

ABSTRACT

Title of dissertation: SYNTACTIC HEAD MOVEMENT
AND ITS CONSEQUENCES

Kenshi Funakoshi, Doctor of Philosophy, 2014

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This thesis attempts to assimilate head movement as far as possible to phrasal movement. In particular, I argue that if we assume that the computational system of natural languages does not discriminate head movement from phrasal movement in terms of locality and the possible mode of operation, a distributional difference between these two types of movement can be explained by the interaction between a locality constraint and an anti-locality constraint to which syntactic movement operations are subject, and crosslinguistic variations in the possibility of what I will call *headless XP-movement* and *headless XP-ellipsis* can be reduced to parameters that are responsible for the possible number of specifiers.

For this purpose, this dissertation discusses a number of syntactic phenomena: nominative object constructions in Japanese, long head movement constructions in Slavic and Romance languages, multiple topicalization in Germanic languages, predicate cleft constructions in Hebrew, Polish, Brazilian Portuguese, and Yiddish, remnant VP-fronting constructions in Polish, a difference between VP-ellipsis and pseudo-gapping in English, null object constructions in Hebrew, Tagalog, Russian,

European Portuguese, Japanese, Bantu languages, Persian, and Serbo-Croatian, and yes/no reply constructions in Irish and Finnish.

SYNTACTIC HEAD MOVEMENT
AND ITS CONSEQUENCES

by

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Dissertation submitted to the Faculty of the Graduate School of the
University of Maryland, College Park in partial fulfillment
of the requirements for the degree of
Doctor of Philosophy
2014

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Dedication

To my parents

Acknowledgments

There are many people I wish to thank for their assistance and support in the completion of my graduate studies at the University of Maryland.

My deepest gratitude goes to my committee members, Susan Dwyer, Thomas Grano, Norbert Hornstein, Howard Lasnik, and Juan Uriagereka. All of them were supportive and helpful throughout, and I would like to thank them for their time and effort. Especially, I owe a vast intellectual debt to Howard and Norbert. It has been a privilege working with them since I arrived at College Park in 2009.

I would also like to express my gratitude to my teachers back in Japan: Brent de Chene, Yoshihiko Hayashi, Yoichi Miyamoto, Kenichi Namai, and Masao Ochi. Without the support that I have constantly received from them, I would not be where I am right now.

Special thanks go to Masahiko Takahashi, who was my officemate for two years. I learned a lot through discussions with him.

I am grateful to the following people for reading my work and/or having a meeting with me to talk about my work: Jun Abe, Tonia Bleam, Željko Bošković, Alex Drummond, Sayaka Goto, Bradley Larson, Jeff Lidz, Terje Lohndal, Darryl McAdams, Taisuke Nishigauchi, Paul Pietroski, Mamoru Saito, Andrew Simpson, Daiko Takahashi, Masahiko Takahashi, and Yuji Takano. Their invaluable comments played a crucial role in developing some of the central components of this dissertation.

I wish to thank the following people for giving me useful comments on my work:

Shinya Asano, Miloje Despic, Michael Fetters, Tomohiro Fujii, Michaël Gagnon, Stefan Huber, Yusuke Imanishi, Atakan Ince, Yumiko Ishikawa, Yuki Ito, Yu Izumi, Wataru Kambayashi, Kazuya Kudo, Chris LaTerza, Jason Merchant, Hiroshi Mito, Takeshi Oguro, Hiromi Onoue, Dongwoo Park, Carolina Petersen, Yuta Sakamoto, Yoshiyuki Shibata, Koji Sugisaki, Shinta Tamaki, Hideharu Tanaka, Hiroyuki Tanaka, Yuta Tatsumi, Hiroyuki Ura, Alexander Williams, and Masaya Yoshida.

I would like to thank the following people for providing me with the crosslinguistic data that I needed: Carolina Petersen for Brazilian Portuguese, Chris Lat-erza, Darryl McAdams, and Alexis Wellwood for English, Michaël Gagnon for French, Ana Lúcia Santos for European Portuguese, and Anna Bondaruk for Hun-garian.

Thanks also go to my classmates Angela Xiaoxue He, Yakov Kronrod, Sol Lago, Darryl McAdams, Dan Parker, Megan Sutton, and Alexis Wellwood.

I also thank to my linguist and non-linguist friends around College Park: Da Fan, Angela Xiaoxue He, Maki Kishida, Yuki Ito, Mio Izumi, Yu Izumi, Shota Momma, Philip Monahan, Ayaka Negishi, Akira Omaki, Naho Orita, Eri Takahashi, Hisako Takahashi, Masahiko Takahashi, and Mahito Yamamoto.

My appreciations also go to Kathi Faulkingham and Kim Kwok for their help in administrative procedures.

Finally, I would like to thank my family for everything: Masanobu, Kiyomi, Sayaka, Daijyu, Mayu, and Hiyori.

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List of Abbreviations

ABS = absolutive
ACC = accusative
APPL = applicative morpheme
ASP = aspect or mood maker
CAUS = causative CL = classifier
COMP = complementizer
COP = copular
DAT = dative
DECL = declarative
DET = determiner
EXPL = expletive
FEM = feminine
FV = final vowel
FOC = focus maker
FUT = future tense
GEN = genitive
HON = honorification form
IMPERF = imperfective
IND = indicative mood
INSTR = instrumental
M = masculine
NEG = negation
NOM = nominative
OBJ, OM = object maker
PERF = perfective
PL = plural
POSS = possessive
PPRT = past participle
PRE = nominal inflection prefix
PRES = present tense
PRG = progressive
PRT = particle
REFL = reflexive
SBJ = subjunctive mood
SG = singular
SM = subject maker
SP = subject agreement prefix
SUF = nominal inflection suffix
TOP = topic maker

Chapter 1: Introduction

1.1 Overview

The primary aim of this thesis is to construct a theory of syntactic head movement in which head movement is assimilated as far as possible to phrasal movement and differences between these two types of movement are deduced from general principles that regulate syntactic operations. The core idea that I will explore is that eliminating differences between head movement and phrasal movement in terms of locality and the possible mode makes it possible (i) to deduce a distributional difference between these two types of movement from a locality constraint and an anti-locality constraint, and (ii) to reduce crosslinguistic variations in the possibility of what I will call *headless XP-movement* and *headless XP-ellipsis* to parameters that are responsible for the possible number of specifiers.

