gives the indefinite strict interpretation in the same way as the comparable non-elliptic sentence.

(105)   Bill will admire a picture of himself, and

John will [$_{VP}$ **admire a picture of him**]

Very interestingly, it seems that the availability of the indefinite strict interpretation as in (105) corresponds to the availability of the strict identity interpretation in (101). In other words, speakers who find the strict identity interpretation in (101) impossible also find the indefinite strict interpretation in (102) impossible, while speakers who find the strict identity interpretation in (101) available to some extent also find the indefinite strict interpretation in (102) available to the same extent. If this is the case, the fact can be neatly accounted for by the assumption in the previous subsection that the change from a reflexive to the corresponding pronoun under LF Copy induces some degradation. Note that at this point of LF representation in (105), we do not have to involve any indices to make sure that *him* in the elliptic VP refers to *Bill*, instead of someone else in the discourse, because the same restriction on pronominal interpretation applies to the comparable non-elliptic sentence in (106).

(106)   Bill will admire a picture of himself, and John will admire a picture of him, too.

Unless stress/focus is put on *him* in the second conjunct, *Bill* and *him* must be coreferential. As long as some general theory of the restriction on pronominal interpretation ensures this coreference interpretation both in (105) and (106), no extra machinery is necessary in the theory of LF construction of VP-ellipsis to ensure this coreference interpretation.

The fact that the change from an R-expression to the corresponding pronoun is a natural process under LF Copy can also be seen from simpler examples like (107).

(107) Bill saw a red car, and John did, too.

(107) is naturally uttered with the intention that Bill and John saw the same object, which would be mysterious if a possible LF representation for (107) is only derived by a full copy of the antecedent verb [$_{VP}$ *see a red car*]. The relevant LF representation should be the one in which *a red car* in the antecedent VP becomes the pronoun *it* in the elliptic VP, which gives an LF representation of (107) which is identical, in the relevant respect, to the LF representation of *Bill saw a red car, and John saw it, too.*[27]

Note that Fiengo and May (1994) claim that reconstruction is a symmetrical relation, and hence, the prediction is that if an R-expression can be the antecedent of the corresponding pronoun, the pronoun can be the antecedent of the R-expression, too. Bearing this prediction in mind, let us consider (108). In Fiengo and May's (1994) notation, when an R-expression NP [-pronoun] undergoes vehicle change to [+pronoun], it is represented as [P]NP, which they call "pronominal correlate," functioning as the corresponding pronoun.

(108) Bill [$_{VP_1}$ saw [$_{NP_1}$ a picture of himself]], but John didn't [$_{VP_2}$ see [P]$_{NP_2}$ a picture of himself]], although John did [$_{VP_3}$ see [$_{NP_3}$ a picture of himself]]

In (108), NP1 and NP3 are full R-expressions, while NP2 is the corresponding pronoun (or the pronominal correlate, in Fiengo and May's terminology). NP1 [-pronoun] and NP2 [+pronoun] are nondistinct, and hence, having VP1 as its antecedent, VP2 can be reconstruction. Further, NP2 [+pronoun] and NP3 [-pronoun] are also nondistinct, and hence, having VP2 as its antecedent, VP3 can be reconstruction. Therefore, (108) should be comparable to *Bill saw a picture of himself, but John didn't see it, although*

John did see a picture of himself, which is grammatical. However, the PF realization of (108) is ungrammatical.

(109) *Bill saw a picture of himself, but John didn't, although John did.

This suggests that Fiengo and May (1994) would have to stipulate that a vehicle change from [-pronoun, -anaphor] (i.e., an R-expression) to [+pronoun, -anaphor] (i.e., the corresponding pronoun) is possible, but a change in the opposite direction is not. This is a stipulation, and goes counter to their general assumption that reconstruction is symmetrical. However, the subset copy hypothesis I am proposing claims that the LF construction of the elliptic VP is asymmetrical in a principled way. In this particular case, a subset copy of an R-expression can provide a set of features of the corresponding pronoun, while the opposite is never possible, because the feature composition of the former is a proper superset of the latter. Therefore, the fact illustrated in (109) is another instance in favor of the subset copy hypothesis of VP-ellipsis.

4.5.4 Locality Effect on the Sloppy Identity Interpretation Revisited[28]

I argued in Section 4.2 that the predicate abstraction analysis of VP-ellipsis is too strong for the locality effect on the sloppy identity interpretation of VP-ellipsis. Further, I have mentioned that the locality effect itself has been controversial, even with classic cases as in (110).

(110) *Bill* said that Mary hit *him*, and John said she did [$_{VP}$ e], too.

As Hoji (1998) points out, however, there are cases in which the locality effect is definitely observed; when the antecedent-pronoun relation in the first conjunct is local (i.e., clause-mates) and the intended antecedent-pronoun relation in the second conjunct is non-local (i.e., not clause-mates), the sloppy identity interpretation is not possible, as in (111).

(111)   *Bill* recommended *his* student, but John thinks that Peter did [$_{VP}$ e] (and so he did nothing himself).

The intended reading in the second clause is that John thinks that Peter recommended John's student, which is not available in (111), even with an appropriate discourse context like (112).

(112)   Bill and John have been competing with each other in placing their students for good teaching positions. Ordinary, whenever Bill recommends Bill's student for a position, John also recommends John's student for the same position. Now, Peter, John's colleague, does various things for John. He sometimes even recommends John's students on behalf of John, so that John does not have to do anything.   (cf. Hoji 1998)

In the corresponding non-elided sentence in (113), however, the intended interpretation is marginally available.

(113)   Bill2 recommended his2 student, but John3 thinks that Peter recommended his3 student (and so he did nothing himself).

Therefore, an analysis is called for to give an account for the fact that the relevant sloppy identity interpretation is not possible in (111). I suggest, following Anderson (1979), that *his* in the first conjunct in (111) is an instance of local anaphor when it is anaphoric to the local subject *Bill*. Under LF Copy analysis of ellipsis construction, what is copied contains this local anaphor *his*, and therefore, it cannot be anaphoric to the long-distance subject *John* in (114).

(114)   Bill recommended *his* student, but
                         [anaphoric]

         John thinks that Peter did [$_{VP}$ recommend *his* student]
                                                  [anaphoric]

Therefore, the only possible sloppy identity interpretation is the one in which *his* in the elliptic VP is anaphoric to the local subject *Peter*, which is good as in (115).

(115)   *Bill* recommended *his* student, and John thinks that Peter did [$_{VP}$ e], too.

The elliptic VP here can be understood as "recommend Peter's student."

         On the other hand, if *his* is not anaphoric to the local subject, it is an instance of a pronominal which does not allow local binding in English as in (116).

(116)   Bill2 thinks that Peter3 recommended his2/4 student.

In other words, I am claiming that a genitive "pronoun" like *his* in English is actually an isomorph of an anaphor and a pronominal, and anaphor *his* and pronominal *his* are different syntactic entities in the same way that *himself* and *him* are:

(117) a.   {3rd person, masculine, singular, anaphor, genitive}

       => spelled out as *his*

    b.   {3rd person, masculine, singular, genitive}

       => spelled out as *his*

Note that a subset copy of the anaphor *his* may provide a set of features corresponding to the pronominal *his*, by taking away the feature {anaphor} under LF Copy, and therefore a question is why the relevant interpretation is not even marginally possible as in the strict identity interpretation of *Bill hit himself, and John did, too*. For this question, I suggest that the relevant interpretation is already marginal even without VP-ellipsis as in (113), probably because the parallelism breaks down. Therefore, the sentence is already degraded without the subset LF Copy applies; LF Copy taking away the feature {anaphoric} makes the sentence worse, and the resulting acceptability is lower than in a sentence in which the feature {anaphor} is lost under LF Copy but the structure relation between the antecedent and the bound pronoun is identical in both conjuncts.[29]

    I will give an argument which supports the general idea of the isomorph hypothesis of English genitive pronouns. There is actually a language in which local genitive anaphors and non-local genitive pronominals are spelled out in morphologically different forms, which supports the present isomorph analysis of English genitive "pronouns." In Serbo-Croatian, *svog* 'his' is a local anaphor and hence in (118)a, it can only be anaphoric to the local subject *Petar*, while *njegovog* 'his' is a non-local pronominal, and in (118)b, it cannot be anaphoric to the local subject *Petar*.[30]

(118) a.   Ivan misli da će Petar preporuciti svog studenta.

       Ivan thinks that will Petar recommend self's student.

       'Ivan2 thinks that Petar3 will recommend self's *2/3 student'

    b.   Ivan misli da će Petar preporuciti njegovog studenta.

       Ivan thinks that will Petar recommend his   student

       'Ivan2 thinks that Petar3 will recommend his(pronominal) 1/2/*3 student'

Bearing this property of Serbo-Croatian in mind, let us consider (119), the Serbo-Croatian counterpart of (113), in which the antecedent VP contains the locally bound anaphor *svog*.[31]

(119) a.   Milan će [$_{VP1}$ preporuciti   svog studenta], a

       Milan will [$_{VP1}$ recommend self's student], and

       'Milan will recommend self's student, and'

    b.   Ivan misli da će Petar [$_{VP2}$ e]

       Ivan thinks that will Petar [$_{VP2}$ e]

       'Ivan thinks that Petar will [$_{VP2}$ e]'

Even if an appropriate context like (112) is provided, (119)b cannot mean that Ivan thinks that Petar will recommend Ivan's student. This naturally follows from the fact that the genitive reflexive *svog* 'his' is a local anaphor, given our LF Copy analysis of VP-ellipsis; that is, VP2 in (120)b is constructed by the exact copy of VP1 which contains *svog* 'his' and hence VP2 must contain *svog* 'his' as well.

(120) a.   Milan će [$_{VP1}$ preporuciti   svog   studenta], a

         Milan will [$_{VP1}$ recommend   self's student], and

         '*Milan* will recommend *his* studnets, and ...'

    b.   Ivan2 misli   da će   Petar3 [$_{VP2}$ **preporuciti svog•2/3 studenta**].

         Ivan2 thinks that will Petar3 [$_{VP2}$ **recommend self's•2/3 student**].'

         'Ivan2 thinks that Petat3 will recommend his•2/3 student'

The only possible interpretation in (120)b is the one in which the student is Petar's student, which is available if we make the discourse continuation natural by adding *i* ... *takodje* 'also' in (120)b as shown in (121).

(121)   Ivan misli   da će i   Petar [$_{VP}$ e] takodje

      Ivan thinks that will   Petar [$_{VP}$ e] also

      'Ivan thinks that Petar will [$_{VP}$ e] too'

This is again a natural consequence, because the VP constructed in LF contains the local anaphor *svog* 'his.'

    This argument also has an interesting consequence for Binding Theory. The classic version of the Binding Conditions proposed by Chomsky (1981) predicts that anaphors and pronominals are in complementary distribution. This is because by definition an anaphor must be bound in its governing category, a pronominal must be free in its governing category, and the governing category is defined in the same way for anaphors and pronominals. The prediction is borne out in almost every case as in (122).

(122) a.   *John* likes *himself/*him.*

    b.   *John* thinks that Mary likes **himself/him.*

A notorious counter example to this prediction is (123), where the genitive "pronoun" *their* can appear in the position in which the anaphor *each other* can also appear.

(123) a.   *The children* like *their* friends.

    b.   *The children* like *each other's* friends.

    To solve this problem, Chomsky (1986a), following the idea of Huang (1983), proposes a theory in which the relevant local domain of Binding Conditions is defined relative to a potential bindee, maintaining that genitive pronouns are exclusively "pronominal": they must be free in the local domain. According to Chomsky (1986a), the local domain of α is the smallest NP or IP containing α in which α can *potentially* satisfy the relevant binding condition. For instance, the pronominal *their* in (123)a can potentially satisfy the relevant binding condition (i.e., Condition B) in the object NP, and hence the object NP is the local domain for *their* in (123)a. *Their* actually satisfies Condition B in (123)a and hence, nothing prevents the anaphoric relation between the subject *the children* and *their*. The sentence is good in the relevant interpretation. The anaphor *each other* in (123)b, on the other hand, cannot potentially satisfy the relevant binding condition (i.e., Condition A) in the object NP and hence, the object NP is not the local domain for *each other* in (123)b. The next smallest NP or IP which contains *each other* is the entire sentence IP. *Each other* can potentially satisfy Condition A in IP (if the subject NP is the antecedent) and hence, the entire sentence IP is the local domain for *each other* in (123)b. *Each other* actually satisfies Condition A in IP if it is

coindexed with the subject NP in (123)b; hence, the sentence is good in the relevant reading.

Let us now return to (111). If genitive pronouns are exclusively pronominal as Chomsky (1986a) asserts, nothing syntactic should prevent the second clause in (111) from meaning that John thinks that Peter recommended John's student. The VP-ellipsis data I presented above strongly argue for another proposal to solve the problem of apparent counter examples to the prediction in Chomsky (1981) that anaphors and pronominals are in complementary distribution. Following Anderson (1979), Chomsky (1981) suggests that locally bound genitive pronouns in English are actually local anaphors. For instance, *their* in (123)a in the relevant local interpretation is an obligatory variant of *themselve's*. Insofar as our argument is on the right track, it gives independent support for the Chomsky/Anderson-type approach: a genitive "pronoun" in English is an isomorph of an anaphor and a pronominal.

Another prediction in the present discussion is that if the anaphoric element allows long distance binding as well as local binding, the relevant sloppy identity interpretation should be possible in an example corresponding to (111). The prediction is borne out in Japanese. First, observe that Japanese reflexive *zibun* 'self' is a long distance anaphor which allows long distance binding as well as local binding as shown in (124).

(124) John-wa [₁ₚ Bill-ga zibun-no gakusei-o suisensita to] omotteiru
      John-TOP [₁ₚ Bill-NOM self-GEN student-ACC recommended COMP] think
      'John₂ thinks that Bill₃ recommended self's₂/₃ student'

Now let us consider (125) in which the genitive anaphor *zibun* 'self' is locally bound in the antecedent VP.[32]

(125) a. Bill-wa zibun-no gakusei-o suisensita,
        Bill-TOP self-GEN student-ACC recommended,

     b. John-wa [₁ₚ Peter-ga [ᵥₚ e] sita to] omotteiru
        John-TOP [₁ₚ Peter-NOM [ᵥₚ e] did COMP] think
        'Bill recommended self's student; John thinks that Peter did [ᵥₚ e]'

(125)b can mean that John thinks that Peter recommended John's student, given an appropriate scenario like (111) above (cf. Hoji 1998 for a similar discussion). Given that LF Copy of the antecedent VP in (125)a constructs (126) as the LF representation of (125)b, the relevant reading of (125)b naturally follows from the fact that Japanese *zibun* allows long distance binding.

(126) John-wa [₁ₚ Peter-ga [ᵥₚ **zibun-no gakusei-o suisen**] sita to]
      John-TOP [₁ₚ Peter-NOM [ᵥₚ **self-GEN student-ACC recommend**] did COMP]
      omotteiru
      think

Nothing syntactic prevents the reflexive *zibun* from being bound by the matrix subject *John* in (126). Note that in (125)b, another sloppy identity reading, that John thinks Peter recommended Peter's student, is also available if we add *mo* 'also' after Peter, which makes the sentence more natural in this reading as in (127).

(127) a. Bill-wa zibun-no gakusei-o suisensita,
        Bill-TOP self-GEN student-ACC recommended,

b. John-wa [$_{IP}$ Peter-mo [$_{VP}$ e] sita to] omotteiru

John-TOP [$_{IP}$ Peter-also [$_{VP}$ e] did COMP] think

'Bill recommended self's student; John thinks that Peter did [$_{VP}$ e]'

4.5.5 Defective Pronouns and E-Type Anaphors

Finally, I will discuss cases in which the antecedent pronoun is a variable bound by a quantificational expression. It has been observed that if the antecedent pronoun is a variable bound by a quantificational NP, the strict identity interpretation is very hard to get. Observe the contrast between (128)a and (128)b.

(128) a. *Bill* will correct *his* paper, and the professor will [$_{VP}$ e], too.

  b. *Every student* will correct *his* paper, and the professor will [$_{VP}$ e], too.

Suppose that *his* is anaphoric to the subject *Bill* in (128)a and that *his* is anaphoric to the subject *every student* in (128)b. The sloppy identity interpretation is readily available in both (128)a and (128)b. However, while the second clause in (128)a can also easily mean that the professor will correct Bill's paper (i.e., the strict identity interpretation), it is very hard to get the reading that the professor will correct the papers of all the students in (128)b. Let us consider what the source of the contrast between (128)a and (128)b in the strict identity interpretation might be. In both, *his* in the first conjunct is locally bound and hence, as we have just discussed in the previous section, this is the anaphor *his* with the feature composition {3rd person, singular, anaphoric, D}.

Now, if a full copy of the antecedent VP is constructed in the elliptic VP, we get the LF representations in (129).

(129) a. Bill will correct his paper, and the professor will [$_{VP}$ **correct his paper**], too.

  b. Every student will correct his paper, and the professor will [$_{VP}$ **correct his paper**], too.

These representation gives only the sloppy identity interpretation, because the VP which is constructed by LF Copy contains the anaphor *his* which must be locally bound. Let us consider first why the strict identity interpretation is easily available in (128)a.[33] We have a device to obtain the appropriate LF representation under LF Copy. An R-expression *his paper* in the first conjunct in (128)a can change into the corresponding pronoun *it*, which is exactly the LF representation for the strict identity interpretation of (128)a. Let us next consider why the strict identity interpretation is very hard to get in (128)b. This time, the change from an R-expression to the corresponding pronoun *it* does not provide an appropriate LF representation. (130) does not make any sense when *his* is understood as a variable bound by *every student*.[34]

(130) *Every student* will correct *his* paper, and the professor will correct it, too.

The strict identity interpretation of (128)b, which is what we want, would be obtained if we had an LF representation like (131), where *their* refers to the collection of the students in question.

(131) Every student will correct his paper, and the professor will [$_{VP}$ **correct their paper(s)**], too.

Note that the corresponding non-elided sentence is grammatical on the relevant interpretation. Here *their* is not interpreted as a variable bound by a quantificational expression *every student*, but rather it refers to the collection of the students in question which is presupposed when a quantificational NP is used. This is one kind of "E-type pronouns" which Evans (1980) brought to light.[35]

Recall first that I have argued in Section 4.5.4 that a locally bound genitive pronoun is actually an anaphor, and hence *his* in (131) in the relevant interpretation is the set of features {3rd person, singular, masculine, anaphor, D}, while *their* in (131) is not locally bound, and hence is a pronominal with the feature composition {3rd person, plural, D}. It is clear under the present LF Copy analysis that a copy of anaphor *his* cannot turn into pronoun *their*. There is, however, a way to make a copy of *his* not inconsistent with the feature composition of *their*. That is, if we take the features {singular, masculine, anaphor} out of *his*, we get a defective pronoun with features {3rd person, D} and the relevant LF representation of (128)b is something like (132) (I have omitted Case feature for ease of exposition).