1.2 Unusual Properties of Head Movement

Since Chomsky 1957, head movement has played a crucial role in analyzing various syntactic phenomena in generative grammar (Chomsky 1957, Emonds 1971, 1976, den Besten 1983, Koopman 1983, Travis 1984, Baker 1985, 1988, Roberts 1991b,

1994, 1998). However, after Chomsky (2001) casts doubts on the existence of head movement as an operation in syntax, head movement has been subject to close scrutiny and some researchers reach the conclusion that there is no syntactic head movement (Koopman and Szabolcsi 2000, Abels 2001, 2003, Boeckx and Stjepanović 2001, Mahajan 2001, Nilsen 2003, Harley 2004).

The reason why Chomsky (2001) doubts the existence of syntactic head movement is that it has unusual properties compared with phrasal movement. The unusual properties of head movement that Chomsky (2001:37–38) points out are listed below:

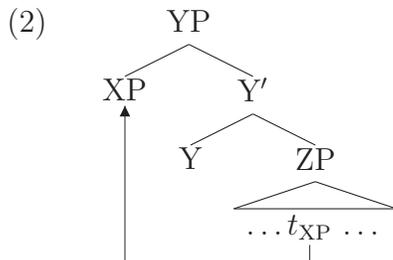
- (1) a. Head movement lacks semantic effects.
- b. Head movement is countercyclic.
- c. The moved head does not c-command its trace.
- d. There is no theoretical apparatus to predict when phrasal movement takes place and when head movement takes place.
- e. Head movement observes locality conditions different from phrasal movement.
- f. Head movement is an adjunction rule, by which moving head is adjoined to the target head.
- g. Head movement is not successive-cyclic (no excorporation).

1.2.1 Lack of Semantic Effects

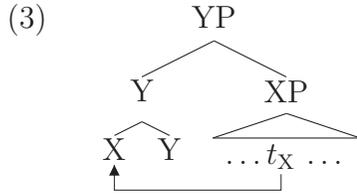
Among these properties, it is relatively easy to argue that (1a)–(1c) are not serious problems. I show why this is so. As for (1a), it is simply a mistake of fact. Although it is true that most instances of head movement seem not to have semantic effects, Lechner (2005) provides evidence that there are cases in which modals in English that undergo head-movement can be interpreted in moved positions. I do not review his arguments here because it requires discussion of a number of assumptions. I refer the reader to Lechner 2005 and concise summaries of his arguments such as Roberts 2010:13–17 and Vicente 2007:appendix to chapter 1. I will review Roberts’ (2010) argument that head movement sometimes affects LF representations in chapter 2.

1.2.2 Countercyclicity and the Extension Condition

As for (1b), it is assumed that (overt, or non-LF) phrasal movement always targets the root position, as illustrated by the following schematic structure (Y' had been the root before movement of XP took place):



In contrast, a typical head movement targets a non-root position, as illustrated by the following structure:



In this structure, YP is the root. X moves to a non-root position (a sister position of Y). Whether this movement is countercyclic or not depends on what kind of notion of cyclicity one has in mind. Chomsky (2001) argues that this X-to-Y movement is countercyclic because his notion of cyclicity is based on the Extension Condition, which requires that all movement operations extend the root of the structure that they apply to. In (2), XP-movement extends the root of the structure (i.e. Y') to YP, observing the Extension Condition. On the other hand, in (3), the root of the structure does not change before and after X-to-Y movement takes place. Thus, this movement does not extend the root, violating the Extension Condition.

However, the Extension Condition is not the only principle that guarantees cyclicity in syntax. As Bošković and Lasnik (1999), Richards (1999, 2004), and Lasnik (2006) point out, all the derivations that the Extension Condition rules out can also be ruled out by Featural Cyclicity, which requires that a strong feature be checked as soon as possible after being introduced into the derivation (Richards 1999:127). Given this redundancy and empirical evidence for Featural Cyclicity over the Extension Condition, these authors argue that we should adopt the former, dispensing with the latter. Notice that X-to-Y movement in (3) does not violate Featural Cyclicity if we, following Chomsky 1995b, interpret “as soon as possible” in its definition as before the maximal projection of the head bearing the strong feature gets embedded. Therefore, head movement is not countercyclic in terms of

Featural Cyclicity.

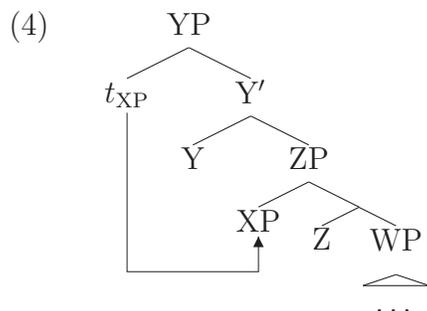
1.2.3 Non-C-commanding Property and the Proper Binding Condition

Regarding (1c), let us consider (2) and (3) again. In (2), the XP in its moved position c-commands its original position (its trace) while in (3), X does not c-command its trace if we assume the simplest definition of c-command (X c-commands Y iff every node that dominates X also dominates Y and X does not dominate Y and Y does not dominate X).

First of all, this non-c-commanding property of head movement depends on the definition of c-command. If we assume the distinction between categories and segments as in Chomsky 1986 and the definition of c-command based on that distinction (X c-commands Y iff every *category* that dominates X also dominates Y and X does not dominate Y and Y does not dominate X), X actually does c-command its trace in (3) since the higher segment of Y is not a category.

Furthermore, even if we adopt the simpler version of c-command and X does not c-command its trace, it is not clear if this is really problematic. That is, what is wrong if X does not c-command its trace? One of the possibilities is to resort to the Proper Binding Condition (PBC), which requires that traces must be bound (Fiengo 1977, May 1977, Saito 1989); if X does not c-command its trace, it does not bind its trace, violating the PBC. However, because of its apparent stipulative nature, the effects of the PBC should be derived from deeper principles. One of the

crucial roles that the PBC plays in syntax is to rule out lowering movement, which is illustrated by the following structure:



In this derivation, XP moves downwards to Spec, ZP. As a result, XP does not c-command its trace, violating the PBC. Such downward movement is generally assumed to be an illegitimate operation in syntax.¹

However, the ban on downward movement can be derived from a more general principle without stipulating the PBC if we adopt the Probe-Goal theory of movement, in which an Agree relation is a prerequisite for movement. For example, in order for XP to move to Spec, YP in (2), an Agree relation must hold between XP and Y. In particular, Y and XP must be a probe and a goal, respectively. A probe must c-command a goal. In (2), Y c-commands XP before XP moves. Thus, upward movement of XP to Spec, YP is allowed. On the other hand, in (4), Z does not c-command XP before XP moves. As a result, an Agree relation cannot be established between XP and Z. Given that an Agree relation is a prerequisite for movement, downward movement of XP to Spec, ZP in (4) can be prohibited without postulating the PBC.

¹However, Richards (2004) argues that lowering should not be banned on the basis of multiple wh-questions in Russian.

Note that X-to-Y movement in (3) is not problematic in terms of the Probe-Goal theory of movement. Y c-commands X before X moves. As a result, an Agree relation can be established between Y and X. Thus, there is no problem if X moves to Y. To sum up, if we adopt the Probe-Goal theory of movement, we do not need to postulate the PBC to rule out downward movement. If we do not have the PBC, there is no problem even if the moved head does not c-command its trace.²

1.2.4 Distribution of Head Movement

So far, we have seen that the first three unusual properties of head movement in (1) do not constitute serious arguments against the existence of syntactic head movement. On the other hand, the rest of (1) are real problems for head movement. They are related to the differences between head movement and phrasal movement that we have to stipulate. (1d) and (1e) are concerned with the distribution of head movement and phrasal movement, which can be best described by Pesetsky and Torrego's (2001) head movement generalization:

- (5) *Head Movement Generalization* (Pesetsky and Torrego 2001:363)

Suppose a head H attracts a feature of XP as part of a movement operation.

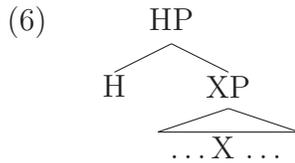
- a. If XP is the complement of H, copy the head of XP into the local domain

²Another alleged case for the PBC concerns some instances of remnant movement. There have been many proposals about how to derive PBC effects in these cases (den Besten and Webelhuth 1987, 1990, Saito 1989, 2002, Lasnik and Saito 1992, Collins 1994, Takano 1994, 2000, Müller 1996, Müller 1998, Kitahara 1997, Koopman and Szabolcsi 2000, Collins and Sabel 2007, Hiraiwa 2010)

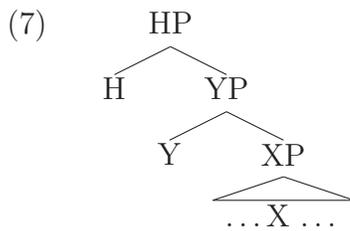
of H.

- b. Otherwise, copy XP into the local domain of H.

The situation that (5a) describes is illustrated by the following structure:



H is the attractor (a probe) and XP (a goal) has the relevant feature that is attracted by H. XP is the complement of H. Thus, the head of XP moves (head movement). As (5b) states, phrasal movement is the result of other situations such as the following:



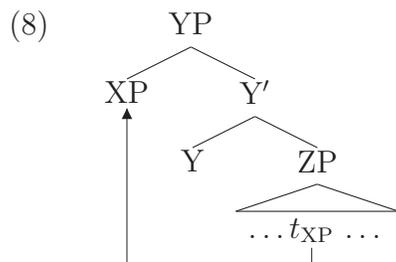
The goal XP is not the complement of the probe H. Thus, XP rather than X moves in this case (phrasal movement).

As Pesetsky and Torrego (2001) point out, this is just a generalization. Thus, there is no principled explanation for why the distribution of head movement and phrasal movement is as the head movement generalization describes. In chapter 3.2, I will deal with this problem and argue that the distributional difference between head movement and phrasal movement can be reduced to a locality constraint and an anti-locality constraint that are assumed to regulate syntactic movement in general. If this succeeds, the unusual properties (1d) and (1e) cease to be problematic because

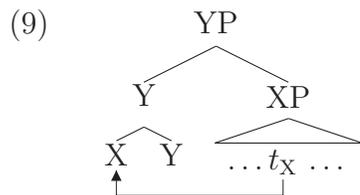
they receive a principled explanation.

1.2.5 Adjunction and Substitution

The property (1f) is concerned with a difference between head movement and phrasal movement in mode via which they are performed. It has been generally assumed that phrasal movement has two modes (i.e. substitution and adjunction in Government-Binding terms, Set-Merge and Pair-Merge in Chomsky's (2000, 2004) terms) while head movement has only one mode (i.e. adjunction or Pair-Merge). As a result of substitution, a category is projected. For example, in (2), repeated here as (8), XP moves to Spec, YP via substitution, projecting Y' into YP.