(132)   *Every student* will correct *his* paper, and

the professor will [$_{VP}$ correct *{3rd person, D}* paper(s)], too.

As I have discussed in Section 4.5.1, although this set of features is "defective" on the PF side in English in that it has no corresponding overt pronoun, it may function perfectly on the LF side. It is not unreasonable, therefore, to suggest that the source of the degradation in (128)b is the fact that part of the φ-features and the anaphoric feature have been taken away under LF Copy. The contrast between (128)a and (128)b has been accounted for in this way.

Next, let us compare (128)b to the sloppy identify interpretation of (133).

.

(133)   *John* will correct *his* paper, and Mary and Bill will [$_{VP}$ e], too.

The LF representation of the sloppy identity interpretation of (133) is obtained by taking the features {singular, masculine} out of the antecedent pronoun *his* {3rd person, singular, masculine, anaphoric, D}; the resulting defective set of features is {3rd person, anaphoric, D} as in (134).

(134)   *John* will correct *his* paper, and

Mary and Bill will [$_{VP}$ correct *{3rd person, anaphoric, D}* paper(s)], too.

Notice that the resulting set of features contains the feature {anaphoric} because the defective pronoun in (134) is locally bound by the subject *Mary and Bill*. Therefore, with the defective pronoun in (134), only part of the φ-features is taken away under LF Copy, while with the defective pronoun in (132), both part of the φ-features and the anaphoric feature are taken away. I tentatively suggest that this difference is the source of the contrast between the sloppy identity interpretation of (133) and the strict identity interpretation of (128)b: the former involves a φ-feature mismatch only, inducing a mild degradation, while the latter involves both a φ-feature mismatch and the anaphoric feature mismatch, inducing a serious degradation.

However, this should not be the whole story. Consider (135) on the strict identity interpretation, which is seriously degraded in the same way as (128)b.

(135) *Every student* thinks that *he* is smart, and the professor does [$_{VP}$ e], too.

This time, in contrast to (128)b, *he* is not locally bound and hence, its feature make-up must be that of a pronominal, not that of an anaphor; i.e., {3rd person, singular, masculine, D}. A subset copy of this set of features will give a defective set of features {3rd person, D}, which is not inconsistent with the desired pronoun *they* to give the strict identity interpretation. Therefore, under LF Copy, only part of the ϕ-features is lost out of the antecedent pronoun *he*, but the degradation is more serious than in cases in which only part of the ϕ-features is lost under LF Copy, such as in (133). A more comparable example to (135) is the sloppy identity interpretation of (136).

(136) *John* thinks that *he* is smart, and Mary and Bill do [$_{VP}$ e], too.

The sloppy identity interpretation of (136) is mildly degraded, but a defective set of features of the pronoun in the elliptic site is {3rd person, D}: only part of the ϕ-features (i.e., {singular, masculine}) is lost out of the antecedent pronoun *he*. Therefore, the contrast between the strict identity interpretation of (135) and the sloppy identity interpretation of (136) remains mysterious in the present account.

Notice, however, that there is a significant difference between (135) and (136) in the relevant interpretation, which I suggest is the source of the contrast in question. Let us look at the non-elliptic counterpart of (135) and (136):

(137) a.   *Every student* thinks that *he* is smart, and the professor thinks that *they* are smart, too.

b.   *John* thinks that *he* is smart, and *Mary and Bill* think that *they* are smart, too.

In (137)b, both the pronoun *he* and the pronoun *they* are anaphoric to their matrix subject, *John* and *Mary and Bill*, respectively. Therefore, the structure is parallel. The only difference is ϕ-feature specification whose mismatch between *he* and *they* is the source of degradation as I have argued. The structure in (137)a, on the other hand, is not semantically parallel in the sense that the pronoun *he* in the first conjunct is a variable bound by the matrix subject, while the pronoun *they* in the second conjunct is not bound by the matrix subject. (138) informally illustrates this lack of parallel interpretation in (137)a.

(138) a.   *Every student* [$_{VP1}$ thinks that *he* is smart], and

└─ variable binding ─┘

b.   the professor [$_{VP2}$ thinks that *they* are smart], too.

↓

refers to a collection of students whose description is provided by the antecedent clause.

The semantic parallelism does not hold between VP1 and VP2 in (138), which makes ellipsis or deaccenting of VP2 impossible under Rooth/Tomioka theory of pronominal interpretation in phonologically reduced structures. Therefore, the strict identity interpretation of (135) is impossible.
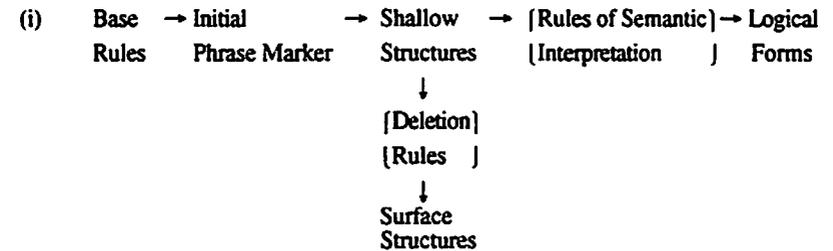
4.6 Summary of Chapter 4

In this chapter, I have explored how the subset copy principle gives the relevant LF representation of VP-ellipsis. First, I have introduced the observation by Tancredi (1992) and Tomioka (1997), among others, that restrictions on pronominal interpretation and scope interpretation are identical in VP-ellipsis and the corresponding non-elided structures, and proposed that a full copy of the antecedent features provides an appropriate syntactic LF representation without introducing indices and/or λ-notations. A semantic/pragmatic theory applies to this LF representation at the LF interface and correctly predicts (im)possible interpretations. When a full copy cannot provide a correct LF representation, I proposed that copying a proper subset of the antecedent features provides a possible LF representation of the intended interpretation. The generalization is that when part or all of the φ-features or the -*self* portion of a reflexive pronoun are taken away under LF Copy, the sentence is degraded, while when only R-features are taken away and the φ-features are left intact, the sentence is not degraded. A speculation about this generalization is that the anaphoric feature and φ-features are formal features (although they are probably interpretable) inducing syntactic phenomena like agreement and the locality effect of binding. R-features, on the other hand, are purely semantic features. The syntactic LF Copy operation is sensitive to the loss of formal features under LF Copy, inducing some degradation, while it is not sensitive to purely semantic features and hence, the loss of R-features under LF Copy induces no degradation.

Notes to Chapter 4

[1] Note that if some stress/focus intonation is put on *his* in (4)b, there will be other possible interpretations. Such interpretations are not available in the corresponding VP-ellipsis in (1)b, of course, because there is no way to put stress/focus intonation on elements in the elliptic VP.

[2] Note that although Sag (1976) claims that the relevant recoverability/identity condition on VP-ellipsis should be stated in terms of alphabetic variance of λ-expressions at "Logical Forms," he maintains that VP-ellipsis is derived by a "Deletion Rule." The general picture in his system is illustrated in (i) (p.98).

(i) Base → Initial → Shallow → [Rules of Semantic]→ Logical
     Rules   Phrase Marker   Structures   [Interpretation]   Forms
                              ↓
                         [Deletion]
                         [Rules]
                              ↓
                         Surface
                         Structures

Therefore, Sag's theory seriously involves globality (that is, a Deletion Rule is conditioned by Logical Forms, even though there is no obvious direct connection between them). This is not desirable in the current practice of syntactic theories.

[3] Below and throughout this chapter, I will use *italics* to represent the anaphoric relation between two or more NP's. When there are more than one anaphoric relations in the example, I will use numeral indices, following tradition. Note, however, that indices here are introduced just for ease of exposition and are not syntactic entities unless otherwise noted. In Fiengo and May (1994) and Kitagawa (1991), as well as in Chomsky (1980, 1981, 1986a), indices are real syntactic entities playing significant roles in their theories, and hence, when I review or discuss Fiengo and May (1994) and Kitagawa (1991), I may use indices in their way as real syntactic entities.

[4] Although Lasnik (1972) states that the principle applies to co-ordinated structures, it applies more generally to phonologically reduced structures, including subordination, a question/answer pair, and so on.

[5] As Christopher Tancredi (personal communication) noted, one may wonder the particle *mo* 'also' attached to the subject *Yamada sensei* 'Mr. Yamada' in (20)b may induce this parallelism effect. However, if we change the conjunction so that *mo* 'also' can be replaced by the nominative Case marker *ga*, the judgments remain the same as in (i).

(i) a. Dokoka-ni dono gakusei-mo suwatta atode ...
         somewhere every student sat after
         'After every student sat somewhere ...'

b.　Yamada sensei-ga　dokoka-ni　suwatta
　　　teacher-NOM　somewhere　sat
　　　'Mr. Yamada sat somewhere'

[6] Williams (1977) actually argues, following Wasow (1972), that this empty VP has an articulated internal structure in the same way as when all the lexical items are present, except that all terminal nodes have an empty category [e] rather than real lexical items. This point, however, is not relevant to the present discussion and therefore I will use the notation [$_{VP}$ e] to represent the empty VP.

[7] Sag's (1976) theory makes essentially the same prediction as Williams' theory regarding the locality effect of the sloppy identity interpretation, although their exact executions appear to be different.

[8] Christopher Tancredi (personal communication) suggests that the following fact may be relevant to the grammaticality of the sloppy identity interpretation in (28); that is, *John* in (28)b has to be included in the set of people (implicitly) quantified over by *anyone* in (28)a, because if we force John to be outside of the people quantified over by anyone, the sentence is ungrammatical.

(i)　a.　Did *anyone* here admitted that Mary had bribed *him*?
　　b.　* No, but John admitted that she had.

I will not pursue, however, the issue of exactly how to theorize this observation.

[9] Sag (1976) did not provide an analysis to account for the contrast between sentences like (31) and sentences like (32)/(33) with respect to the availability of the strict identity interpretation. However, once the contrast is recognized, Sag must make the same kind of stipulation as Williams did. That is, Sag has to say that his rule which changes a pronoun to a variable is optional, while his rule which changes a reflexive to a variable is obligatory (see Kitagawa (1991: footnote 4, p.501))

[10] This non-coreferential interpretation in (43)c is the speaker's intention which is linguistically encoded. Therefore, in reality, it is possible that the person referred to by *John* and the person referred to by *his* turns out to be the same person by accident.

[11] Note that it is another non-trivial issue why the restrictions on pronominal interpretation of conjoined structures are weakened when there is stress/focus on the pronoun (or when the speaker points to some person in the situation in which the conversation is taking place). This is well beyond the scope of the present project and I will not discuss it here.

[12] Some speakers find the sloppy identity interpretation of (49)b nearly perfect and some find it fairly degraded, but all the speakers, as far as I can see, find that (49)b is less acceptable than (49)a. See Kitagawa (1991) for a report and discussion on the judgment variation when feature mismatch is involved.

[13] We need some caution, however, when 1st person and/or 2nd person is involved. Consider (i) which is a conversation between Speaker A and Speaker B.

(i)　A: Will you wash your car?
　　B: Yes, I will [$_{VP}$ e].

(iB) is a perfectly grammatical sentence meaning "I will wash my car." At a first glance, (i) seems to be an instance of a change from the pronoun *your* to the pronoun *my*. However, it should be noted that utterance A and utterance B are produced by different speakers A and B in (i). It would be generally true that in a conversation between two persons, when the speaker says *I, my*, etc., the conversation partner automatically understands them as *you, your*, etc., and when the speaker says *you, your*, etc., the conversation partner automatically understands them as *I, my*, etc. It is reasonable therefore to assume that when Speaker B in (i) understands the utterance by Speaker A, all the instances of the second person pronouns are replaced by corresponding 1st person pronouns in the cognition of Speaker B; that is, when Speaker B hears (iA), his LF representation (ii) is automatically replaced by (iii).

(ii)　Will you wash your car?
(iii)　Will I wash my car?

As far as (iii) is the antecedent LF representation for B, B's utterance in (i)B involves no change of person features from the antecedent. Hence, there is no degradation in (i), contrasting to (vi), in which both clauses are uttered by a single speaker and the sloppy identity interpretation involves a person feature mismatch, and is degraded.

(iv)　You will wash your car, and I will, too.

[14] Sigrid Beck (personal communication) points out that the following examples suggest that PRO actually has φ-features.

(i)　a.　Mary wants [PRO to recommend herself]
　　b.　They want [PRO to be doctors]

In (i), *herself* and *doctors* seem to agree with PRO with respect to φ-features. If this is the case, the fact in (i) and the fact in (60) make contradictory predictions: PRO has φ-features and has no φ-features. I have no satisfactory solution to this problem, and I only suggest that agreement in (ii) can be established between the matrix subject and *herself* or *doctors* and that PRO still can have no φ-feature specification.

[15] As pointed out by Christopher Tancredi (1997, personal communication), however, the situation may not be as simple as Fiengo and May (1994) claim. The overt counterpart of (63), which is (i), is bad in the interpretation as in (ii), which Tancredi calls "self-oriented" interpretation.

(i)　Mary will admire *John*, and *he* thinks that Sally will admire *John*, too.
(ii)　..., and John, (λx, [x thinks that Sally will admire x])

However, (i) is good in the relevant coreferential interpretation when a stress is put on *he*, which induces "non-self-oriented" interpretation. For instance, (i) with the relevant stress pattern may well be uttered in a situation that the person John thinks that Mary and Sally will admire the same person, but John does not know that the person they will admire is John himself. In other words, in John's thought, the person who will be

admired by Mary and Sally is not identified as John himself. Note that this is not an instance of the traditional "accidental coreference," because the speaker's intension can clearly be the coreference between *John* and *he*. In this non-self-oriented interpretation, (i) is good, voiding the Condition C violation effect. I will discuss a similar pattern in Section 4.5.2. Now, it is true that the non-self-oriented interpretation is available in (62) with the appropriate stress on *he*, and hence, the LF representation with no change from *John* to *him* is necessary in this interpretation. Notice, however, that the usual self-oriented interpretation (with no special stress on *he*) is still available in (62), as far as I can see. In other words, an interpretation other than the one which is allowed in (i) is still available in (62), which cannot be accounted for if the LF representation is (63), which allows only the non-self-oriented interpretation. Therefore, I assume, with Fiengo and May, that there needs to be some mechanism which changes an R-expression into the corresponding pronoun under LF reconstruction of the elliptic VP. In the following discussion throughout this chapter, I assume that the coreference/bound interpretation we are interested in is the usual self-oriented interpretation, and I will put aside a possibility of non-self-oriented interpretation.

[16] Fiengo and May's (1994) actual representation does not use a pronoun in the elliptic VP, but rather they use the full copy of the antecedent nominal expression and put a superscript P on the left of the NP as in (i), which they call the "pronominal correlate."

(i)   Mary will admire *John*, and *he* thinks that Sally will [$_{VP}$ admire ^{P}**John**], too.

I will use the real corresponding pronoun in the LF representation, and I will momentarily argue that in this kind of vehicle change, what is actually constructed in the elliptic site is the corresponding pronoun, not the full NP marked [+pronoun].

[17] I have put aside the (structural) Case features in the discussion for ease of exposition.

[18] I will discuss another marginally possible interpretation of (68) in Sections 4.5.3.

[19] Indefinite DP's behave quite differently from other quantificational DP's like *every picture*, *every other picture*, etc. for which the story I have just sketched will not work because (i) does not make any sense.

(i)   *Bill saw every other picture, and John saw it, too.

I will discuss a related topic in Section 4.5.5.
    Sigrid Beck (personal communication) suggests another way to obtain the semantic identity between *a picture of himself* and *it* in (73), maintaining *a picture of himself* as a quantificational expression. When the object DP raises, it leaves a variable in its original position as shown in (ii).

(ii)   [$_{IP}$ Bill [[a picture of himself]$_2$ [$_{VP1}$ saw t2]], and John [$_{VP2}$ saw it], too.

If the pronoun *it* in VP2 is also interpreted as a variable bound by *a picture of himself*, VP1 and VP2 are semantically identical so that VP-ellipsis or deaccenting is possible. Note here that if VP2 is an elliptic VP and its contents are provided by LF Copy of VP1 after QR, vehicle change from *a picture of himself* to the pronoun *it* is no longer necessary to obtain the same referent interpretation. Hence, if this is the only way to

obtain the relevant LF representation of (68), the argument in the text is not an instance of the vehicle change effect. A question remains, however, regarding how this cross-sentential variable binding is ever possible in (ii), which is not possible with other quantificational expressions like *every other picture* as in (i).

[20] This is a departure from Burzio (1991), who proposes that reflexives have no relevant features.

[21] Note that Hestvik (1992a), for instance, proposes that pronouns also move to some functional category in LF. If this is the case, the difference between reflexives and pronouns cannot simply be attributed to whether or not they have a feature which induces LF movement. The difference must then reside in their features other than the ones which induces LF movement. It still should be the case that pronouns and reflexives have different features because their grammatical functions are very different, but it is now less clear whether reflexives really have more features than the corresponding pronouns do. I simply stipulate that they do, as is suggested from the morphological make-up of reflexives and pronouns in English.

[22] A note is in order here. Given the feature specifications in (75), it is true that a subset copy of an R-expression cannot provide a set of features of the corresponding reflexive. However, suppose that only φ-features of an R-expression are copied, then the resulting set of features (i.e., φ-features) is not identical to a set of features for the corresponding reflexive, but is not inconsistent with it, either. Then, why is a construction of a reflexive out of an R-expression not marginally possible? For this question, I suggest that the resulting set of features is identical to the corresponding pronoun, it is naturally interpreted as the pronoun, and that this makes it very difficult to even marginally interpret the set of features as the corresponding reflexive.

[23] Note that a coreferential interpretation between *him* and *John* is possible in the "non-self-oriented" interpretation which is obtained by putting a stress on *John* in (78), but in such an interpretation, the LF of the second clause is not represented as in (79) (see footnote 15).

[24] Note that Fiengo and May do not claim that the change from a pronoun to a reflexive or from a reflexive to a pronoun is an instance of vehicle change. I will review below Fiengo and May's treatment of the change from a reflexive to the corresponding pronoun.

[25] See footnote 15.

[26] Note that separating part of purely semantic features does not seem to be allowed. See the discussion in Section 2.6 of Chapter 2.