On the other hand, as a result of adjunction, a segment is projected. For example, in (3), reported here as (9), X moves to Y via adjunction, not projecting a category. The higher Y and the lower Y are different segments of the same category Y.

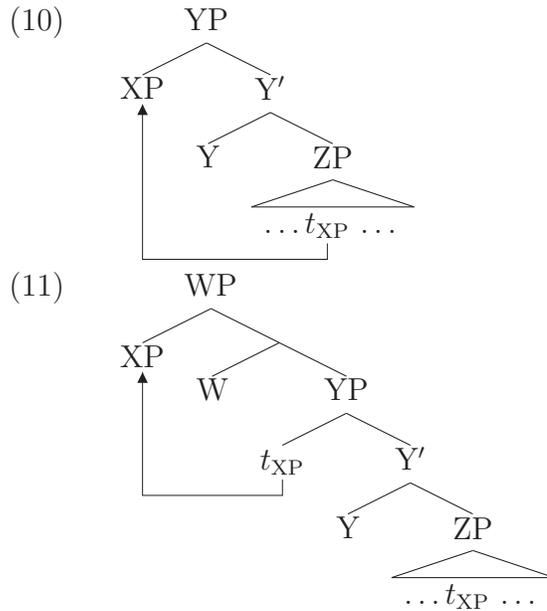


There is no principled reason why head movement, unlike phrasal movement, has only one mode, adjunction. In chapter 3.3, I will argue that we should abandon this unmotivated assumption and propose that the computational system of natural

languages allows head movement via substitution as well as head movement via adjunction (the “two types of head movement” hypothesis). Therefore, the unusual property (1f) disappears.

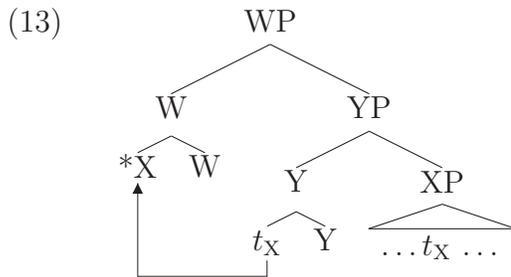
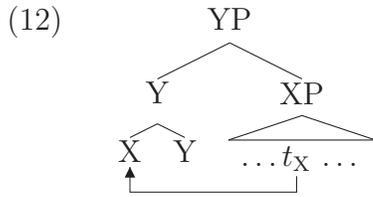
1.2.6 No Excorporation

Finally, (1g) is concerned with long-distance movement. When a phrase XP moves to a higher position in the structure, it can move in a successive cyclic way, as illustrated by the following:



The final landing site for XP is Spec, WP. In this situation, XP can stop by the intermediate position (Spec, YP) on its way to Spec, WP. This is the so-called successive cyclic movement.

It is generally assumed that head movement, unlike phrasal movement, does not proceed successive cyclically in long-distance contexts. Successive cyclic long-distance head movement is illustrated by the following:



The final landing site for X is W. In this situation, it is impossible that X first moves to the intermediate head position (Y) and then moves out of Y to W. Head movement like (13) is called excorporation and is prohibited. The question is, why is successive cyclic movement possible for phrasal movement but not for head movement? In chapter 3.4, I will discuss this issue and argue that this unusual property of head movement follows from a general locality constraint on movement.

In sum, in this thesis, I will propose a theory of syntactic head movement in which the unusual properties of head movement, compared with phrasal movement, that Chomsky (2001) points out are deduced from general principles that regulate syntactic operations.

1.3 Outline

In this section, I will give a short summary of each of the chapters.

In chapter 2, I will present empirical evidence that there is syntactic head movement in natural languages. After reviewing Roberts' (2010) argument that some instances of head movement affect LF representations and Baker's (1988) ar-

gument that noun incorporation is subject to a syntactic constraint, I will present evidence that verb movement in Japanese can feed another syntactic movement (cleft-movement). Crucial examples are given below:

- (14) a. Tyoosyoku-ni [Taro-ga **ringo-o** mit-tu] to [Hanako-ga
breakfast-for Taro-NOM apple-ACC three-CL and Hanako-NOM
banana-ga ni-hon] tabe-rare-ru.
banana-NOM two-CL eat-can-PRES
'For breakfast, Taro can eat three apples and Hanako can eat two
bananas.'
- b. Tyoosyoku-ni t_1 tabe-rare-ru no-wa [[Taro-ga **ringo-o** mit-tu]
breakfast-for eat-can-PRES C-TOP Taro-NOM apple-ACC three-CL
to [Hanako-ga **banana-ga** ni-hon]]₁ da.
and Hanako-NOM banana-NOM two-CL COP
(Lit.) 'It is [Taro three apples] and [Hanako two bananas] that can eat
for breakfast.'

I will show that (14a) must involve conjunction of TPs out of which Ts that contain *vs* and Vs undergo head movement in an across-the-board fashion, as illustrated by the following:

- (15) [[_{TP} Taro-NOM apple-ACC 3-CL t_{eat} t_v t_T] and [_{TP} Hanako-NOM banana-NOM
2-CL t_{eat} t_v t_T]] eat-*v*-T-C

In (14b), the TP conjunct undergoes cleft-movement. Given the across-the-board head movement analysis of (14a), (14b) shows that head movement can feed cleft-movement. Given that cleft-movement is syntactic, it leads us to conclude that head movement in this case must also be treated as syntactic movement.