[27] Christopher Tancredi (personal communication) questions whether the speaker's intention of the same referent interpretation in (107) is actually linguistically encoded. If the change from an R-expression (i.e., *a red car*) to the corresponding pronoun (i.e., *it*) is the real LF representation as in (i), sentence (ii) should be as good as sentence (iii).

(i)   Bill saw a red car, but John didn't [$_{VP}$ see it]
(ii)   Bill saw a red car, but John didn't, although he DID see a red car.

(iii)   Bill saw a red car, but John didn't see it, although he DID see a red car.

Unfortunately, (ii) in the relevant reading is not as good as (iii), contrary to what the proposed theory predicts. However, (ii) is not as bad as (iv), either, which is the non-elided counterpart of (ii) when there is no change from *a red car* to the corresponding pronoun *it* in the elliptic site.

(iv)   *Bill saw a red car, but John didn't see a red car, although he DID see a red car.

I have nothing substantial to say about these facts at the moment.

[28] A substantial portion of this subsection was presented at the *Student Conference in Linguistics (SCIL)* 10, at Northwestern University, June 7, 1998 (see Oku to appear c). I am deeply grateful to Masao Ochi for his help with the presentation of the paper.

[29] See Section 4.5.5 for a related discussion.

[30] I thank Sandra Stjepanović for helping me with Serbo-Croatian data.

[31] Some speakers find (119)b bad, regardless of the intended interpretation, because for such speakers, a clitic (*će*, in this case) is not compatible with VP-ellipsis for some reason. The following sentence, in which the clitic *će* 'will' is replaced by a non-clitic *neće* 'not-will', is good for all the speakers, and the possible interpretation of VP2 is constrained in the same way as in (119)b, and the relevant point in the following argument remains the same when (119)b is replaced by (i).

(i)   Ivan   misli   da   Petar neće   [$_{VP2}$ e]
        Ivan   thinks   that   Petar not-will [$_{VP2}$ e]
        'Ivan thinks that Petar will not [$_{VP2}$ e]'

[32] It is actually controversial whether Japanese structures like (125)b involve VP-ellipsis plus *suru*-support, similar to English VP-ellipsis plus *do*-support, but for the sake of discussion, I assume that the contents of the elliptic VP in (125)b is constructed by LF Copy.

[33] Fiengo and May (1994) encounter the same question for a different reason internal to their theory, and a solution they suggest is essentially the same as the one I am going to suggest here (Fiengo and May 1994: footnote 17, P.213).

[34] Note that if we add some distributive operator to the second conjunct, the sentence becomes good as in (i) (Christopher Tancredi (personal communication) informed me of this type of "quantification subordination" effect).

(i)   *Every student* will correct *his* paper, and in each case, the professor will correct it, too.

I will put aside this type of case in the discussion.

[35] A characteristic of E-type pronouns Evans (1980) informally describes is that "their reference [is] fixed by a description recoverable from the antecedent, quantifier-containing, clause" (p. 344). A full discussion of E-type pronouns is beyond the scope of the present study. The following discussion is a sketchy suggestion of how the proposed LF Copy theory can deal with some properties of VP-ellipsis when it contains this kind of E-type pronouns.

Chapter 5

Scrambling, Null Arguments, and

A Theory of Covert Selection

5.1 Introduction

In Chomsky (1981), the selectional property of each head (for instance, the θ-assigning property of a verb) is satisfied at D-structure (as well as at S-structure and LF, given the Projection Principle); hence, the entire phrase structure has been built before it undergoes any syntactic operations. Although one of the characteristics of the minimalist program (Chomsky 1992, 1994, 1995a, etc.) is to eliminate D-structure and S-structure as linguistically significant levels of representation, one aspect of the "D-structure" properties has been maintained in standard practice in the literature. That is, a head-complement merger (which is motivated by the selectional property of the head (Chomsky, class lecture, fall 1995)) must take place before any structure is built up above the head. Let us call this the "selection-first" property of phrase structure building. Bošković and Takahashi (1998) propose a novel theory of Japanese scrambling in which (LF) Lowering movement into a θ-position is possible, and hence, the θ-assigning property of a head can be satisfied (long) after more structure has been built above the head. Therefore, Bošković and Takahashi's theory of scrambling is a serious challenge to the selection-first assumption.

In this chapter, exploring the implications of Bošković and Takahashi's proposal, I argue that selection-first is not necessarily the only option in phrase structure building, and that the selectional property of a head can be satisfied in a later stage of the derivation where more structure has been built above the head in question. In Section 5.2, as a point of departure for the discussion in this chapter, I will review Bošković and Takahashi's (1998) LF analysis of Japanese scrambling. In Section 5.3, I claim that Bošković and Takahashi's theory naturally extends to an LF Copy analysis of null argument structure in Japanese, and I discuss consequences of this extension. In Section 5.4, I discuss English VP-ellipsis and VP-fronting in terms of covert complement selection. In Section 5.5, I discuss the technical execution of the radical acyclic merger in covert syntax. Section 5.6 is the summary of this chapter.

5.2 Bošković and Takahashi (1998): An LF Analysis of Scrambling

Since the onset of the last resort view of Move-α (Chomsky 1986a), optional movements like Japanese scrambling have been a point of controversy. Miyagawa (1997), for instance, argues that scrambling is actually feature-driven and hence the scrambling movement is not optional (what is optional is selection of the relevant driving feature); Fukui (1993), on the other hand, argues that optionality of movement is allowed under certain conditions. Bošković and Takahashi (1998) propose a novel theory of scrambling: that is, so-called scrambled phrases are base-generated at their surface position and lower to a θ-position in covert syntax to check a θ-feature of the predicate, assuming that θ-roles are features to be checked.[1] Therefore, the movement involved is LF Lowering which is feature-driven and obligatory. This is consistent with the last resort view of movement. The derivation is demonstrated in (1), where *sono*

hon 'that book' is base-generated at its surface position and lowers to a θ-position in covert syntax to check the undischarged object θ-feature of the verb *watasita* 'handed'.[2]

(1) a. *Overt Syntax*

sono hon-o   Bill-ga [Mary-ga John-ni watasita to]   omotteiru

that book-ACC Bill-NOM [Mary-NOM John-DAT handed COMP] think

'Lit. That book, Bill thinks that Mary handed to John'

b. *Covert Syntax*

Bill-ga [Mary-ga John-ni sono hon-o   watasita to]   omotteiru

Bill-NOM [Mary-NOM John-DAT that book-ACC handed COMP] think

L_____ LF Lowering _____↑

One characteristic of Japanese (long-distance) scrambling is its LF undoing effect (Saito 1989), which contrasts with, for instance, English topicalization. I will first present one of Bošković and Takahashi's arguments to highlight this contrast between Japanese and English. Let us consider (2)a, where the embedded object *dare-no shasin-o* 'who-GEN picture-ACC' appears in front of the non-interrogative matrix clause, but still takes embedded scope.

(2) a. *Overt Syntax*

[dare-no shasin-o]   John-ga [dare-ga   katta ka] sitteiru

[who-GEN picture-ACC] John-NOM [who-NOM bought Q] know

'John knows who bought some pictures of who'

b.   *Covert Syntax*

   John-ga   [dare-ga   [dare-no   shasin-o]   katta   ka] sitteiru

   John-NOM [who-NOM [who-GEN picture-ACC]   bought Q] know

   |_____ LF Lowering _____↑

Given that a *wh*-phrase is licensed only when it is in the scope of an interrogative Comp (Q), LF undoing is necessary to obtain the structure for the right interpretation as in (2)b. Based on this observation, Saito (1989) concludes that scrambling can be undone in LF. This effect of LF undoing is straightforward in Bošković and Takahashi's analysis. *Dare-no shasin-o* 'who-GEN picture-ACC' is base-generated at the surface position as in (2)a and lowers to check the object θ-feature of the embedded verb *katta* 'bought' as in (2)b. This sharply contrasts with English Topicalization like (3), where the embedded object *some pictures of who* appears in front of a non-interrogative matrix clause, which makes the sentence ungrammatical.

(3)   * [Some pictures of who]₂, John knows [who bought t₂]

(3) is very bad, unlike a simple subjacency violation as in (4).

(4)   ?? [Some pictures of Mary]₂, John knows who bought t₂.

If LF undoing like Japanese (2) were possible in English, sentence (3) would have an LF representation like (5) and thus would be as good as *John knows who bought some pictures of who.*

(5)   John knows [who bought [some pictures of who]].

   |_____ LF Lowering _____↑

This shows that LF undoing (for the purpose of licensing of the *wh*-phrase) is not possible in English.

To account for this difference between Japanese and English, Bošković and Takahashi propose (6).

(6)   a.   θ-features are "weak" in Japanese

       b.   θ-features are "strong" in English

             ("weak/strong" in the sense of Chomsky 1992, 1994)[3]

Weak features must be checked before the derivation arrives at the LF interface and not necessarily in overt syntax. Hence, in Japanese, there is nothing wrong with derivations in which a phrase is base-generated at a non-θ-position, as long as the phrase checks the θ-feature of the predicate by means of LF Lowering before the derivation arrives at the LF interface. English θ-features, on the other hand, are strong; strong features must be checked in overt syntax, otherwise, the derivation crashes. Hence, for (3), a derivation in the same way as in Japanese scrambling would leave the strong θ-feature of the verb *bought* unchecked in overt syntax, and the derivation crashes. The only way to derive the surface order of (3) is to base-generate the phrase *some pictures of who* in the embedded object position to check the strong θ-feature, and then topicalize it to the surface position. Now, there is no motivation for LF Lowering of the fronted phrase after topicalization, since the θ-feature has already been checked, and the last resort principle of movement prevents LF Lowering. *Who* in the topicalized phrase

stays outside of the scope of the interrogative Comp in LF, and thus the sentence is ungrammatical.[4]

The argument above shows that it is possible that Japanese scrambling is undone in LF, but Bošković and Takahashi's proposal actually makes a stronger claim that scrambling is obligatorily undone in LF, because θ-features of the predicate, weak though they are in Japanese, must be checked eventually before the derivation arrives at the LF interface. Sohn (1994) provides evidence that scrambling actually must be undone in LF. Consider (7), where the "scrambled" quantificational phrase *daremo-ni* 'everyone-DAT' cannot take scope over the matrix quantificational subject *dareka-ga* 'someone-NOM.'

(7)   Daremo₁-ni   dareka-ga   [Mary-ga t₁ atta   to]   omotteiru

        everyone₁-DAT someone-NOM [Mary-NOM t₁ met COMP]   think

        'Lit. Everyone, someone thinks that Mary met.'

        = For some x, x a person, x thinks that for every y, y a person, Mary met y.

        ≠ For every y, y a person, there is some x, x a person, such that x thinks that

           Mary met y.

This shows that the quantificational phrase *daremo-ni* 'everyone-DAT' obligatorily stays in the embedded clause for the purpose of quantifier scope interpretation. Bošković and Takahashi's theory neatly accounts for this scope fact; that is, the quantificational phrase *daremo-ni* 'everyone-DAT' obligatorily lowers to the embedded VP complement position to check the θ-feature of the verb *atta* 'met' in LF. Therefore, their prediction that scrambling must be undone in LF is confirmed. Note that when two quantificational phrases are θ-marked in the same simplex clause, the sentence is scopally ambiguous as in (8).

(8)   dareka-ga   daremo-ni   atta

        someone-NOM everyone-DAT met

        'someone met everyone'

The prediction is then that (9)a is also scopally ambiguous, in which the downstairs subject, not the upstairs subject, is an existential QP. Hence, after LF undoing, the sentence is (9)b in which the structure of the downstairs IP is identical to (8).

(9)   a.   Daremo₁-ni   Mary-ga   [ᵢₚ dareka-ga   t₁ atta   to]   omotteiru

             everyone-DAT Mary-NOM [ᵢₚ someone-NOM t₁ met   COMP] think

             'Lit. Everyone, Mary thinks that someone met'

        b.   Mary-ga   [ᵢₚ dareka-ga   daremo₁-ni   atta   to]   omotteiru

             Mary-NOM [ᵢₚ someone-NOM everyone-DAT met   COMP] think

             |_____ LF Lowering _____↑

From (8) and (9)b, it is not surprising that the scope facts are identical in (8) and (9)a. It is another issue what the exact mechanism is to account for the scope fact in (8), but whatever applies to (8) applies to (9)b, as well.

Let us look at another difference between Japanese scrambling and English topicalization. Topicalization in English is sensitive to the *Wh*-Island Constraint as shown in (10).

(10)   ?*John₁, you wonder whether Mary kissed t₁.

                                          (Bošković and Takahashi 1998: 359)

This is an instance of Rizzi's (1990) relativized minimality; the NP *John* moves to an A'-position across an A'-Spec which is occupied by *whether*. Under Chomsky and Lasnik's (1993) execution of relativized minimality, for instance, (10) is degraded because the NP *John* fails to make the shortest move in moving from its θ-position (marked by *t1*) to its surface position. As Bošković and Takahashi claim, however, sentences like (11) are good in Japanese, suggesting that Japanese long-distance scrambling does not obey the *Wh*-Island Constraint.

(11)   Sono hon-o1   John-ga   [Mary-ga t1 yonda kadooka]   siritagatteiru

         that book-ACC John-NOM Mary-NOM read   whether   want-to-know

         Lit. 'That book, John wants to know whether Mary read'

The standard analysis of (long-distance) scrambling generally assumes that the landing site of the scrambled NP in (11) is an A'-position. If (11) is derived by an overt movement of the scrambled NP, the NP *sono hon-o* 'that book-ACC' moves to its surface position which is an A'-position, skipping another A'-position occupied by *kadooka* 'whether.' Therefore, the derivation of (10) and the derivation of (11) are identical in the relevant respects, and thus the difference of their grammaticality remains mysterious. One way which Bošković and Takahashi suggest to account for the contrast between (10) and (11) is to appeal to Chomsky and Lasnik's (1993) *-assigning mechanism.[5] That is, English topicalization in (10) leaves an offending trace in the θ-position because the topicalized phrase failed to make the shortest move, and since the offending trace is in a θ-position, it stays in the derivation, which is the source of the Subjacency violation effect in (10). Saito (1989) convincingly argues that with Japanese long-distance scrambling, no operator-variable relation is maintained in

LF between the surface position of the scrambled phrase and its θ-position. Nothing exists in the surface scrambled position in LF. Bearing this in mind, let us consider the lack of locality effect in Japanese scrambling under the LF Lowering hypothesis. When the scrambled phrase lowers to the θ-position in LF, it obviously skipped intervening θ-positions, all potential landing sites. However, no trace is left in the surface position of *sono hon-o* 'that book' because nothing requires a trace in that position at LF, and therefore no offending trace is created in the first place; hence, there is no Subjacency effect. I will discuss more the locality effect of movement in Section 5.4, in which the locality effect of VP-fronting is taken into consideration.[6]

This is the essence of Bošković and Takahashi's proposal of an LF analysis of Japanese scrambling. They claim that the difference between Japanese and English follows from the difference in the strength of θ-features between these languages. Note that although the θ-relation between the θ-assigning head and the θ-receiving argument(s) would be deeply related to semantic interpretation, Bošković and Takahashi's theory claim that θ-roles are syntactic features to be checked during the syntactic derivation. In the next section, I will argue that Bošković and Takahashi's theory can naturally be extended to account for the difference between English and Japanese with respect to the availability of the null argument structure with the sloppy identity interpretation. There is one important point I should mention here before we precede. Note that as long as there is a topicalization operation observed in languages (e.g., English) which is a feature-driven overt raising, such an option should be possible in principle to derive argument-displacement in Japanese, in addition to the Bošković and Takahashi type LF movement derivation. However, if topicalization is another option for Japanese argument-displacement, LF undoing is also optional, and hence, the obligatory LF undoing effect as in (7) is not accounted for. (7) should be scopally ambiguous, contrary to fact.

Therefore, I assume that whenever the relevant selectional feature is weak and LF Lowering derivation is possible, only that derivation is allowed. The reason for this might be related to economy. That is, LF movement is more economical than overt movement (Chomsky 1992). Let me suggest one possible way to derive this effect. Under the copy and deletion hypothesis of movement, the difference between covert movement and overt movement can be stated in the following way. With overt movement, the deletion part of movement operation applies both in the PF side and in the LF side, while with covert movement, the deletion part applies only in the LF side; in the PF side, the chain is trivial (i.e., one membered) and hence, no deletion is necessary to derive the correct input to the sensory-motor system for the correct pronunciation of the sentence. Covert movement has one less operation than the corresponding overt movement has, other things being equal, and hence, it is more economical. I will discuss a consequence of this assumption for predicate fronting in Section 5.4.

5.3 Sloppy Identity Interpretation and the Nature of Japanese Null Arguments[7]

5.3.1 Overview

It has been observed that some instances of Japanese null object sentences allow the sloppy identity interpretation. For example, having (12) as the discourse antecedent, (13) may mean either that John discarded Bill's letter (the strict identity interpretation) or that John discarded John's letter (the sloppy identity interpretation).[8]

(12) Bill-wa zibun-no tegami-o suteta

Bill-TOP self-GEN letter-ACC discarded

'Bill discarded his letter(s)'

(13) John-mo [e] suteta

John-also [e] discarded

'Lit. John discarded [e], too'

Otani and Whitman (1991) claim that the sloppy identity interpretation of Japanese null object sentences is obtained by VP-ellipsis. Extending Williams' (1977) LF Copy analysis of English VP-ellipsis to Japanese null objects, Otani and Whitman claim that the contents of the phonologically missing object in (13) are constructed by an LF Copy of the VP whose head verb has escaped out of it. The derivation is demonstrated in (14).

(14) a. *V-Raising out of VP*

Bill-wa[$_{VP1}$ zibun-no tegami-o t$_v$][$_v$ suteta];   John-mo [$_{VP2}$ [e] t$_v$][$_v$ suteta]

Bill-TOP [$_{VP1}$ self-GEN letter-ACC t$_v$][$_v$ discarded]; J-also [$_{VP2}$ [e] t$_v$][$_v$ discarded]

|___↑ |___↑

b. *Derived VP Rule*

Bill-wa[$_{VP1}$ λx [x zibun-no tegami-o t$_v$]][$_v$ suteta];John-mo [$_{VP2}$ [e] t$_v$][$_v$ suteta]

B-TOP [$_{VP1}$ λx [x self-GEN letter-ACC t$_v$]][$_v$ discarded];J-also [$_{VP2}$ [e] t$_v$][$_v$ discarded]

c. *Reflexivization*

Bill-wa[$_{VP1}$ λx [x x-no tegami-o t$_v$]][$_v$ suteta]; John-mo [$_{VP2}$ [e] t$_v$][$_v$ suteta]

B-TOP [$_{VP1}$ λx [x x-GEN letter-ACC t$_v$]][$_v$ discarded]; J-also [$_{VP2}$ [e] t$_v$][$_v$ discarded]

d.   *VP Rule (LF Copy of VP1 onto VP2)*

Bill-wa[$_{VP1}$ λx [x x-no tegami-o t$_v$]] [$_v$ suteta];

Bill-TOP [$_{VP1}$ λx [x x-GEN letter-ACC t$_v$]][$_v$ discarded];

John-mo [$_{VP2}$ λx [x x-no tegami-o t$_v$]] [$_v$ suteta]

John-also [$_{VP2}$ λx [x x-GEN letter-ACC t$_v$]] [$_v$ discarded]

The verb *suteta* 'discarded' first moves out of the VP, probably to Infl, as in (14)a, and the Derived VP Rule applies, making the predicate λ-abstracted as in (14)b. Reflexivization changes the anaphor *zibun* 'self' into a variable bound by the λ-operator as in (14)c. LF Copy of VP1 constructs the contents of VP2, which provides the structure for the sloppy identity interpretation as shown in (14)d.

Hoji (1998), however, argues that the sloppy identity interpretation of Japanese null arguments has nothing to do with VP-ellipsis, but it is rather a "sloppy-like" reading derived from some special properties of Japanese null arguments.[9] For the relevant reading of (13), for instance, Hoji claims that Japanese null arguments can be indefinite, which allows the "sloppy-like" reading in the same way that (15) allows the sloppy-like reading.

(15)   John-wa tegami-o   suteta

John-TOP letter-ACC   discarded

'John discarded a letter/letters'

In (15), the object NP is indefinite *tegami* 'letter' which can be understood as John's letter(s).

I share with Hoji (1998) the idea that what is involved in Japanese sloppy readings is the argument itself, not the VP. However, I will take a different tack on the issue so that I can relate the sloppy identity interpretation with scrambling, by extending Bošković and Takahashi's (1998) analysis of Japanese scrambling. Before I discuss the main proposal in this section, I will introduce arguments against the VP-ellipsis analysis of the sloppy identity interpretation of null arguments in Japanese.[10]

5.3.2   Against the VP-ellipsis Analysis

In this subsection, I will introduce three types of new data. The first shows that the sloppy identity interpretation is available for null subject as well, already suggesting that the relevant reading is not necessarily contingent on VP-ellipsis. The second data show that the sloppy identity interpretation is available even when VP-ellipsis cannot derive the relevant structure, again suggesting that VP-ellipsis is not the sole source of the sloppy identity interpretation of Japanese null arguments. The last data show, independently of the availability of the sloppy identity interpretation, that VP-ellipsis cannot derive the structure in which the head verb remains unelided in Japanese. This last argument strongly argues that VP-ellipsis can never be the source of the sloppy identity interpretation of Japanese null argument structures.

Having (16)a as the preceding discourse, (16)b can mean either that John also thinks that John's proposal will be accepted (the sloppy identity interpretation), or that John also thinks that Mary's proposal will be accepted (the strict identity interpretation). Likewise, (17)b can mean either that John also thinks John's student passed the exam (the sloppy identity interpretation), or that John also thinks that Bill's student passed the exam (the strict identity interpretation).[11]

(16) a. Mary-wa [zibun-no teian-ga saiyo-sare-ru-to] omotteiru

Mary-TOP [self-GEN proposal-NOM accept-PASS-PRES-COMP] think

'Mary2 thinks that her2 proposal will be accepted'

b. John-mo [[e] saiyo-sare-ru-to] omotteiru

John-also [[e] accept-PASS-PRES-COMP] think

'Lit. John also thinks that [e] will be accepted'

(17) a. Bill-wa [zibun-no gakusei-ga siken-ni tootta-to] omotteiru

Bill-TOP [self-GEN student-NOM exam-DAT passed-COMP] think

'Bill2 thinks that his student passed the exam'

b. John-mo [[e] siken-ni tootta-to] omotteiru

John-also [[e] exam-DAT passed-COMP] think

'John also thinks that [e] passed the exam'

This already suggests strongly that the sloppy identity reading is not necessarily contingent on VP-ellipsis.[12] It is very interesting to note that Spanish null subjects do not allow the sloppy identity interpretation in the comparable structure. Let us consider (18), the Spanish counterpart of (16).[13]

(18) a. María cree [que su propuesta será aceptada].

Maria believes [that her proposal will-be accepted].

· 'Maria2 believes that her2 proposal will be accepted'

b. Juan también cree [que *pro* será aceptada].

Juan too believes [that *pro* will-be accepted].

'Lit. Juan also believes that *pro* will be accepted'

In (18)b, only the strict identity reading is possible: (18)b means that Juan believes that Maria's proposal will be accepted and it never means that Juan believes that Juan's proposal will be accepted. The properties of the null subject in (18) are quite different from the properties of the null subject in (16). In other words, the sloppy identity interpretation is not a property of phonologically empty arguments in general. Spanish null subjects behave like English overt pronouns, because the English counterpart of (18), using the pronoun *it* in place of *pro*, also allows only the strict identity reading:

(19) a. Mary2 believes that her2 proposal will be accepted, and

b. John believes that it will be accepted, too.

Let us consider one more pair of examples, to show that this Japanese-Spanish contrast is more general:

(20) a. seerusuman-ga Mary-no uchi-ni kita

salesman-NOM Mary-GEN house-to came

'A salesman came to Mary's house'

b. [e] John-no uchi-ni-mo kita

[e] John-GEN house-to-also came

'Lit. [e] came to John's house, too'

(21) a. Un vendedor fue a la casa de María.

a salesman went to the house of Maria.

'A salesman went to Maria's house'

b.   También   *pro* fue   a la   casa de Juan

also   *pro* went to the house of Juan

'Also *pro* went to Juan's house'

In Japanese example (20), the salesman who visited John's house can be a different salesman from the one who visited Mary's house. Let us call this "the indefinite reading" of null arguments, because (20)b can be understood as if the indefinite *seerusuman* 'a salesman' is in the subject. In Spanish example (21)b, on the other hand, the salesman who visited Juan's house must be the same person who visited Maria's house. Again, Spanish null subjects behave like the English overt pronoun (*he*, in this case), while Japanese null subjects behave quite differently:

(22)   A salesman visited Mary's house, and he visited John's house, too.

In (22), the salesman who visited John's house must be the same person who visited Mary's house.

The Japanese null subjects in (16), (17), and (20) behave as if the whole subject of the first embedded clause is repeated in the second embedded clause. For instance, the null argument in (14b) is understood as if the noun phrase *zibun-no teian* 'self's proposal' is there, and the null argument in (20)b is understood as if the noun phrase *seerusuman* 'a salesman' is there. In Section 5.3.3, I will propose an analysis which accounts for this contrast between Japanese and Spanish in a principled way, and at the same time is free from the problems of the VP-ellipsis analysis. Let us go on to the second set of data to show that VP-ellipsis is not the sole source for the sloppy identity interpretation of Japanese null arguments.

Nemoto (1993) observes that in the double object construction in Japanese, the accusative anaphor cannot precede the dative antecedent at surface structure:
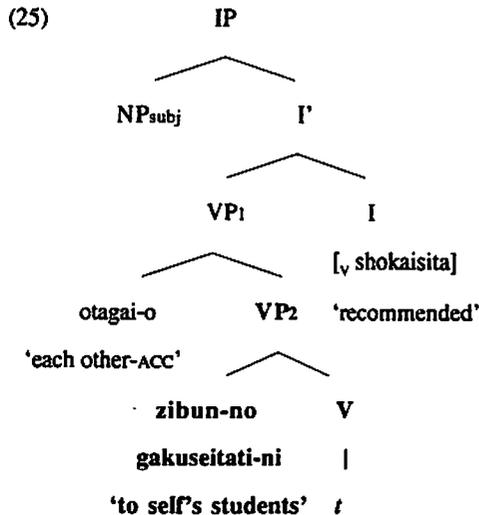

(23)   a.   John-wa   [NP zibun-no gakuseitati-ni][NP otagai-o]   shokaisita

John-NOM [NP self-GEN students-DAT][NP each other-ACC]   introduced

'John introduced (to) his students each other'

b.   * John-wa   [NP otagai-o] [NP zibun-no gakuseitati-ni]   shokaisita

John-TOP [NP each other-ACC][NP self-GEN students-DAT]   introduced

'John introduced each other to his students'

(23)a is good where the dative antecedent precedes the accusative anaphor, while (23)b is very bad where the accusative anaphor precedes the dative antecedent. Let us assume, following Miyagawa (1997), that the accusative NP and the dative NP can be base-generated freely in either order, and let us further assume that the first NP asymmetrically c-commands the second.[14] In (23)b, then, the anaphor *otagai* 'each other' is not bound, while the R-expression *zibun-no gakuseitati* 'self's students' is, and hence (23)b violates both Binding Conditions A and C (Chomsky 1981). Bearing this fact in mind, let us consider (24).

(24)   a.   Bill-wa   kyositu-de   [NP zibun-no gakuseitati-ni][NP otagai-o]

Bill-TOP classroom-in [NP self-GEN students-DAT] [NP each other-ACC]

shokaisita

introduced

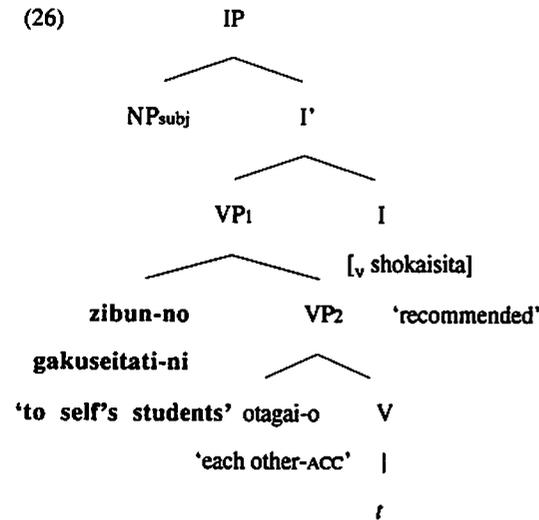'Bill introduced (to) his students each other in the classroom'

b. ? John-wa ofisu-de   [e] [NP otagai-o]   shokaisita

    John-TOP office-in   [e] [NP each other-ACC]   introduced

    'Lit. John introduced [e] each other in the office'

Having (24)a as the antecedent sentence, (24)b is fairly good with the sloppy identity interpretation. It may be slightly degraded, probably because only one of the two object arguments is missing and the other is redundantly repeated. However, (24)b is far better than (23)b, which is severely degraded. If (24)b is derived by VP-ellipsis, there must be a VP-constituent that contains *zibun-no gakuseitati* 'self's students' to be elided and at the same time excludes the head verb AND *otagai* 'each other,' making them the remnants. The relevant structure must therefore be something like (25), where **boldface** indicates the elliptic site.

(25)

```
                    IP
                 /      \
          NPsubj          I'
                       /      \
                  VP1            I
                /      \       [v shokaisita]
         otagai-o       VP2    'recommended'
      'each other-ACC'     /   \
                  · zibun-no      V
                  gakuseitati-ni   |
                  'to self's students'  t
```

Notice, however, that (25) violates the two Binding Conditions, as shown in (23)b; hence if the structure for (24)b were (25), (24)b should be as bad as (23)b, contrary to fact.

The only remaining possible structure for (24)b is something like (26), in which only the dative argument, not the VP, is phonologically missing.

(26)

```
                    IP
                 /      \
          NPsubj          I'
                       /      \
                  VP1            I
                /      \       [v shokaisita]
          zibun-no       VP2    'recommended'
          gakuseitati-ni    /   \
          'to self's students' otagai-o   V
                        'each other-ACC'   |
                                           t
```

No VP-ellipsis is involved in this derivation, but the sloppy identity interpretation of the phonologically missing argument is still available. This shows that VP-ellipsis cannot be the only source for the sloppy reading of null arguments in Japanese.

Finally, there is a piece of data that strongly argues that VP-ellipsis can never be the source of the sloppy identity interpretation of the Japanese null argument structure. Recall that Otani and Whitman's (1991) analysis crucially assumes that the head verb has escaped out of the relevant VP before LF Copy of the VP applies. In other words,

LF Copy of the VP whose head is the trace of the head verb is possible. However, there is evidence that such a derivation is not available in Japanese:

(27) a. Bill-wa   kuruma-o   teineini   aratta

       Bill-TOP   car-ACC   carefully   washed

       'Bill washed the car carefully'

   b. John-wa   [e]   arawa-nakat-ta

       John-TOP   [e]   wash-not-PAST

       'Lit. John didn't wash [e]'

(28) a. Bill-wa   gohan-o   sizukani   tabeta

       Bill-TOP   meal-ACC   quietly   ate

       'Bill ate the meal quietly'

   b. John-wa   [e]   tabe-nakat-ta

       John-TOP   [e]   eat-not-PAST

       'Lit. John didn't eat [e]'

In (27)b and (28)b, it is hard (or impossible, for some speakers) to get the interpretation in which the adverb is understood in the elliptic site; that is, in (27)b, it is hard to get the reading that John didn't wash the car carefully, which would imply that John did wash the car but not in a careful manner. Instead, (27)b means that John didn't wash the car at all, which is the most natural and easily available interpretation of (27)b. Likewise, (28)b means that John didn't eat the meal at all. With English VP-ellipsis, on the other hand, the relevant reading is easily available:

(29) a. Bill washed the car carefully, but

   b. John didn't.

The most prominent interpretation of (29)b is that John didn't wash the car carefully, implying that John did wash the car but not in a careful manner. This is straightforwardly accounted for by assuming that the adverb *carefully* is part of the VP which is elided, and hence the relevant LF representation of (29)b is (30).

(30)   John didn't [$_{VP}$ [$_{VP}$ wash the car] carefully]

Coming back to the Japanese example, suppose, following the standard assumption, that adverbs like *teineini* 'carefully' or *sizukani* 'quietly' are attached to a VP in the structure. Further, it is generally assumed that there is no phonologically empty proform for manner adverbs like *carefully* and *quietly*. Given these two natural assumptions, the facts in (27) and (28) naturally follow if VP-ellipsis is not available in Japanese. However, if VP-ellipsis as in (31) were available in Japanese, the facts in (27) and (28) are mysterious.

(31)   *Verb Raising + VP-Ellipsis*

      John-wa   [$_{VP}$ [$_{VP}$ kuruma-o   t$_v$] teineini]   [$_v$ arawa-nakat-ta]

      John-TOP   [$_{VP}$ [$_{VP}$ car-ACC   t$_v$] carefully]   [$_v$ wash-not-PAST]

The relevant reading would have to be easily available if a derivation like (31) were possible, because the adverb and the object are contained in the elided VP. This argument strongly suggests that there is no VP-ellipsis in Japanese in which the head verb remains unelided; VP-ellipsis cannot derive structure (32)b, for instance.[15]

(32) a.   Bill-wa   zibun-no   tegami-o   suteta

Bill-TOP   self-GEN   letter-ACC   discarded

'Bill₂ discarded his₂ letter(s)'

b.   John-mo   [e]   suteta

John-also   [e]   discarded

'Lit. John discarded [e], too'

Hence, the conclusion is that the source of sloppy identity interpretation in Japanese null object structures cannot be VP-ellipsis, contra Otani and Whitman (1991). Note incidentally that the fact in (27) and (28) suggests that adverbs alone cannot be copied. This is further confirmed by the fact that (33)b does not allow the interpretation in which the adverb *teineini* 'carefully' is understood even when (33)a is the discourse antecedent; (33)b means only that John did not wash the car at all.

(33) a.   Bill-wa   kuruma-o   teineini   aratta

Bill-TOP   car-ACC   carefully   washed

'Bill washed the car carefully'

b.   John-wa   kuruma-o   araw-anak-atta

John-TOP   car-ACC   wash-not-PAST

'John didn't wash the car'

I will argue in the next section that this is straightforwardly accounted for by the LF Copy theory I propose.

Given the conclusion that VP-ellipsis cannot derive a structure in which the verb remains in Japanese and hence VP-ellipsis can never be the source of the sloppy identity

interpretation of sentences like (32), we have to provide the source of sloppy identity interpretation and the indefinite interpretation of Japanese null arguments without appealing to VP-ellipsis. This is the topic of the next section.

5.3.3 Deriving Null Argument Properties: LF Copy Analysis

Let us first briefly review Hoji's (1998) theory of the sloppy identity interpretation (the "sloppy-like reading" in Hoji's terminology) of phonologically empty arguments. Assuming that there is a null pronoun in a phonologically empty argument positions in Japanese, Hoji claims that there are two sources for the sloppy identity interpretation of Japanese null pronouns. One is the indefinite use of Japanese null pronouns and the other is the referential use of null pronouns. As I have already mentioned in Section 5.3.1, Hoji claims that (34)b can mean that John discarded John's letter because the null pronoun *ec* can be interpreted as the indefinite 'letter(s)' which in turn can be understood as 'John's letter(s)', giving an apparent sloppy identity interpretation.[16]

(34) a.   Bill-wa   zibun-no   tegami-o   suteta

Bill-TOP   self-GEN   letter-ACC   discarded

'Bill₂ discarded his₂ letter(s)'

b.   John-mo   *ec*   suteta

John-also   *ec*   discarded

'Lit. John discarded *ec*, too'

Further, Hoji argues that the sloppy identity interpretation of (35) follows from the referential use of the null pronoun *ec*.

(35) a.   Bill-wa   zibun(-zisin)-o   suisensita

          Bill-TOP   self(-self)-ACC recommended

          'Bill recommended himself'

    b.   John-mo   *ec*   suisensita

          John-also   *ec*   recommended

          'Lit. John recommended *ec*, too'

The pronoun *ec* refers to the person [John|] who the subject *John* also refers to. In this way, coreference between *John* and *ec* is established, giving the sloppy identity interpretation. Hoji assumes that this is not a Binding Condition B violation, because the Binding Conditions are operative only to bound variable interpretations, but not to coreference (Reinhart 1983). The prediction then is that if the subject is a non-referential quantification expression, the Binding Condition B prevents the anaphoric relation between the subject and the object *ec* and hence, the sloppy identity interpretation of the type observed in (35) is not possible. As Takahashi (1997) points out, however, the sloppy identity interpretation is equally available even when the subject is a non-referential quantificational expression as shown in (36).