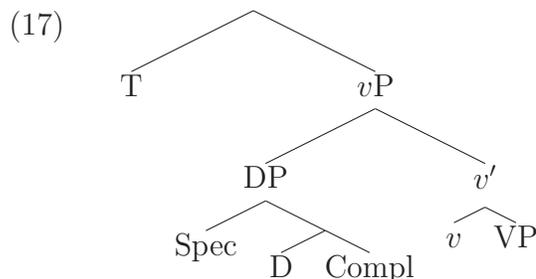
In chapter 3, I will propose a theory of syntactic head movement, which was

briefly described in 1.2. Crucial ingredients for this theory are a locality condition, anti-locality, and the “two types of head movement” hypothesis. Under this theory, we no longer have to distinguish head movement from phrasal movement in terms of locality and the possible mode of operations. Crucial differences between these two types of movement are deduced from locality and anti-locality constraints. I will propose the following as the locality constraint:

- (16) γ intervenes for Agree(P, G) iff
- a. every category that dominates γ also dominates G and
 - b. every category that dominates P also dominates γ and
 - c. $\gamma \neq G$ and
 - d. γ matches P and G.

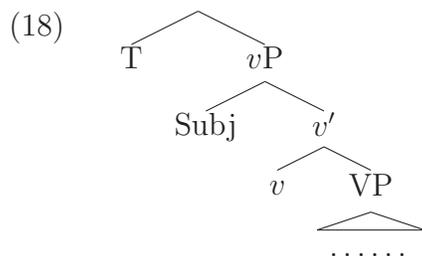
This locality constraint has the combined effect of Relativized Minimality or the Minimal Link Condition (or their equivalents) (Rizzi 1990, Chomsky 1995c) and the A-over-A Principle (Chomsky 1964b, Bresnan 1976). Thus, in cases such as subject-raising, the head of the subject DP cannot enter into an Agree relation with T since its maximal projection DP intervenes for it (A-over-A Principle effects).

This is illustrated by the following:



In this structure, $\text{Agree}(T, D)$ is intervened by the DP. Given that Agree is a prerequisite for movement, the maximal projection DP rather than its head moves, resulting in phrasal movement.

In the case of head movement, on the other hand, anti-locality prohibits phrasal movement. Let us consider the case of v -to- T movement:



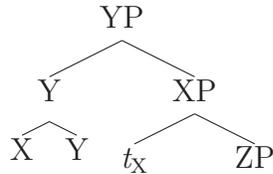
Given that the complement of a probe P cannot undergo movement that is triggered by P (anti-locality), vP cannot undergo movement triggered by T in this structure. Suppose further that intermediate projections are somehow syntactically invisible (Chomsky 1995c, Speas 1990, Travis 1984). If we assume that only elements that can potentially be a target of the relevant movement can be interveners (Rackowski and Richards 2005), then, neither vP nor v' intervene for $\text{Agree}(T, v)$. This is why movement of v is allowed in this case.

In sum, from the locality constraint and anti-locality, it follows that a head X moves when its maximal projection XP is the complement of a probe and a maximal projection XP moves when it is not the complement of a probe. This is exactly what Pesetsky and Torrego's (2001) head movement generalization states. Note that a crucial assumption for this deduction of the head movement generalization is that the computational system of natural languages does not discriminate head

movement from phrasal movement in terms of locality: phrasal categories could intervene for head movement. For example, if head movement were intervened only by heads, the D in (17) should be able to move. Therefore, the distributional difference between head movement and phrasal movement can be deduced from the locality constraint and anti-locality only if the computational system does not discriminate head movement from phrasal movement in terms of locality.

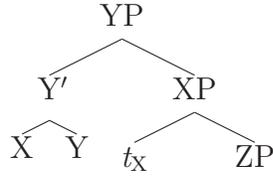
The “two type of head movement” hypothesis states that the computational system of natural languages allows head movement via substitution (HMS) as well as head movement via adjunction (HMA),³ eliminating another difference between head movement and phrasal movement. HMA and HMS are illustrated by the following schematic structures:

(19) *Head Movement of X to Y via Adjunction*

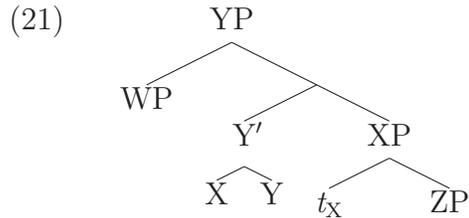


(20) *Head Movement of X to Y via Substitution*

³Throughout this thesis, I use a non-traditional usage of the notion of substitution. By substitution, I mean one type of movement operation as a result of which the target of movement projects into a category rather than a segment. For example, in (20), Y, the target of movement, projects into a category (i.e. Y'). On the other hand, as a result of adjunction, the target of movement project into a segment. For example, in (19), Y projects into a segment (i.e. Y). I will discuss how to implement adjunction and substitution under bare phrase structure theory in Appendix 2 to chapter 4.



In (19), X moves to Y by adjunction, which is standard head movement. On the other hand, in (20), X moves to Y but via substitution, projecting Y into Y'. The (im)possibility of HMS of X to Y is reduced to the possible number of specifiers that Y can take. Note that as a result of HMS of X to Y, the former complement of Y (i.e. XP) becomes a specifier of Y. Given this, HMS of X to Y creates the multiple specifier configuration if Y has another (original) specifier. This is illustrated in (21).



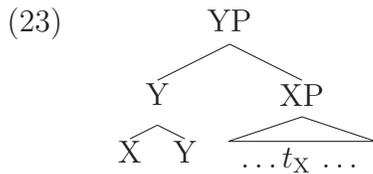
In (21), X head-moves to Y via substitution, turning the former complement XP into a specifier of Y. Note that in (21), Y has another specifier, WP. Thus, Y has multiple specifiers in this structure, WP and XP. If Y does not allow multiple specifiers, the configuration in (21) should be ruled out. Given these considerations, the following condition follows:

- (22) Head movement of X to Y, the next higher head, can be performed via substitution only if either
- a. Y allows multiple specifiers or

- b. Y does not have an element in its specifier.

This condition and the locality constraint in (16) will play a crucial role in chapters 4 and 5.

Chapters 4 and 5 will investigate consequences of the theory of syntactic head movement. Chapters 4 and 5 are concerned with generalizations about what I call a *headless XP*, which is a phrase whose head has moved out of it. For example, in the following structure, a head X moves to Y, resulting in a headless XP:



Chapter 4 is about movement of such headless XPs. Takano (2000) makes the generalization that headless XPs cannot move. Takano’s Generalization holds at least in Dutch, German, and English. The following English example illustrates this.

- (24) ***The book to Mary**, John gave.

As (24) shows, multiple topicalization is not allowed in English. One of the possible derivations for multiple topicalization sentences is one in which multiple elements appear in the topic positions (e.g. Spec, TopP), as illustrated by the following:

- (25) *_[TopP] **the book** [**to Mary** [Top _[TP] John gave]]]

In order to account for the unacceptability of multiple topicalization sentences like (24), however, it is not sufficient to assume that multiple elements cannot appear in the topic position in English. This is because headless VP-movement could derive the multiple topicalization sentence without applying topicalization to each element, as illustrated by (26).

(26) * $[_{VP} t_{gave} \text{ the book to Mary}]$, John gave t_{VP}

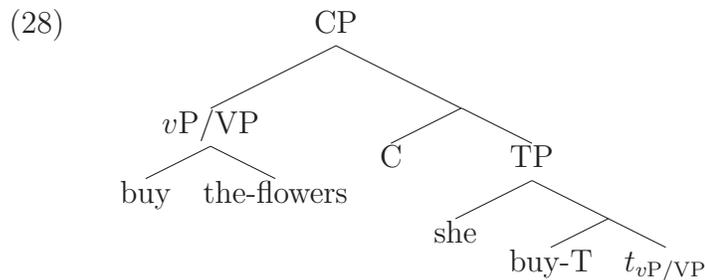
In (26), the verb *gave* moves out of VP, resulting in a headless VP, which moves to the topic position. The ban on multiple topic elements cannot rule out this derivation since only one element (i.e. the headless VP) appears in the topic position in this derivation. This is why headless XP-movement should be prohibited.

Takano's Generalization can be explained by the locality constraint. To see how this is possible, let us consider the structure given in (23) again. In (23), every category that dominates X also dominates XP (i.e. YP; the higher segment of Y is not a category). Therefore, X could intervene for an Agree relation of XP with a probe. To put it differently, an Agree relation of a headless XP with a probe is blocked by its moved head. This is why headless XPs cannot be moved.

Furthermore, I will point out that there are exceptions to Takano's Generalization, providing data that indicate that Takano's Generalization does not hold in Hebrew and Polish. The relevant data from Hebrew is given in the following:

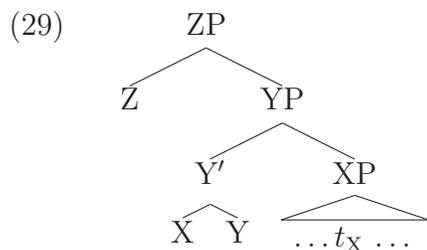
(27) $[_{vP/VP} \text{Liknot et ha-praxim}]$, hi kanta.
to.buy ACC the-flowers she bought
'As for buying the flowers, she bought.' (Hebrew: Landau 2006:37)

Given Landau's (2006) analysis of this construction, I will conclude that a sentence like this is derived by headless vP/VP -movement, as illustrated by the following.:



In this structure, the verb moves out of vP/VP to T, resulting in the headless vP/VP . After the headless vP/VP moves to Spec, CP, (27) results if both copies of the verb are pronounced. Thus, if this analysis is correct, headless XP-movement is allowed in Hebrew.

I will argue that languages like Hebrew and Polish allow headless XP-movement because they allow HMS. To see this, let us consider the following structure, in which X head-moves to Y via substitution:



Unlike in (23), in (29), it is not the case that every category that dominates X also dominates XP. This is so because Y' is a category; Y' dominates X but not XP. Therefore, X does not intervene for an Agree relation of XP with a probe when X undergoes HMS. If we assume that HMS is allowed in Hebrew and Polish, headless XP-movement in these languages is not problematic in terms of the locality

constraint.

I will further argue that HMS is available in Hebrew and Polish but not in Dutch, German, and English because the former allow multiple specifiers while the latter do not. Recall that one of the necessary conditions on HMS is the availability of multiple specifiers, according to (22). Therefore, if we assume that Hebrew and Polish allow multiple specifiers while Dutch, German, and English do not, we can explain why the former allow HMS while the latter do not. I will justify this assumption by examining multiple subject constructions and A-scrambling across a subject in these languages.

To sum up, the crosslinguistic difference in terms of the applicability of Takano's Generalization can be reduced to parameters that are responsible for the availability of multiple specifiers if we adopt the "two types of head movement" hypothesis.

Chapter 5 concerns another generalization about headless XPs that headless XPs cannot be elided (Lasnik's Generalization: Lasnik 1999).⁴ I will show that Lasnik's Generalization holds in English and Danish but not in Hebrew, European Portuguese, Russian, Japanese, Tagalog, Irish, and Finnish. The following English and Russian examples illustrate this:

(30) *John solved the problem, and Mary will [_{vP} solve [~~_{VP} *t*_{solve} the problem~~]],
too.