(36)   (John igaino) subeteno gakusei-ga   *ec* suisensita   kara

      (John except) all   student-NOM   *ec* recommended because

      John-mo zibun(-zisin)-o   suisensita

      John-also self(-self)-ACC   recommended

      'Lit. All the students (except John) recommended *ec* so that John recommended himself, too'

Therefore, as far as there is no contrast between (35) and (36), Hoji's argument about the sloppy identity interpretation of (35) is not valid. We need an alternative. Note that in Hoji's theory, special properties of Japanese null arguments are attributed to the nature of the null pronoun *ec* (the indefinite use and the referential use). In what follows, I propose that the relevant interpretations of Japanese null arguments can be obtained because of the nature of Japanese predicates; that is, θ-features are weak in Japanese, which allows LF construction of the contents of phonologically empty arguments. The theory is free from the problem in Hoji we have just seen, and also opens the possibility that the special behavior of Japanese null arguments is systematically related to scrambling in Japanese.

Recall Bošković and Takahashi's (1998) claim that θ-features are weak in Japanese. I propose that this property of Japanese predicates makes it possible for LF Copy of the antecedent argument (not VP) to construct the contents of a phonologically empty argument. For instance, in (37), there is actually nothing in the object argument position marked by [e] and thus the object θ-feature of the verb *suteta* 'discarded' is not checked off in overt syntax.

(37) a.   Bill-wa   zibun-no tegami-o   suteta

          Bill-TOP   self-GEN   letter-ACC discarded

          'Bill2 discarded his2 letter(s)'

    b.   John-mo   [e]   suteta

          John-also [e]   discarded

          'Lit. John discarded [e], too'

Now, LF copy of the antecedent arguments *zibun-no tegami-o* 'self-GEN letter-ACC' checks the undischarged object θ-feature of the verb in (37)b, providing the contents of the phonologically empty argument.[17] This gives the right structure for the sloppy identity interpretation as shown in (38).

(38) a.   Bill-wa   [$_{NP1}$ zibun-no tegami-o] suteta

              Bill-TOP   [$_{NP1}$ self-GEN   letter-ACC] discarded

              'Bill2 discarded his2 letter(s)'

      b.   John-mo [$_{NP2}$ zibun-no tegami-o] suteta

              John-also [$_{NP2}$ self-GEN letter-ACC] discarded

              'Lit. John discarded [e], too'

Likewise, the sloppy identity interpretation of null subjects as in (39) can be accounted for in the same fashion.

(39) a.   Mary-wa [[$_{NP1}$ zibun-no ronbun-ga] saiyo-sare-ru-to]   omotteiru

              Mary-TOP [[$_{NP1}$ self-GEN paper-NOM] accept-PASS-PRES-COMP] think

              'Mary2 thinks that her2 paper will be accepted'

      b.   John-mo [[e] saiyo-sare-ru-to]   omotteiru

              John-also [[e] accept-PASS-PRES-COMP] think

              'Lit. John also thinks that [e] will be accepted'

LF Copy of NP1 provides the contents of the phonologically empty subject NP2, which provides the structure of the sloppy identity interpretation as shown in (40).

(40) a.   Mary-wa [[$_{NP1}$ zibun-no ronbun-ga] saiyo-sare-ru-to]   omotteiru

              Mary-TOP [[$_{NP1}$ self-GEN paper-NOM accept-PASS-PRES-COMP] think

              'Mary2 thinks that her2 paper will be accepted'

LF Copy of NP1 onto NP2

      b.   John-mo [[$_{NP2}$ zibun-no ronbun-ga] saiyo-sare-ru-to]   omotteiru

              John-also [[$_{NP2}$ self-GEN paper-NOM] accept-PASS-PRES-COMP] think

              'John also thinks that John's paper will be accepted'

Similarly, the relevant LF representation for (35) is provided by LF Copy as shown in (41).

(41) a.   Bill-wa   [$_{NP1}$ zibun(-zisin)-o] suisensita

              Bill-TOP   [$_{NP1}$ self(-self)-ACC]   recommended

              'Bill recommended himself'

      b.   John-mo [$_{NP2}$ zibun(-zisin)-o] suisensita

              John-also [$_{NP2}$ self(-self)-ACC]   recommended

              'John recommended himself, too'

Further, the structure for the indefinite reading of the null argument in (42) is also provided by LF Copy as shown in (43).

(42) a.   [$_{NP1}$ seerusuman-ga] Mary-no uchi-ni kita

              [$_{NP1}$ salesman-NOM]   Mary-GEN house-to came

              'A salesman came to Mary's house'

b.   [e] John-no uchi-ni-mo kita

        [e] John-GEN house-to-also came

        'Lit. [e] came to John's house, too'

(43)   a.   [$_{NP1}$ seerusuman-ga] Mary-no uchi-ni kita

           [$_{NP1}$ salesman-NOM] Mary-GEN house-to came

           'A salesman came to Mary's house'

LF Copy of NP1 onto NP2

    b.   [$_{NP2}$ seerusuman-ga] John-no uchi-ni-mo kita

        [$_{NP2}$ salesman-NOM] John-GEN house-to-also came

        'A salesman came to John's house, too'

I claim that this type of an LF Copy derivation is possible in Japanese because θ-features are weak in Japanese: LF checking of θ-features of a predicate is possible. A natural question at this point is how we can obtain the strict identity interpretation of the null argument structures in (37) and (39) and the definite interpretation of (42), which are all available interpretations; that is, (37) may mean that John discarded Bill's letter(s), but the LF representation in (38)b does not provide this interpretation. And (42) can be uttered with the intention that the salesman who came to John's house is the same person who came to Mary's house, but the LF representation in (43)b does not provide this interpretation.[18] I suggest two ways to obtain the interpretations in question. There is a null **pronoun** in the phonologically empty argument position, whose property is identical to the Spanish *pro* and English overt pronouns. For instance, in the alternative LF representation of (39)b, the null pronoun is interpreted in the comparable way to the LF representation in which the argument is the pronoun *sore* 'it' as in (44)b.

(44)   a.   Mary-wa [[$_{NP1}$ zibun-no ronbun-ga] saiyo-sare-ru-to] omotteiru

           Mary-TOP [[$_{NP1}$ self-GEN paper-NOM] accept-PASS-PRES-COMP] think

           'Mary2 thinks that her2 paper will be accepted'

    b.   John-mo [sore-ga saiyo-sare-ru-to] omotteiru

        John-also [it-NOM accept-PASS-PRES-COMP] think

        'Lit. John also thinks that it will be accepted'

(44)b is an appropriate LF representation of the strict identity interpretation of (39). The same argument applies to (37) and (42). Note that there may be no appropriate overt pronoun in Japanese corresponding to the English *he* in (42),[19] and hence, the pronoun in question is phonologically empty as with the Spanish *pro*. An interesting aspect of this proposal is that we can make the property of pronouns constant across languages regardless of whether they are phonologically realized or not. Pronouns are not interpreted as if they have a fully articulated internal structure identical to the antecedent; that is, *he* in (45)a does not have an LF interpretation like [$_{NP}$ *a salesman*], even though [$_{NP}$ *a salesman*] is its antecedent NP. Likewise, *it* in (45)b does not have an LF interpretation like [$_{NP}$ *a picture of himself*], even though [$_{NP}$ *a picture of himself*] is its antecedent NP.

(45)   a.   *A salesman* came to Mary's house, and *he* came to Sally's house, too.

    b.   Bill saw *a picture of himself*, and John saw *it*, too.

I claim that in the Japanese counterpart of (45), if a null pronoun is in the place of *he* or *it*, the interpretations are identical to (45): the definite interpretation for (45)a and the strict identity interpretation for (45)b. Japanese has another option, however, when the position corresponding to *he* or *it* in (45) is phonologically empty; that is, no null

pronoun in the position in overt syntax, and LF Copy of the antecedent NP provides the contents of the phonologically empty argument position. A full copy of [$_{NP}$ *a salesman*] is in the subject position in place of *he* in LF, and a full copy of [$_{NP}$ *a picture of himself*] is in the object position in place of *it* in LF, giving the definite interpretation and the sloppy interpretation, respectively.

The other way to obtain the strict identity interpretation and the definite interpretation is to assume that an R-expression can change into the corresponding pronoun under LF Copy. Recall that it is attested in Chapter 4 that this change is available for free. Therefore, instead of making a full copy of the antecedent, the copy of the φ-features and the categorial D feature of the antecedent provides the relevant information to construct the corresponding pronoun in the phonologically empty argument position (assuming that a pronoun consists of φ-features and the categorial D feature). Again, the LF representation of (39), for instance, is (44) in which the R-expression *Mary-no teian* 'Mary-GEN proposal' changes into the corresponding pronoun *sore* 'it' under LF Copy, which gives the representation of the strict identity interpretation.[20]

Notice that the claim that an LF Copy of the antecedent argument can check the subject θ-feature as in (40) and (43) means that LF Lowering into the subject θ-position is also possible; that is, under Bošković and Takahashi's LF theory of scrambling, this means that the scrambling of the subject is possible. Saito (1985), however, claims that scrambling of the subject is not possible. For instance, the sentence in (46) is pretty bad on the intended interpretation.

(46) *Bill₂-ga   John-ga   [t₂ atamaga ii to]   omotteiru

     Bill₂-NOM John-NOM [t₂ smart   COMP] think

     'Lit. Bill₂, John thinks that t₂ is smart.'

     (Cf. Bill thinks that John is smart)

Saito (1985) argues that t₂ in (46), for instance, is a variable (because long-distance scrambling is A'-movement), and a variable needs Case to be licensed. Saito further claims that the nominative Case in Japanese is an inherent Case (not structural Case assigned by Infl) and hence, when the Case marker -*ga* is moved along with the NP *Bill* as in (46), no Case is available for the trace t₂. Therefore, the variable t₂ is not properly licensed and the sentence is ruled out. Mihara (1994: 98ff), however, argues that the reason why (46) is out on the intended interpretation is simply because of a parsing difficulty. The first nominative NP is easily interpreted as the subject of the highest predicate and it is very hard to interpret it otherwise. Mihara then claims that if we try to make the sentence easy to parse, by putting a big pause and using the appropriate subjects and predicates to avoid the garden-path, a sentence with a scrambled subject dramatically improves as in (47), where || indicates a big pause.

(47) LGB₁-ga || Sanseido-no hito-ga || [e₁ Foris-no hon-no nakadewa, yahari

     LGB₁-NOM   Sanseido-GEN person-NOM [e₁ Foris-GEN book-GEN among, surely

     dantotsu-no   best-seller da   to]   itteta   yo

     by far-GEN   best-seller COPULA COMP]   was-saying   I-am-telling-you

     '(I am telling you that) a person from Sanseido was saying that LGB is surely by far the best-seller among the books by Foris.'

I will argue that Mihara is correct in this respect, by showing that even when the availability of scrambling is independently attested, the effect of scrambling is canceled if there is parsing difficulty. Look at (48) first, which shows that scrambling of the dative marked object of the verb *atta* 'met' is possible.

(48)   Mary2-ni   John-ga   Bill-ga   t2   atta   to   omotteiru

       Mary2-DAT John-NOM   Bill-NOM   t2   met   COMP   think

       'Lit. Mary2, John thinks that Bill met t2'

Now, if we change the matrix verb into one which takes a dative object as in (49), the relevant scrambling interpretation is impossible.

(49)   *Mary2-ni,   John-ga   Sally-ni   [$_{IP}$ Bill-ga   t2   atta   to]   itta.

       Mary2-DAT, John-NOM   Sally-DAT   [$_{IP}$ Bill-NOM   t2   met   COMP] said

       'Lit. Mary2, John said to Sally that Bill met t2'

The only possible interpretation of the string of words in (49) is that the first dative phrase *Mary-ni* 'Mary-DAT' is interpreted as an argument of the matrix verb *itta* 'said' and the second dative phrase *Sally-ni* 'Sally-DAT' is interpreted as an argument of the downstairs verb *atta* 'met.' Therefore, I will follow Mihara's argument and assume that scrambling of a subject is also possible in principle, and hence, under the LF theory of scrambling and null argument, I maintain that all θ-features are weak in Japanese, without any exception, a desirable conclusion.[21]

      Next, I will discuss Spanish null subjects; specifically, I will address the question of why Spanish null subjects do not allow the sloppy identity interpretation and

the indefinite interpretation. The relevant examples are (18) and (21), repeated here as (50) and (51), respectively.

(50)   a.   María cree   [que su propuesta será   aceptada].

            Maria believes [that her proposal   will-be accepted].

            'Maria2 believes that her2 proposal will be accepted'

     b.   Juan también cree   [que *pro* será   aceptada].

            Juan too   believes [that *pro* will-be accepted].

            'Lit. Juan also believes that *pro* will be accepted'

(51)   a.   Un vendedor fue   a   la   casa   de María.

            a   salesman   went   to   the house of Maria

            'A   salesman went to Maria's house'

     b.   También   *pro* fue   a   la   casa de Juan

            also   *pro* went to the house of Juan

            'Also *pro* went to Juan's house'

Recall that (50)b can only mean that Juan believes that Maria's proposal will be accepted (the strict identity interpretation) but it cannot mean that Juan believes that Juan's proposal will be accepted (the sloppy identity interpretation). Likewise, in (51)b, the salesman who visited Juan's house must be the same person who visited Maria's house (the same referent interpretation), but the salesman who visited Juan's house cannot be different from the one visited Maria's house; the indefinite interpretation is not possible. I first adopt the descriptive generalization that pronouns in general, whether they are phonologically contentful or null, do not allow the sloppy identity interpretation or the indefinite interpretation. This might be because of their strong referential property, but I will not address the deeper question of why this is so.[22] Given this, if there is *pro* in the

subject position in a sentence, neither the sloppy identity interpretation nor the indefinite interpretation is available.

Now, a remaining question is why LF Copy as in the Japanese counterparts of (50) and (51) is not available in Spanish. I propose that θ-features are strong in Spanish. Recall that strong features must be checked in overt syntax. Therefore, in (51), for instance, the subject θ-feature of the verb *fue* 'went' must be checked off with an argument in overt syntax. The derivation cannot wait until the LF Copy provides an argument (a full copy of the antecedent subject *un vendedor* 'a salesman' in (51)a) to check the strong θ-feature. The only way to derive the surface form of (51)b is to insert the pronoun *pro* and check off its strong subject θ-feature of the verb in overt syntax. Now, the subject θ-feature has been discharged, and the pronoun *pro* already occupies the subject position. Therefore, no LF Copy is possible to provide the contents of the subject and hence, there is no way to get the appropriate LF representation for the indefinite interpretation in (51). Exactly the same argument applies to (50). No LF Copy is possible to give the appropriate LF representation for the sloppy identity interpretation.[23]

The proposal that θ-features are strong in Spanish predicts that there is no scrambling in Spanish with the same property of Japanese scrambling. The prediction seems to be correct; the behavior of a displaced argument in Spanish does not display LF undoing effect.

(52) a.   Juan sabía quién había comprado varias fotos   de quién.
           Juan knew who   had   bought   several pictures   of who

      b. (?) Varias fotos   de María, Juan sabía quién había comprado
           several pictures of María, Juan knew   who   had   bought

      c.   * Varias fotos   de quién, Juan sabía quién había comprado
           several pictures of who, Juan knew   who   had   bought

(52)a shows that the multiple *wh*-question is possible in Spanish. When the object NP of the verb *comprado* 'bought' is displaced in front of the matrix clause crossing a *wh*-island as in (52)b, the sentence is basically grammatical.[24] However, when the displaced phrase contains a *wh*-word as in (52)c, the sentence is ungrammatical. This shows that this argument displacement in Spanish is not Japanese type scrambling, because if it were, LF undoing derives an LF representation of (52)c which is comparable to the LF representation of (52)a, and thus (52)c is predicted to be as good as (52)a, contrary to fact. Therefore, in the proposed theory, the lack of scrambling in Spanish and the lack of the sloppy identity interpretation and the indefinite interpretation of null arguments in Spanish are derived for the identical reason; θ-features are strong in Spanish.

Finally, in this section, I will show that the proposed hypothesis that there is no scrambling in English naturally accounts for the fact that English does not allow Japanese-type null arguments. That is, English does not allow a phonologically empty argument which displays the property of a full copy of the antecedent.[25] Recall that Bošković and Takahashi (1998) propose that θ-features in English are strong and hence arguments must discharge the θ-features of the verb in overt syntax. This is why scrambling is not possible in English under Bošković and Takahashi's analysis. Bearing this in mind, let us look at the following examples:

(53) a.   * Bill₂ discarded his₂ letter, and John discarded, too.

      b.   Bill₂ ate his₂ shoe, and John ate, too.

(53)a is ungrammatical and (53)b does not have the interpretations which are available in the corresponding Japanese examples. In (53)a, LF Copy of *his letter* may construct an LF representation like (54).

(54)   Bill discarded [$_{NP1}$ his letter], and John discarded [$_{NP2}$ his letter], too.

$$\underline{\qquad}\text{ LF Copy }\underline{\qquad}\uparrow$$

However, the object θ-feature of the verb *discard* is strong and thus must be checked in overt syntax. LF Copy, which provides NP2 as the argument of the verb, is too late to discharge the θ-feature. Similarly, even with a verb like *eat* in (53)b which optionally allows missing objects, the second clause of (53)b simply means that John did some eating activity. Neither the strict identity interpretation (i.e., John ate Bill's shoe) nor the relevant sloppy identity interpretation (i.e., John ate John's shoe) can be obtained, although both of them are available interpretations in the corresponding Japanese sentences. Let us consider how these derivations are ruled out in English. Suppose first that the verb *eat* enters the computation with the object θ-feature to be checked. (55)a may be derived by LF Copy, allowing the sloppy identity interpretation. (55)b may be derived by LF Copy plus "vehicle change" which changes the R-expression *his shoe* into the corresponding pronoun *it*, under LF Copy, allowing the strict identity interpretation, even if we follow the general assumption that there is no null pronoun *pro* available in English.

(55)   a.   Bill ate [$_{NP1}$ his shoe], and John ate [$_{NP2}$ his shoe], too.

        b.   Bill ate [$_{NP1}$ his shoe], and John ate [$_{NP2}$ it], too.

However, sentence (53)b in these derivations is already ruled out because the strong θ-feature is not discharged in overt syntax. Suppose, on the other hand, that the verb *eat* enters the computation without the object θ-feature to be checked. Then sentence (53)b is correctly ruled in; there is nothing wrong with the argument structure of the sentence. This time, however, LF Copy cannot apply to derive the LF representations in (55), because there is no θ-feature for the argument to discharge; nothing requires an argument as a complement of this instance of *eat* and hence, nothing is copied. Therefore, there is no way to derive (55); hence, the lack of the readings represented in (55) is accounted for.