(31) a. Ty poznakomil Mašu s Petej?
 you.NOM introduce.SG.M Mašu.ACC with Peter.INSTR

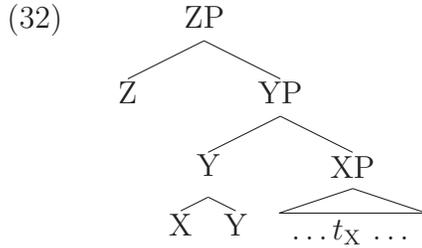
⁴Lasnik (1999), however, immediately rejects the generalization on the basis of the fact that there are languages in which V is moved out of VP, while VP-ellipsis is allowed.

‘Did you introduce Masha to Perter?’

- b. Konečno poznamomil $[\text{vP } t_{\text{poznakomil}} \text{ Mašu } s \text{ Petej}]!$
of.course introduce.SG.M
(intended) ‘Of course I introduced Masha to Peter!’
(Russian: Gribanova 2013:102)

English does not allow null objects, as shown in (30). In order to account for this fact, we need to assume that headless VP-ellipsis is prohibited. On the other hand, given Gribanova’s (2013) analysis, I will conclude that some instances of null object sentences in Russian should be treated as headless *vP*/*VP*-ellipsis sentences, as illustrated by (31b). In (31b), the verb moves out of *vP* and the resulting headless *vP*, which includes *Mašu* and *s Petej* ‘to Peter’, is elided.

I will argue that Lasnik’s Generalization and the crosslinguistic variation of the applicability of this generalization can be explained in the same way as the case of Takano’s Generalization if we adopt a movement analysis of ellipsis. I will propose a movement analysis of ellipsis that builds on Johnson’s (2001) analysis of VP-ellipsis and Aelbrecht and Haegeman’s (2012) idea. According to this analysis, ellipsis of XP is derived by topicalizing XP and deleting the moved XP. Therefore, the ban on headless XP-ellipsis (Lasnik’s Generalization) can be explained in the same way as the ban on headless XP-movement (Takano’s Generalization). To see this, let us consider the following schematic structure:



X moves to Y, yielding the headless XP. In order to elide the headless XP, the XP must be able to move under the movement analysis of ellipsis. This, however, is impossible since X intervenes for an Agree relation of the headless XP with a probe. Given that Agree is a prerequisite for movement, the headless XP cannot move. If the headless XP cannot move, it cannot be elided either because movement is a prerequisite for ellipsis under the movement analysis of ellipsis.

Chapter 6 is a case study of a kind of headless XP-ellipsis in Japanese. I will present novel arguments that headless *vP*/*VP*-ellipsis (V-stranding *VP*-ellipsis in Goldberg’s (2005) terms) is available to derive null object sentences in Japanese. For this purpose, I examine data involving null adjuncts and propose a generalization about the distribution of null adjuncts, which can easily be accounted for if headless *vP*/*VP*-ellipsis is available in Japanese. Furthermore, I show that the verbal identity requirement holds in Japanese. This constitutes further evidence for the existence of headless *vP*/*VP*-ellipsis since the verbal identity requirement holds in languages that allow headless *vP*/*VP*-ellipsis (Cyrino and Matos 2002, Doron 1999, Goldberg 2005, Gribanova 2013, and Potsdam 1997; see also Lasnik 1997).⁵

⁵Lasnik 1997 and Goldberg 2005 provide potential counterevidence against the verbal identity requirement. In 6.3.1, I will argue that examples that they provide do not constitute counterevidence against the verbal identity requirement.

Chapter 2: Arguments for Syntactic Head Movement

2.1 Introduction

In this chapter, I present empirical evidence that there is syntactic head movement. First, I consider cases in which head movement affects meanings (LF representations) in 2.2. Head movement that affects LF representations cannot be a PF operation since PF operations cannot interact with the semantic component. Next, I consider cases in which head movement is subject to a syntactic constraint in 2.3. I review Baker's (1988) argument that noun incorporation, a type of head movement, is syntactic. Finally, I consider cases in which head movement feeds another syntactic movement. On the basis of a peculiar case marking pattern in conjunctive DPs in Japanese, I argue that verb movement in Japanese is syntactic because it feeds cleft-movement, which is a clear instance of syntactic movement.

2.2 Head Movement that Affects LF Representations: NPI Licensing

Roberts (2010) argues that head movement sometime induces semantic effects, observing that head movement affects the licensing of negative polarity items (NPIs). Polarity items are licensed in *wh*-questions only under rhetorical question interpre-

tations, as Progovac (1994) observes. (1a) is acceptable only under the rhetorical reading. In contrast, in *wh*-questions with no NPIs or yes-no questions with NPIs, the rhetorical reading is just optional, as (1b) and (1c) show.

- (1) a. When did Mary insult anyone?
b. When did Mary insult Peter?
c. Did Mary insult anyone? (Progovac 1994:97)

This property of NPIs accounts for the unacceptability of the following sentence.

- (2) *Which one of them does anybody like? (Roberts 2010:10)

D-linked *wh*-phrases like *which one of them* force the non-rhetorical question reading while NPIs like *anyone* require the rhetorical reading to be licensed. These contradicting demands yield the unacceptability.

Given this, the contrast between the following sentences indicates that head movement affects the licensing of NPIs:

- (3) a. Which one of them doesn't anybody like?
b. *They succeeded in finding out which one of them anybody didn't like.
(Roberts 2010:10)

In (3a), negation moves to C along with subject-auxiliary inversion (T-to-C movement). Then, negation in C c-commands the NPI *anyone* under a certain defini-

tion of c-command,¹ licensing it. On the other hand, in (3b), there is no subject-auxiliary inversion because it is an embedded question. As a result, *anyone* is not c-commanded by negation, failing to be licensed.