Recall that I showed in the previous section that there is no LF Copy of adverb alone, and hence, the adverb *teineini* 'carefully' can never be understood in (56)b.

(56)   a.   Bill-wa   kuruma-o   teineini   aratta

               Bill-TOP   car-ACC   carefully   washed

               'Bill washed the car carefully'

        b.   John-wa   kuruma-o   araw-anak-atta

               John-TOP   car-ACC   wash-not-PAST

               'John didn't wash the car'

(56)b only means that John did not wash the car at all, even though it has (56)a as its discourse antecedent. Now, this is straightforwardly accounted for by the assumption that there is no selectional feature in (56)b to be discharged by the adverb *teineini* 'carefully.' Nothing requires the adverb to be copied, and hence, no LF representation with the adverb is provided for (56)b. This analysis is consistent with Bošković and Takahashi's (1998) claim that there is no adverb scrambling in Japanese. Therefore,

under the proposed theory of scrambing and null element construction, the generalization is that LF Copy of X is possible if and only if scrambling of X is possible.

The most interesting claim the present analysis makes is that facts like (53) follow from exactly the same mechanism that makes scrambling impossible in English, while the availability of the sloppy identity interpretation and the indefinite interpretation with Japanese null arguments follows from exactly the same mechanism that makes scrambling possible in Japanese. To sum up, Bošković and Takahashi (1998) propose that scrambling is possible in Japanese because θ-features are weak in Japanese, while it is impossible in English because θ-features are strong in English. I have argued in this section that Bošković and Takahashi's proposal also explains the fact that sloppy identity interpretation and the indefinite interpretation of null arguments is possible in Japanese, while English does not allow Japanese-type null arguments. Likewise, given that θ-features are strong in Spanish, it follows that Spanish does not allow scrambling and the Spanish null subjects do not allow the sloppy identity interpretation and the indefinite interpretation. In other words, I am claiming that the availability of scrambling and the availability of null arguments that allows the sloppy identity interpretation and the indefinite interpretation are systematically related. Although an extensive cross-linguistic investigation is required to evaluate the present hypothesis, this theory can be seen as an explicit attempt to capture an old observation of Hale's (1983): typologically, free word order languages tend to allow extensive use of null anaphora. The present analysis provides a pricnipled account for this long standing descriptive generalization which has never been captured in a satisfactory way. Note further that the present analysis makes it clear that it is θ-features of predicates that must be discharged, not θ-features of arguments, because the θ-feature of the antecedent argument has already been checked in the antecedent clause and hence, nothing is wrong

with the argument in the antecedent clause. The motivation for LF Copy of arguments is the undischarged θ-features of the predicate in a null argument sentence; this instance of checking relation is therefore asymmetrical, a point which was not clear in Bošković and Takahashi (1998).

5.4 VP-Ellipsis and VP-Fronting

In the preceding section, I have argued that in the Japanese null argument structure, there is nothing in the phonologically empty argument position in overt syntax, and that the contentful argument is provided by a copy of the antecedent argument in the LF component. I claim that this is possible in Japanese because θ-features are weak in Japanese. If we apply the same logic to the LF Copy analysis of VP-ellipsis I proposed in Chapters 2 and 4, it may be claimed that VP-ellipsis in English is possible because the selectional property of the remnant Infl/Aux is a syntactic feature to be checked, and it is weak. That is, the complement selection feature of the remnant Infl/Aux is not necessarily checked in overt syntax and hence LF Copy of the antecedent VP can check the complement selection feature of Infl/Aux in covert syntax. I actually assume this, and I do not assume that there is an empty VP [$_{VP}$ e] in overt syntax in the elliptic site; that is, there is no VP node in overt syntax, regardless of whether it is a simplex [$_{VP}$ e] (as in Jackendoff 1972) or has a full fledged complex structure (as is assumed in Wasow 1972 and Williams 1977). The assumption that there is no VP node in overt syntax in VP-ellipsis may be supported by the following fact: so-called VP adverbs (Jackendoff 1972) like *completely* are licensed by being attached to a VP as in (57).[26]

(57) a.   John [ᵣ should [ᵥₚ completely [ᵥₚ solve the problem]]]

b.   * John [ᵣ completely [ᵣ should [ᵥₚ solve the problem]]]

c.   * [ᵢₚ Completely [ᵢₚ John [ᵣ should [ᵥₚ solve the problem]]]]

Now, if VP-ellipsis structure has a phonologically empty VP node in overt syntax, it would be possible that the adverb *completely* is licensed by attaching to this VP node as in (58).

(58)   John should [ᵥₚ completely [ᵥₚ e]]

However, (59) shows that (58) is not a possible structure.

(59)   * Mary partially solved the problem, but John should completely.

(Cf. ... but John should completely solve it)

The fact receives a straightforward account if we assume that there is no VP node in overt syntax in VP-ellipsis; there is no node to which the adverb *completely* attaches. Under the present LF Copy analysis of VP-ellipsis, although the VP node is created in covert syntax, it is too late for the adverb to attach to it, because the adverb has phonological contents which would not be interpreted at the LF iinterface if the attachment of the adverb to the VP takes place in covert syntax after the VP node is created by LF Copy and merges to the Infl/Aux.

In Section 2.2 of Chapter 2, I proposed that the "fronted" VP is actually base-generated at the surface position and lowers to the complement position of the remnant Infl/Aux to satisfy the selectional property of the Infl/Aux (my argument is based on a curious fact that the verb in the fronted VP is bare when the remnant Aux is the

perfective *have*). The theory of VP-ellipsis in English I proposed provides conceptual support for the "base-generation" analysis of the "fronted" VP in English; that is, since the complement selection feature of the remnant Infl/Aux is weak in English, there is nothing wrong with a derivation in which a VP is base-generated in the fronted position in overt syntax and lowers to the complement position in covert syntax, in just the same way that a scrambled phrase in Japanese is base-generated in its surface position in overt syntax and lowers to the θ-position in covert syntax to check the weak θ-feature of the predicate. Therefore, the base-generation hypothesis of VP-fronting is a natural conclusion under our LF Copy analysis of VP-ellipsis.²⁷ I will now discuss whether the hypothesis is empirically supported.

First of all, let us review our discussion of the perfective participle morphology in VP-fronting, because it is one of the arguments for the base-generation hypothesis, theory-internal though it is. Recall that the head verb of the fronted VP is bare, even when the associated Aux is the perfective *have* as in (60).²⁸

(60)   They said that John would leave, and leave he has.

(Cf. ... and John has left/*leave)

The simplest idea to account for this fact is that the verb stays bare because it is not string-adjacent to the Aux *have* (Urushibara 1997) and the PF/Morphology component does not induce the appropriate inflection of the verb. In (61), however, the verb has to be properly inflected even though it is not adjacent to the Aux *have*.

(61) a.   John has not left/*leave.

b.   Has John left/*leave?

The idea I proposed in Chapter 2 to account for the difference between (60) and (61) is roughly the following. There is a point of derivation in (61) in overt syntax in which the verb and the Aux are string-adjacent (i.e., before the head movement of Aux *have*) and hence, the verb has to be properly inflected. If the fronted VP in (60) is base-generated in the complement position of the Aux *have* and moves to the sentence-initial position, there is a point of derivation in which the verb and the Aux are string-adjacent and hence, the verb must be properly inflected as in (61). If the fronted VP is base-generated in its surface position, on the other hand, there is no point of derivation in overt syntax in which the Aux and the verb are string-adjacent. The hypothesis that the "fronted" VP is obligatorily base-generated at its surface position gives an account of this special morphological property of the perfective participle in English. This is the first argument for the obligatory base-generation hypothesis of VP-fronting in English.

Let us next consider the LF undoing effect. It has generally been observed that topicalization or *wh*-movement of an argument does not necessarily show the reconstruction effect (van Riemsdijk and Williams 1981, Freidin 1986, Lebeaux 1988, Chomsky 1992, among others),[29] while the fronted predicate generally shows the forced reconstruction effect (Huang 1993, Takano 1995, Heycock 1994, 1995, among others). Let us compare topicalization (i.e., argument-fronting) in (62) and predicate-fronting in (63).

(62)   Those books about John1, he1 thinks Mary will criticize.

(63)   * They say Mary will criticize those books about John, and
            criticize those books about John1, he1 thinks she will.

In (62), coreference between *John* and *he* is possible, which shows that the fronted argument (at least the portion containing the NP *John*) does not necessarily receive an interpretation at its θ-position where *he* c-commands *John*, which would induce a Binding Condition C violation. In (63), the coreference between *John* and *he* is not possible, which shows that the fronted predicate must receive an interpretation at the complement position of Aux *will*, inducing a Condition C violation.

The forced reconstruction effect is straightforwardly accounted for if we assume that the fronted predicate is actually base-generated at its surface position. LF lowering of the predicate is necessary to check the selectional feature of the remnant Infl/Aux. Another argument for the LF analysis of Japanese scrambling was its lack of locality effect (see Section 5.2 above).[30] Let us now consider the locality effect of predicate fronting:

(64)   a.   ?? They say that John is intelligent, but intelligent I wonder whether he
                  really is.

          b.   ?? They say that Mary is proud of all her students, but proud of Bill I
                  wonder whether she is.

The sentences are not very bad, but they are still not perfect, either.[31] Recall that scrambling crossing a *wh*-island is virtually completely grammatical, as in (65).

(65)   sono hon1-o   John-ga   [Mary-ga t1   yonda kadooka]   siritagatteiru
          that book1-ACC John-NOM [Mary-NOM t1   read   whether]   want-to-know
          'Lit. That book, John wants to know whether Mary read'

One way to account for the fact in (65) is to assume that nothing requires a trace in the surface position of the scrambled phrase when it lowers to the θ-position in LF. Hence, although it crosses a wh-island, no offending trace is created by LF Lowering and the sentence is grammatical. The same argument predicts that the sentences in (64) are grammatical, if we assume the LF analysis of predicate-fronting, and that nothing requires a trace in the surface position of the fronted predicate, even though the predicate Lowering crosses a wh-island. One may want to account for the contrast by assuming that the lowering of the predicate must leave a copy (i.e., a trace) in its surface position for some reason, and the copy is marked *, which is the source of the degradation in (64). For instance, there may be a topicalization feature on the root of the tree which requires a copy to function as an operator. After LF Lowering, a copy in the original position functions as an operator and a copy in the lowered position functions as a variable bound by the operator. Now, the lowering crosses a wh-island and hence, the operator is marked *. If the operator-variable chain cannot be canceled, there is a copy which is marked * at the LF representation, which causes the relevant degradation. Although it is not easy to determine whether the fronted predicate actually creates an operator-variable chain in (64), there are cases of predicate-fronting in which an operator-variable chain must be created, namely, when the fronted predicate is an wh-phrase as in (66). Very interestingly, the locality effect is stronger in (66) than in (64).

(66)   a.   * How intelligent do you wonder whether John is?

        b.·   * How proud of her students do you wonder whether Mary is?

I suggest that the contrast between (64) and (66) is accounted for in the following way. The fronted predicates are base-generated in their surface position, which is possible because the selectional feature of the remnant Infl/Aux is weak, and which is necessary

in this case because LF movement is more economical than overt movement. The predicate must lower to the complement position of the Infl/Aux in covert syntax to check the selectional feature of the Infl/Aux. This is a potential violation of the Wh-Island Constraint. In (66), therefore, the operator is marked * which makes the sentences ungrammatical. If the fronted predicate in (64) makes an operator-variable chain as Takano (1995) argues, in the same way as do the sentences in (66), (64) must be as bad as (66), contrary to fact. I suggest therefore that no operator is required in (64); LF Lowering leaves nothing in the surface position of the predicate, and hence, there is no copy with *, even though the lowering crosses a wh-island. This is the source of the contrast between (64) and (66). A remaining question is why the sentences in (64) are not perfect. One conjecture is that the difference follows from the difference between arguments and non-arguments. That is, the fact that the predicate crosses an island induces some degradation, regardless of whether the movement creates an offending trace or not. The generalization I suggest is summarized in (67).[32]

(67)   a.   argument crossing an island;   no offending trace   √

        b.   argument crossing an island;   with offending trace   ??

        c.   predicate crossing an island;   no offending trace   ??

        d.   predicate crossing an island;   with offending trace   *

Let us consider what the fundamental difference between arguments and predicates is. I suggest that the crucial difference resides in their semantic properties: predicates are semantically "functions" in that they take some argument and give a proposition back. Arguments, on the other hand, are not "functions" but rather they are semantically "arguments" of a function. Therefore, the generalization is that a function displays a stronger locality effect than an argument. This is a restatement of the fact that

a predicate displays a stronger locality effect than an argument, and I do not have a deeper principle to explain this generalization. Nonetheless, I present some empirical evidence to suggest that this generalization is on the right track.

First, it is well-known that adverbs (or adjuncts) displays a stronger locality effect than arguments as in (68).

(68)   a.   ?? What2 do you wonder whether John fixed t2?

       b.   * How2 do you wonder whether John fixed the car t2?

I suggest that an adjunct is semantically a function in that it takes a certain type of XP as its argument and gives the same type of XP back. For instance, a so-called VP-adverb like *completely* takes a predicate as its argument and gives another predicate back. In (69), the adverb *completely* takes [$_{VP}$ *solve the problem*] and gives back another VP of the same type [$_{VP}$ *completely* [$_{VP}$ *solve the problem*]].

(69)   John will [$_{VP}$ completely [$_{VP}$ solve the problem]]

Because of the property as a function whose domain is VP (or predicate), adverbs like *completely* are licensed only when they syntactically adjoin to a VP (not to other categories). The "selectional" properties of other types of adjuncts can be accounted for in the same way.

Second, *what*, which is syntactically an argument, behaves as a function on a certain interpretation. First, look at (70) which can expect two types of answer as in (71)a (a single answer) and (71)b (a pair-list answer) (May 1985).

(70)   What did every student see?

(71)   a.   Every student saw the house.

       b.   John saw the house, Mary saw the library, and Bill saw the pond.

When (70) anticipates a single answer like (71), the semantic representation of (70) is something like (72) in which *what* is an individual, a standard analysis.

(72)   Which y, y an individual, is such that for every x, x a student, x saw y?

Chierchia (1992) proposes a functional *wh*-analysis, according to which when (70) anticipates a pair-list answer like (71)b, the semantic representation of (70) is something like (73) in which *what* is a function.

(73)   Which f, f a function from an individual to an individual, is such that for every x, x a student, x saw f(x)?

In other words, (70) on this interpretation is asking for the identity of a function. A set of ordered pairs like {<John, the house>, <Mary, the library>, <Bill, the pond>} can provide an appropriate response to this question, because it is a function from an individual to an individual. If the value of *x* is *John*, *the house* is given as what was seen, and if the value of *x* is *Mary*, *the library* is given as what was seen, and so on. Now, if the proposed generalization of the locality effect is correct, the prediction is that a functional *what* displays a stronger locality effect than the individual *what*. The prediction is borne out. Saito (1995) observes that when *what* crosses a *wh*-island, a pair-list answer is no longer available.[33]

(74) ?? What do you wonder whether every student saw?

(75) a. I wonder whether every student saw the house.

    b. # I wonder whether John saw the house, Mary saw the library, and Bill saw the pond.

Notice that although the pair-list sentence in (75)b is perfectly grammatical as an independent statement, it is impossible as an answer to (74). This means, under Chierchia's analysis, that *what* in (74) cannot behave as a function; in other words, a functional *what* cannot cross a *wh*-island. This contrasts with the individual (i.e., non-functional) *what*; the single answer in (75) is a good response to (74), showing that the non-functional *what* can cross a *wh*-island, only inducing a Subjacency violation effect. Therefore, this argument is considered to be another piece of evidence that a function displays a stronger locality effect than an argument.

Let us next discuss the *wh*-scope reconstruction of predicate-fronting. Recall that one of the arguments for LF undoing of Japanese scrambling is the fact that a *wh*-phrase in a scrambled phrase can take its scope in its θ-position as shown in (76).

(76) [dare-no shasin-o]ı John-ga [dare-ga tı katta ka] sitteiru
    [who-GEN pictures-ACC]ı John-NOM [who-NOM tı bought Q] know
    'Lit. (some) pictures of who, John knows who bought'

The corresponding English sentence is ungrammatical, showing that LF undoing (for the purpose of licensing *wh*-phrase) is not possible in English.

(77) * [Some pictures of who]ı John knows who bought tı

If the fronted predicate is base-generated in its surface position and obligatorily lowers to the complement position of Infl/Aux to check the selectional feature of the Infl/Aux, the predicate-fronting sentence where the predicate contains a *wh*-phrase is predicted to be good. Oka (1996) observes that the relevant examples are better than (77):

(78) a. ?? [proud of whom], I wonder who was. (Oka 1996: 364)

    b. */??They said that everyone would buy some pictures of someone, and [buy some pictures of whom], I wonder who did.

(78)a is Oka's example which is marked ??. (78)b is an example which I have made as parallel as possible to (77). There are some speakers who find a contrast between (77) and (78) real, but for other speakers they are all ungrammatical. If the contrast between (77) and (78) is real, it would be a strong support for the LF analysis of predicate-fronting we are exploring. *Whom* in (78), for instance, can take its scope in the lowered position. The source of the slight degradation is attributed to (67)c; the predicate has crossed a *wh*-island. Why do some speakers find no contrast between (77) and (78) and claim that they are all ungrammatical? There seems to be another factor involved here. Pesetsky (class lecture, fall 1997) suggested (79) as a condition of *wh*-interrogatives in English.

(79) With the exception that P[reposition] is ignored, acceptable *wh* phrase must begin with *wh*

Hence, there is a sharp contrast between (80)a and (80)b; the former is perfect, while the latter is very bad.

(80)   a.   Sue needs to know [*whose* mother's brother's picture] you've destroyed this time.

     b.   * Sue needs to know [the picture of *whose* mother] you've destroyed this time.

Note that if (79) is the only condition relevant to all the cases we have seen so far, the argument for the lack of LF undoing of topicalization as in (77) does not hold anymore; (77) is bad simply because of (79). I would like to suggest that although (79) masks the contrast between (77) and (78) for some speakers, the fact that other speakers still find some contrast between them indicates that something more than (79) is involved. LF undoing of topicalization is not possible, while LF undoing of predicate-fronting is obligatory. The fact follows from the assumption that θ-features are strong, while the selectional features of the Infl/Aux are weak in English. Recall that the latter claim is a natural conclusion under the LF Copy theory of VP-ellipsis. In the next section, I will discuss some technical aspects of covert selection.

Finally, let us consider quantifier scope in VP-fronting. First, look at (81).

(81)   a.   Someone saw everyone.

     b.   · See everyone, someone did.

Although (81)a is scopally ambiguous, (81)b allows only the wide scope interpretation of the existential quantifier *some*. Observing this difference, Huang (1993) claims that the VP-internal subject trace is irrelevant to scope interpretation. Since I have claimed,

with Takano (1995) and Heycock (1995), that the fronted predicate is forced to be in the complement position of the remnant Aux/Infl at LF, it is predicted that the scope facts of (81)b are the same as those of (81)a, contrary to fact. For this problem, I simply stipulate that an element cannot be extracted out of another element which has undergone movement. That is, after LF lowering of the VP in (81)b, *everyone* cannot QR out of the VP, and hence, the only possible interpretation is the one in which *someone* takes wide scope over *everyone* in (81)b. *Everyone* may QR to adjoin to the VP before the VP lowers as in (82)a, and the ultimate LF representation after VP lowering is (82)b, which is the right representation of the possible interpretation: *someone* takes wide scope over *everyone*.

(82)   a.   [$_{VP}$ everyone1 [$_{VP}$ see t1]][someone2 [t2 did]]

           ↑_____| ↑___|

     b.   [someone2 [t2 did [$_{VP}$ everyone1 [$_{VP}$ see t1]]]]

           |_____ LF Lowering _____↑

A serious topic to be explored is why extraction out of a moved element is not possible, which I will not pursue here.[34]

5.5   Radical Acyclic Merger and a Theory of Phrase Structure Building

Bošković and Takahashi (1998) provide concise conceptual arguments for Lowering and Movement into θ-positions, claiming that they are not as innovative as they appear, but rather are a natural possibility in the minimalist framework. Their arguments can naturally be generalized to Movement/Merge into other selected positions;

specifically, the same conceptual arguments hold for LF Lowering of the "fronted" predicate to the selected position and for LF Copy into the selected position (an LF Copy analysis of VP-ellipsis and Japanese null arguments). "Selected positions" here means positions selected by a head, such as a complement of Infl/Aux, as well as θ-positions. However, there is one aspect of theoretical execution which is not explicit in Bošković and Takahashi; that is, in Japanese scrambling, what is in a θ-position in overt syntax when the position is filled with an argument by LF lowering, or is there literally no position in overt syntax which corresponds to a θ-position in covert syntax? Under the bare phrase structure hypothesis (Chomsky 1994, 1995a) in which there is no X-bar format for phrase structure building mechanism to follow and no categorial nodes independent of lexical items, there will be two logical possibilities concerning a θ-position in overt syntax in Japanese scrambling. One is to assume that there is some "lexical item" which consists of only a categorial feature, say, D. This lexical item merges with the verb and creates the θ-position, but it has not checked off the θ-feature of the head verb in overt syntax and is waiting for the scrambled phrase (base-generated at the surface non- θ-position) to fill it in so that it may discharge the θ-feature in covert syntax. If this is the case, we have to postulate the existence of this "empty lexical item" which consists only of the categorial feature and allows a full fledged lexical item to fill it in by LF Lowering. Further, we have to postulate that a verb has some selectional property other than θ-features which can be satisfied by an "empty lexical item." It seems therefore that we need a couple of extra assumptions for this option to work properly. The other possibility, which I think is more natural, is to assume that there is actually no θ-position created in overt syntax when the scrambled phrase is base-generated at its surface position. The θ-position is created when the scrambled phrase lowers to check a θ-feature in covert syntax. As far as the necessary lexical item and selectional features of the head verb are concerned, the latter possibility has to make no

extra assumption other than what we need in overt merger. That is, covert feature checking between a head and a selected element takes place as a result of the merger between them. In this section, I assume the second possibility and discuss the exact technical execution of covert merger of a head and elements selected by the head. The most innovative aspect of this type of merger is that it can take place well after more structure has been built above the selecting head. I argue here that a couple of natural assumptions will make this acyclic merger a natural process in syntax.

First of all, if the cycle is defined by the strength of syntactic features to be checked (Chomsky 1995a), checking weak features can be "acyclic" in principle. Next, in any version of movement theory which assumes a last resort principle, unchecked features (weak or strong) are "visible" to syntactic operations; otherwise, syntactic operations can never target a head which has unchecked features. Therefore, even if a head has been deeply embedded in the phrase structure, as long as it has unchecked features to be discharged, syntactic operations (specifically, LF Lowering and LF Copy in the present case) can see, and thus target, the head. The relevant phrase can be attached to the head in covert syntax; the merger gives the relevant local relation between the head and the phrase attached to it and the feature is correctly discharged. Therefore, a syntactic operation which targets an embedded head is a natural option in syntax which should not be excluded *a priori*. A question arises: what is the exact syntactic relation between the head and the phrase "attached" to it by LF Lowering or LF Copy? I will address this question below, but as a preliminary for the discussion of this question, I will first address another serious question which arises in the conception of phrase structure in which there is no syntactic position in overt syntax when the position is created in covert syntax by LF Lowering or LF Copy.
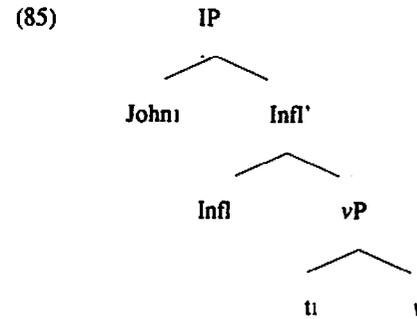
Consider the phrase structure of (83)b.

(83) a. Mary didn't leave, but

b. John did.

Suppose that the supportive *do* is a phonological realization of Infl (when there is no local verb to which the Infl can attach (Lasnik 1995a), for instance). I have assumed so far that the selectional feature of Infl is weak, that no complement VP has been attached to the Infl in (83)b, and that this is why VP-ellipsis (but not argument-ellipsis) is possible in English. Hence, the phrase structure of (83)b in overt syntax is (84).

(84)

```
            IP
         /      \
      John      Infl
```
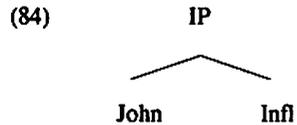
Notice, however, that *John* in (84) is the sister, and therefore the complement, of Infl. Given that English is a head-initial language (putting aside the question of how the head parameter effect can be specified in the bare theory of phrase structure), the surface order should be Infl-*John*, realized as *did John*, contrary to fact. To solve this problem, I propose that the actual structure of (83)b is not (84), but (85), where Infl takes *v*P as its complement whose head *v* has the selectional properties to take NP as its "specifier" and VP as its "complement." These selectional properties of the *v* are essentially the same as Chomsky (1995a: 348ff) proposes, except that I propose that the selectional property of *v* to take VP is weak. Therefore, in (85), the selectional property has not been discharged in overt syntax.

(85)

```
            IP
         /      \
     John1      Infl'
             /       \
          Infl        vP
                   /      \
                 t1        v
```

Now, *John* is the specifier of Infl and hence *John* and Infl are spelled out in the correct order *John did*. I therefore claim (86).

(86) a. Infl has strong selectional features to take *v*P in English

b. *v* has weak selectional features to take VP in English

I assume that *v* checks the θ-feature of the subject NP. Note that θ-features in the proposed theory are syntactic features to be checked, which would be independent of the actual semantic contents of "thematic properties" each argument assumes; for instance, it has been assumed that the subject of the verb *know* is Experiencer, and the subject of *hit* is Agent, and so on (for instance, Jackendoff 1972). I suggest therefore that actual semantic contents of thematic properties are interpreted globally (i.e., not necessarily within the X-bar theoretic local configuration) in the semantic component.

Given this theory of phrase structure for VP-ellipsis and VP-fronting, a question is why VP-adverbs like *completely* cannot be licensed by adjoining to *v*P, yielding **John did completely*, which has the structure in (87).

(87)

```
              IP
           /      \
        Johnₗ       I'
                 /      \
              Infl       vP
                      /       \
                 completely    vP
                            /       \
                          tₗ         v
```
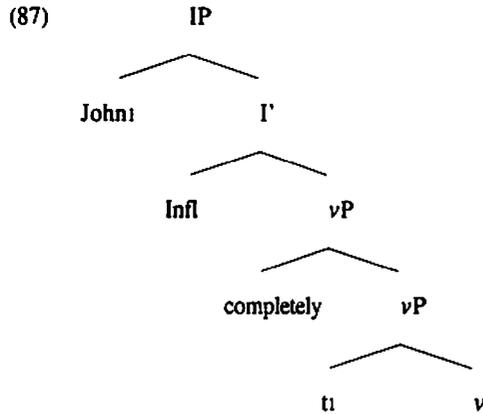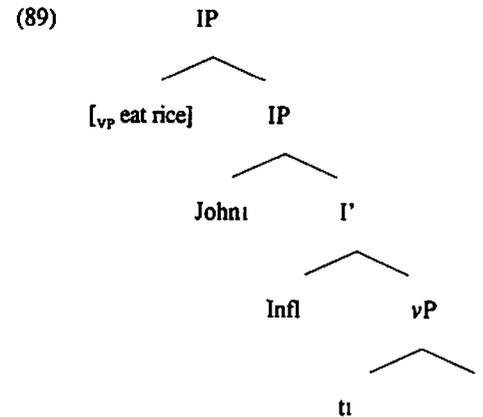
For this problem, I suggest that the semantic property of VP-adverbs requires that they take a bare predicate in their scope, but they cannot take a subject in their scope. If the very nature of small *v* is to assign the subject θ-feature to its Spec position, *v*P contains a member of the subject argument chain. Therefore, adjoining an adverb like *completely* to *v*P is not compatible with the semantic nature of the adverb. Because of the semantic properties of VP-adverbs and *v*, *v*P cannot be a target of the VP-adverb adjunction.

If it is true that the strong subject θ-feature in English is a property of *v*, we have a solution to a potential problem in our base-generation analysis of VP-fronting. In (88), for example, where the VP is base-generated in its surface position, if the strong θ-feature to be checked against the subject NP is a property of the verb *eat*, it is not clear how the feature can be checked in overt syntax (recall that we have assumed that θ-features are strong in English).[35]

(88)   Eat rice, John did.

Now, let us come back to the question of exactly where the selected element is located when it merges with the selecting head in covert syntax. Take (88) as an example whose structure in overt syntax is (89).
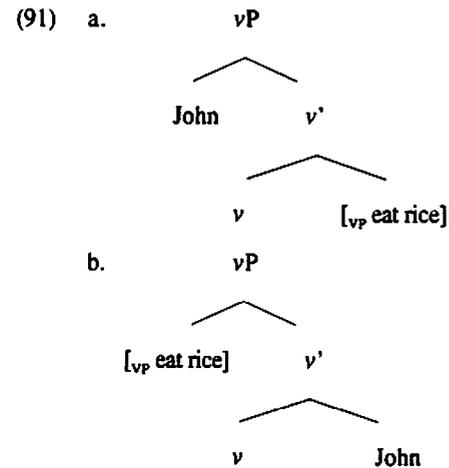
(89)

```
                 IP
              /      \
       [vₚ eat rice]   IP
                    /      \
                 Johnₗ       I'
                          /      \
                       Infl       vP
                                /      \
                             tₗ         v
```

v has an unchecked selectional feature to be checked against VP, and recall that unchecked features are visible to syntactic operations. Therefore, LF Lowering of the VP *eat rice* can target the head *v*. Now, there are two possible landing sites for the VP as is illustrated in (90).[36]

(90)   a.

```
              IP
             /  \
        Johnι      I'
                  /  \
              Infl      vP
                       /  \
                     tι      v'
                            /  \
                          v      [vP eat rice]
```

b.

```
            IP
           /  \
      Johnι      I'
                /  \
            Infl      vP
                     /  \
            [vP eat rice]   v'
                          /  \
                        v      tι
```
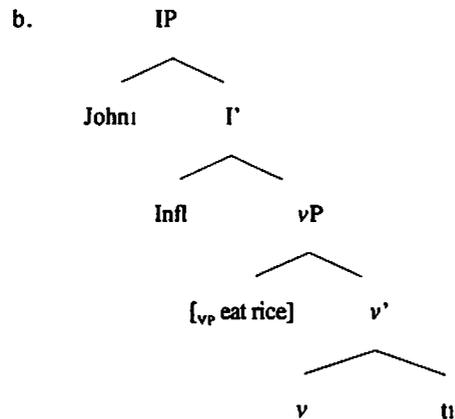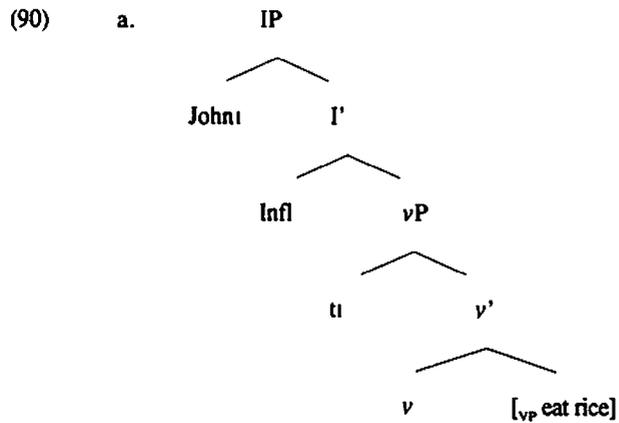
In (90)a, the VP *eat rice* is the complement of the verb *v*, while in (90)b, the VP *eat rice* is the specifier of the verb *v*; in both cases, the VP and the selecting head *v* are sufficiently local for checking the selectional feature of the verb *v*. As far as the LF structure is concerned, word order is irrelevant for choosing one over the other between (90)a and (90)b. One possible conclusion, therefore, is that both (90)a and (90)b are

freely available derivations, especially concerning the checking of the selectional features of the verb *v*.

However, if both (90)a and (90)b are free options, when the VP merges with *v* overtly, it is predicted that both (91)a and (91)b are free options as well, which is obviously wrong.

(91)   a.

```
            vP
           /  \
       John      v'
                /  \
              v      [vP eat rice]
```

b.

```
            vP
           /  \
   [vP eat rice]   v'
                  /  \
                v      John
```

That is to say, if LF Copy or LF Lowering freely allows both (90)a and (90)b, overt merger of the VP *eat rice* must also allow both (91)a and (91)b. Therefore, some mechanism is necessary to ensure that only (91)a, not (91)b, is possible, and consequently that only (90)a, not (90)b, is possible. The mechanism I propose is (92).

(92)   The selectional feature of *v* to take VP can be checked only in the sister relation between *v* and VP.

In other words, although the head *v* has two types of selectional features, the one to take an argument and the other to take a VP, the latter feature can be checked only in the "head-complement" relation in traditional X-bar theoretic terms, the head being *v* and the complement being a VP. Therefore, even though no X-bar theoretic format plays a role in phrase structure building in the bare phrase structure hypothesis, the effect of the X-bar format is encoded in the property of the selecting head. This assumption seems to be necessary and has been implicit in standard practice of the minimalist literature. For instance, suppose that Infl has two types of selectional properties: one is EPP and the other is the property to take a VP (call it the "VP-feature") (let us ignore the projection *v*P here for the sake of simple exposition, but the general idea must be true in the full-fledged phrase structure with *v*P). Suppose that we have Infl, the expletive *it*, and the VP [*seems that John left the town*] at a point of derivation as in (93).

(93)   a. Infl

        b. expletive *it*

        c. [_{VP} seems that John left the town]

There are two possible structures to satisfy the two selectional properties of Infl: by merging Infl with the expletive *it* to check the EPP feature and then merging the VP to the complex [*It* + Infl] to check the VP-feature, which gives (94)a, or alternatively, by merging Infl with the VP to check the VP-feature and then by merging the expletive *it* with the complex [Infl + VP] to check the EPP feature, giving (94)b.

(94)   a.

       b.
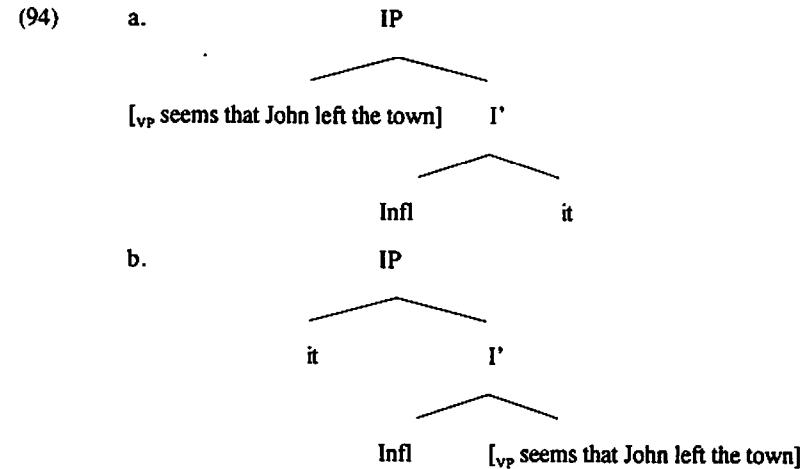
Obviously, the structure in (94)a provides the wrong word order at PF: **Seems that John left the town it.* It seems that nothing rules out (94)a in the bare theory of phrase structure as it stands. Note that the verb *seems* is the head of the VP in the specifier position of IP in (94)a and hence, the relevant tense feature can be checked off between *seems* and Infl in the local head-head relation.[37] What is necessary and has implicitly been assumed in the bare theory of phrase structure building is one of the following assumptions.

(95)   a.   Merge with the complement must take place before merge with the specifier.

        b.   The complement selecting feature of a head can be checked off only in the sister relation between the head and the phrase.

        c.   The specifier selecting feature of a head can be checked off only in the head-specifier relation between the head and the phrase.

In the present example, (95)a means that the VP-feature of Infl must be checked off before the checking of the EPP feature. Chomsky (class lecture, fall 1995) actually suggests that the complement selectional property can be considered as a "strong feature." However, the complement selecting feature must be "stronger" than the specifier selecting feature, to ensure the effect in (95)a. All of the assumptions in (95) ensure that the resulting structure is in traditional X-bar format, but in either case, the effect is derived by the property of the head.[38] Notice here that (95)b leaves the possibility that acyclic merge targeting a head which has an unchecked complement selecting feature provides the head complement relation even if more structure has been built above the head. Especially, if this acyclic head-complement merge takes place in covert syntax, nothing in principle prevents the resulting structure. Therefore, if we assume that (95)b is the relevant property of a head in general, rather than (95)a or (95)c, we can correctly rule in (90)a and (94)b, ruling out (90)b and (94)a. Recall that either of the assumptions in (95) is necessary in the bare theory of phrase structure building in any event, and hence, insofar as there is no independent evidence to select (95)a or (95)c and exclude (95)b, we can reasonably assume that what is at work is (95)b, and the desired result is obtained. In this section, I argued that acyclic Move or Merge into an embedded complement position in covert syntax is a reasonable possibility of the theory of phrase structure building in the general minimalist framework in whcih there is no D-structrue.

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5.6 Summary of Chapter 5

In this chapter, I discussed new aspects of selection and reconstruction in the minimalist framework. Elaborating Bošković and Takahashi's (1998) theory of

Japanese scrambling, I proposed that when the selectional features of the head are weak, merger of the head and the selected phrase can take place in an acyclic manner in covert syntax. The proposed analysis provides many new insights into the properties of Japanese null argument structures and English VP-ellipsis/VP-fronting. Specifically, I argued that the sloppy identity interpretation and the indefinite interpretation of Japanese null arguments are possible because θ-features are weak in Japanese, exactly the same reason that scrambling is available in Japanese: Japanese type null arguments are never available in English because θ-features are strong in English, exactly the same reason that scrambling is not possible in English. VP-ellipsis is possible in English because the selectional feature of v which takes VP as its complement is weak. This allows the derivation in which the "fronted" VP is base-generated in its surface position and lowers to the complement position of v in covert syntax. Economy of derivation further requires that LF Lowering is the only possible operation when the feature of the selecting head is weak. Hence, the forced "reconstruction" effect naturally follows. Another property of non-wh-predicate fronting, i.e., the weak locality effect, also receives a natural account under the base-generation analysis of predicate fronting.

Notes to Chapter 5

[1] Throughout the discussion, scrambling means long-distance scrambling, unless otherwise noted.

[2] For other arguments for movement into a θ-position, see Bošković (1994) and Lasnik (1995b), for instance.

[3] The definition of strong features is actually different in Chomsky (1992), Chomsky (1994), and Chomsky (1995a), and each has different consequences, but the difference is not crucial for our present purposes. See Lasnik (1997) for discussion on three theories of strong features.

[4] It is a big mystery, however, why reconstruction of A'-movement, such as topicalizatoin and *wh*-movement, is possible for binding purposes, while it is impossible for the purposes of *wh*-scope. For instance, a local anaphor *himself* in the topicalized phrase can be coreferential with *John* in (i), although *himself* is not c-commanded by *John* at the surface position, strongly suggesting that Binding Condition A applies to *himself* at the position marked *t*2.

(i)   [Some pictures of *himself*]2, Mary thinks that *John* likes t2.

See Stjepanović (1998b) for an interesting proposal to account for this mystery.

[5] Bošković and Takahashi suggest another way to account for the contrast by appealing to Rizzi's definition of relativized minimality, according to which lowering is immune to the relativized minimality effect.

[6] One might consider another possibility that Subjacency is irrelevant to LF movement (Huang 1982). However, as we will see in Section 5.4, this possibility is not tenable.

[7] A substantial portion of this section was presented at CLS 34, at University of Chicago (April 17, 1998). I thank the audience for suggestions and comments (see Oku to appear b).

[8] [e] indicates the position of the phonologically empty argument, but this is for expository convenience. I will argue that there is actually nothing in the position in overt syntax. See discussion in Section 4.5.

[9] Tomioka (1998) also discusses properties of Japanese null arguments related to the sloppy identity interpretation.

[10] Hoji's (1998) arguments against the VP-ellipsis analysis of the sloppy identity interpretation are very different from what I am going to present in this subsection, and are in part problematic for the present analysis. For instance, Hoji claims that the sloppy identity interpretation is not possible with certain verbs as in (ib), and hence, VP-ellipsis cannot be the source of the sloppy identity interpretation.

(i)   a.   Bill-wa   zibun(-zisin)-o nagusameta
               Bill-TOP   self(-self)-ACC consoled
               'Bill consoled himself'
    b.   John-mo   *ec* nagusameta
               John-also *ec* consoled
               'Lit. John also consoled *ec*'

If Hoji is correct, (ib) is problematic for the LF Copy analysis I am going to explore. However, there are some speakers who find the sloppy identity interpretation still possible in (ib), although I admit that it is slightly harder to get here than with other verbs like *suisensuru* 'recommend'. I have no explanation for this difference at the moment (see Hoji 1998: fn. 14 for a discussion). Takahashi (1996: fn. 3) discusses one difficulty in Hoji's analysis, which I will introduce below.

[11] Nobuhiro Miyoshi (personal communication) first pointed out to me the possibility of the sloppy identity interpretation for null subjects in Japanese.

[12] The data presented in (16) and (17) are not conclusive, however. One may claim that there is a way to save the VP-ellipsis analysis for (16) and (17). If we follow Kuroda (1988), and Fukui and Speas (1986), among others, Japanese subjects can remain VP internal. Then, once the head verb has raised out of the VP as Otani and Whitman (1991) argue and the object NP *siken-ni* 'exam-DAT' in (17)b has been scrambled out of the VP, there is a VP constituent that contains the subject and excludes everything else and hence VP-ellipsis can derive the sentences in (16)b and (17)b. However, I will show below that such a derivation is not possible on independent grounds.

[13] I am grateful to Adolfo Ausín and Marcela Depiante for their help with the Spanish data throughout this section.

[14] Yatsushiro (1997) argues against Miyagawa's analysis, and claims that the basic order of the double objects in Japanese ditransitive structures is NP-DAT and NP-ACC. Therefore, NP-ACC and NP-DAT order as in (23)b is derived by movement of NP-ACC above NP-DAT. As far as I can see, however, the following argument is valid with either Miyagawa's analysis or Yatsushiro's analysis, and so I will assume Miyagawa's analysis for simplicity of exposition.

[15] Note that when (i), the overt counterpart of (31), is uttered in a neutral context, a stress is necessary on the adverb *teineini* 'carefully' to obtain the interpretation in which the adverb is in the scope of negation.

(i)   John-wa   kuruma-o   teineini   arawa-nakat-ta
       John-TOP   car-ACC   carefully   wash-not-PAST
       'John didn't wash the care carefully'

Then, one might argue that the interpretation in which the adverb is in the scope of negation is not available in (27)b, because the necessary stress cannot be put in (27)b, and hence, the lack of this interpretation in (27)b does not necessarily prove that VP-ellipsis in which the head verb is a remnant is not possible in Japanese. However, when (i) is uttered following (27)a, the stress on the adverb in (i) is not necessary to obtain the relevant interpretation. Therefore, the argument in the text can be maintained as it is.

[16] I will use *ec* to represent null argument in the sense of Hoji (1998); that is, it is a lexical item which is present in overt syntax and at the same time is different from the Spanish *pro*.

[17] Note that checking relation between the predicate and the argument is asymmetry. That is, a predicate checks exactly as many arguments as the number of the θ-features it has, while an argument can check more than one θ-features. For instance, an argument first checks a θ-feature of the predicate in the antecedent clause, and then the copy of the same argument can check a relevant θ-feature of the predicate in the clause in which the relevant argument is phonologically missing. See Lasnik (1995b) and Bošković (1994) for discussion that an argument can assume more than one θ-roles. Notice that in Bošković and Takahashi (1998), it is not clear whether the checking between a predicate and an argument is asymmetrical or not, because in scrambling, the number of θ-features the predicate has and the number of arguments in the clause are in one-to-one correspondence.

[18] With the LF representation in (43)b, the accidental coreference is possible, but the real coreference interpretation is available in (42).

[19] The property of *kare*, for instance, is very different from English *he*, although it is often translated as 'he.' For some discussion, see Saito (1985) and Hoji (1991), for instance.

[20] The present analysis implies that when LF representation of Japanese null arguments is provided by LF Copy, the interpretation displays "surface anaphora" phenomena in the sense of Hankamer and Sag (1976). For example, *it* in (i) cannot refer to a camel in the preceding clause, while *it* in (ii) can.

(i)   *I've never ridden a camel, and it stank horribly.
(ii)   I've never ridden a camel, but Ivan has, and he says it stank horribly.
                                 (Hankamer and Sag 1976: 403-404)

This is called "missing antecedent phenomenon," one of the surface anaphora phenomena, and Hankamer and Sag propose that there must be a structure like (iii) for (ii) at some level of representation and *it* in (ii) refers to *a camel* in the elided portion of the sentence.

(iii)   I've never ridden a camel, but Ivan has [ridden a camel], and he says it stank horribly.

I will now show that the same kind of phenomenon can be observed in Japanese null object sentences. In (iv), *sono ko* 'the kid' cannot refer to *chugakusei* 'junior high school student' in the preceding clause and hence the sentence is bad in the intended coreferential reading.

(iv) * watashi wa   *chugakusei*-no   eisakubun-o
      I-TOP   *high school student*-GEN   English composition-ACC
      tensaku-sita-koto-wa   nai   ga,   *sono-ko*-wa   totemo
      correct-did-fact-TOP   not   but,   *that-kid*-TOP   very

yushu-datta
smart-was
'I have never corrected English composition by a junior high school student, but
the kid was very smart'

However, the sentence is good in (v) in which a null object is involved.

(v) watashi wa   chugakusei-no   eisakubun-o
     I-TOP   high school student-GEN   English composition-ACC
     tensaku-sita-koto-wa nai   ga,   Tanaka-wa   tensaku-sita-koto-ga aru
     correct-did-fact-TOP not   but,   Tanaka-TOP   correct-did-fact-NOM exist
     sono-ko-wa   totemo   yushu-datta   soda
     the kid-TOP   very   smart-was   is said
     'Lit. I have never corrected English composition by a junior high school student,
     but Tanaka has once corrected [ ]. He says the kid was very smart'

The fact receives a natural account if we assume that at the relevant level of
representation (which the LF interface in our theory), (v) has a structure like (vi) and
that *sono-ko* 'that kid' refers to *chugakusei* 'junior high school student' in the elided part
of the sentence.

(vi) watashi wa   chugakusei-no   eisakubun-o
      I-TOP   high school student-GEN   English composition-ACC
      tensaku-sita-koto-wa nai   ga,   Tanaka-wa   [*chugakusei-no*
      correct-did-fact-TOP not   but,   Tanaka-TOP   [*high school student*-GEN
      eisakubun-o]   tensaku-sita-koto-ga aru
      English composition-ACC]   correct-did-fact-NOM exist
      sono-ko-wa   totemo   yushu-datta   soda
      the kid-TOP   very   smart-was   is said
      'Lit. I have never corrected English composition by a junior high school student,
      but Tanaka has once corrected [**English composition by** *a junior high
      school student*]. He says *the kid* was very smart'

This gives an empirical support for our LF Copy analysis of Japanese null arguments.

[21] Another argument for the impossibility of subject scrambling in Japanese Saito (1985)
gives is that no argument can intervene between the subject and a quantifier modifying
the subject as shown in (i)a.

(i) a. * Gakusei-ga   sake-o   san-nin   nondeiru
             student-NOM   sake-ACC   three-CL   drink-Prog
             · 'Three students are drinking sake'
     b.   Sake-o   gakusei-ga   san-bon   nonda
          sake-ACC   student-NOM three-CL   drank
          'The students drank three bottles of sake'

As (i)b shows, another argument can intervene between the object NP and the quantifier
modifying the object. Assuming the structure in (ii) for (i), Saito concludes that the
object NP can be scrambled, while the subject NP cannot.

(ii) a.   Gakusei-ga₁   sake-o₂   [ₛ t₁ san-nin   [ᵥₚ t₂ nondeiru]]
            student-NOM₁ sake-ACC₂ [ₛ t₁ three-CL [ᵥₚ t₂ drink-Prog]]
      b.   Sake-o₂   [ₛ gakusei-ga   [ᵥₚ t₂ san-bon   nonda]]
            sake-ACC₂ [ₛ student-NOM [ᵥₚ t₂ three-CL   drank]]

Note, however, that there are other cases in which an argument intervenes between the
subject and the quantifier modifying the subject, and the sentence nonetheless is good.

(iii) ?gakusei-ga   shukudai-o   san-nin   dasanakatta.
        student-NOM   homework-ACC three-CL   submit-not-PAST
        'Three students didn't submit the homework'

It is not clear to me what the source of the difference between (i)a and (iii) is, but as far as
I can see, scrambling of subject is possible at least in some cases. I tentatively conclude
that scrambling of subject is possible and (i)a is ruled out for some independent reason.

[22] There are exceptions to this generalization, however, in which a pronoun allows the
sloppy identity interpretation (Wasow 1972).

(i)   The man who gave *his paycheck* to his wife is wiser than the man who gave *it* to
      his mistress.

It seems that a pronoun may refer to a type, rather than a token, under certain
conditions, although the exact nature of such conditions is not clear to me. Compare (i)
with (ii) in which the sloppy identity interpretation is impossible.

(ii) John washed his car, and Bill washed it, too.

[23] Stanley Dubinsky (personal communication) suggested a possible alternative to obtain
the contrast between Japanese null subjects and Spanish null subjects. That is, under
Kuroda's (1988) and Fukui and Speas' (1986) proposal that Japanese subjects can stay
VP-internal, the indefinite interpretation is a property of in-situ subjects in general.

[24] It is an interesting question whether the grammatical status of (52)b is comparable to
the English-type Subjacency violation. Torrego (1984) proposes that the S-bar node,
but not S node, is a bounding node in Spanish and the following extraction out of an
wh-island does not yield a Subjacency violation because only one S-bar node has been
crossed.

(i)   [ₛ· X [ₛ ... [ₛ· *Wh* [ₛ ... t_x ...]]]]
       ↑_____|

Abstractly speaking then, (52)b has structure (i) and thus should be completely
grammatical if topicalization is derived in the same way as *wh*-movement in Spanish.
However, the judgments seem to vary among speakers and also Torrego does not
discuss non-*wh* argument displacement in Spanish and notes that it is different from the
English-type topicalization. It is another interesting topic to examine the nature of non-
wh argument displacement in Spanish, but it is beyond the scope of this work. In any
case, what is crucial to the present discussion is the clear contrast between (52)b and

(52)c, which shows that there is no LF undoing effect in Spanish argument displacement.

[25] Note that the following argument does not explain why there is no *pro* in English.

[26] Note that I-bar adjoined position and IP-adjoined position are possible sites for adverbs in principle. For instance, sentential adverbs like *probably* can occur in these positions as in (i).

(i)   a.   John probably should solve the problem.
        b.   Probably, John should solve the problem.

[27] Phillips (1996) argues that there are some asymmetries between VP-ellipsis and VP-fronting, which is not expected in the theory I have proposed, but I will not address this issue here.

[28] Recall that I have assumed that LF Lowering is the only option for deriving the VP-fronting structure (see discussion in Section 2.2 of Chapter 2). I completely abstract away from dialectal variation and the "echo effect" observed in the data, and assume that sentences like (60) is the basic fact. See Section 2.2, footnote 10 in Chapter 2 for some discussion.

[29] I will put aside many issues of reconstruction effect of fronted arguments. For instance, Freidin (1986) observes that reconstruction is forced for the complement of the fronted argument, while reconstruction is optional for the adjunct of the fronted argument (see also van Riemsdijk and Williams 1981 and Lebeaux 1988). Also, as Heycock (1995) argues, there may be some cases in which the fronted predicate does not necessarily show the forced reconstruction effect, which I will put aside, too, for simplicity of the discussion. What is crucial in the present argument is the general contrast between fronted arguments and fronted predicate, the latter generally showing the forced reconstruction effect.

[30] Huang (1993) proposes that (i) is out in the relevant coreferential reading because the VP-internal subject trace binds *John*, inducing a Binding Condition C violation.

(i)   * Criticize those books about John₁, he₁ will.

Therefore, in Huang's theory, the fronted VP is not necessarily reconstructed in the complement position of the Infl/Aux. However, as Barss (1986) and Takano (1995) point out, Huang's analysis is not correct, because (63) is also out in the intended coreferential interpretation, but this time, the VP-internal subject trace (the trace of *she*) does not bind *John*. This shows that the fronted VP is actually forced to be in the complement position of the Infl/Aux in LF.

[31] For discussion of the weak locality effect of VP-fronting, see Chomsky (1986b) and Roberts (1990).

[32] The idea is similar to the idea of Chomsky and Lasnik (1993), although the exact execution here is rather different from that of Chomsky and Lasnik.

[33] (74) is already degraded because of a Subjacency violation, but it is not relevant to the present discussion.

[34] Takahashi (1994) provides a principled account for the fact that extraction out of a moved element is not possible. The basic idea is that movement creates a chain whose members are identical copies, and extraction out of the moved element destroys the uniformity of the members of the chain. Unfortunately, however, Takahashi's theory does not apply to the present case under the proposed theory of predicate fronting, because I have claimed that no trace is left when the fronted predicate lowers, and the resulting chain is trivial (i.e., one-membered) and hence, movement out of the lowered predicate in LF does not destroy the chain uniformity.

[35] Saito and Murasugi (1993) suggest, on independent grounds, that VP-internal subject in English can be PRO. This is another possibility to deal with the potential problem of our base-generation analysis of VP-fronting, assuming that the strong subject θ-feature is a property of the lexical verb, not the small *v*, although we have to work out the theory of distribution of PRO accordingly. A more serious question is how to derive a sentence which involves VP-fronting of passive as in (i).

(i)   Kissed by Mary, John was.

Recall that I have claimed that a fronted predicate must be generated at its surface position, and hence, object θ-feature of *kissed* cannot be checked against *John* in overt syntax. However, I have also assumed that θ-features are strong and hence must be checked in overt syntax in English. This is an apparent paradox. For this problem, I again suggest that PRO checks off the strong object θ-feature of *kissed* in overt syntax.

[36] I assume that LF Lowering of the VP does not leave any trace, because no independent principle requires it, in the same way that LF Lowering of the scrambled phrase in Japanese does not leave any trace.

[37] If the verbal morphology of tensed main verbs in English is realized by the PF merger with Infl under string-adjacency condition between the verb and Infl as is proposed in Lasnik (1995a), (94)a gives the surface structure *Seem that John left does it.* Another wrong output.

[38] Another possible way of ensuring that head-complement merger takes place before head-specifier merger is to assume that the specifier selecting feature is "created" or becomes "activated" only when the complement selecting feature is discharged (see Watanabe 1993 for a similar idea). This assumption, however, as well as (95)a and (95)c, is not compatible with the acyclic merge hypothesis.

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