Given that NPI-licensing condition is an LF condition, Roberts (2010) concludes from these data that at least some head movement affects LF representations. If all head movement were PF operations, it is a mystery how this is possible. Thus, we can conclude that syntactic head movement exists.

2.3 Head Movement that is Subject to a Syntactic Constraint: Noun Incorporation

What Baker (1988) calls *noun incorporation* is also an instance of syntactic head movement. Noun incorporation is exemplified by the following Onondaga sentences:

- (4) a. Pet wa?-ha-htu-?t-a? ne? o-**hwist**-a?
 Pat PAST-3MS/3N-lost-CAUS-ASP the PRE-money-SUF
 ‘Pat lost the money.’
- b. Pet wa?-ha-**hwist**-ahtu-?t-a?.
 Pat PAST-3MS-money-lost-CAUS-ASP
 ‘Pat lost money.’ (Onondaga: Baker 1988:76–77)

In (4a), the object DP appears as a separate word. On the other hand, in (4b), the noun root functioning as an object is combined with the verb root into a compound verb. Baker (1988) argues that sentences like (4b) are derived by head movement

¹X c-commands Y if and only if every category that dominates X also dominates Y and X does not dominate Y.

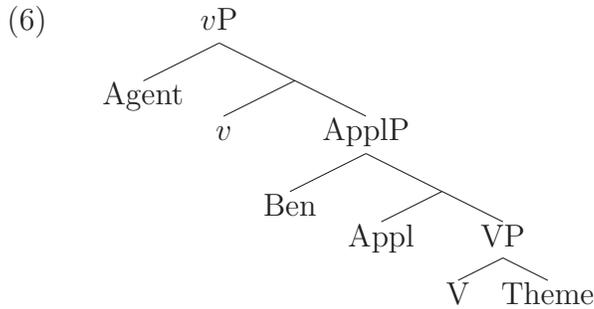
of the object to V in syntax (see also Baker 1996, 2009 and Baker et al. 2005).

Noun incorporation must be treated as syntactic movement because it is subject to a syntactic condition. Baker (2009:154) mentions that “a robust property of noun incorporation in many languages is that the incorporated noun can only be interpreted as expressing the theme/direct object argument of the verb.” This generalization is illustrated by the following Mapudungun examples:

- (5) a. \tilde{N} i chao kintu-**waka**-le-y.
My father seek-cow-PRG-IND.3sS
‘My father is looking for the cows.’ NOT: ‘The cow is looking for my father.’
- b. Juan ngilla-**waka**-lel-fi-y.
Juan buy-cow-APPL-3O-IND.3sS
‘Juan bought a cow for him/her. NOT: ‘Juan bought it for the cow.’
(Mapudungun: Baker 2009:154)

In these examples, the object noun *waka* ‘cow’ is the incorporated noun. This noun can only be interpreted as the theme but not as the agent in (5a). Thus, it can only mean that my father is looking for the cows. Likewise, in (5b), the incorporated noun must be interpreted as the theme but not the benefactee.

It is not clear why this generalization holds if noun incorporation is a PF operation. On the other hand, it can easily be explained if noun incorporation is syntactic. Suppose the following standardly assumed structure:



In order for Agent or Ben(efactee) to move to V, movement must be downward movement. Downward movement is an illegitimate operation in syntax under the Probe-Goal theory of movement, as I argued in 1.2.3. In contrast with Agent and Ben, Theme can move to V because this is upward movement. That is why an incorporated noun can only be interpreted as a theme object argument.

To sum up, the robust generalization about noun incorporation can be reduced to a general constraint on movement if we assume that noun incorporation is syntactic movement. From this, I conclude that noun incorporation, a type of head movement, is syntactic.

2.4 Head Movement that Feeds Syntactic Movement: Verb Movement in Japanese

In this section, I argue that verb movement in Japanese can be syntactic on the basis of data that show that some instances of verb movement in Japanese feed syntactic movement. In absolute head-final languages like Japanese, it is highly controversial as to whether verb movement exists. This is so because verb movement, even if it is overt, does not affect surface word order in such languages. Thus, there has

been a lively debate as to whether Japanese has verb movement. Some argue for its existence (Otani and Whitman 1991 and Koizumi 2000). However, the validity of their arguments has been questioned by Hoji (1998), Takano (2002), Fukushima (2003) and Fukui and Sakai (2003). Therefore, whether verbs move in Japanese is still far from settled. I present novel evidence for syntactic verb movement in Japanese, on the basis of the peculiar case-marking pattern in conjunctive object DPs.

In 2.4.1, I provide a brief overview of analyses of nominative objects in the potential construction in Japanese and conclude that the syntactic environment where nominative objects appear and the syntactic environment where accusative objects appear are mutually exclusive under (almost) all the existing analyses of the potential construction. In 2.4.2, I present data that pose a problem for every current analysis of the potential construction and I argue that if verb movement is available in Japanese, the problem disappears. After considering and rejecting other possible alternatives in 2.4.3, I conclude that there is verb movement in Japanese. More crucially, I show that there is a case in which verb movement feeds syntactic movement (cleft movement) in Japanese. This implies that at least some instances of verb movement are syntactic.

2.4.1 Nominative Object Construction

In Japanese, an object of a non-stative predicate cannot be marked with nominative Case, as shown in (7).

- (7) Taro-ga zyoozuni sakana-o/*ga tabe-ru.
 Taro-NOM properly fish-ACC/*NOM eat-PRES
 ‘Taro eats fish properly.’

On the other hand, an object of a stative predicate can be marked with nominative Case, as (8) shows.

- (8) Taro-ga sakana*-o/-ga nigate-da.
 Taro-NOM fish-ACC/NOM not.like-COP
 ‘Taro doesn’t like fish.’

Interestingly, when a non-stative predicate is accompanied by a stative predicate like a potential suffix *-(rar)e*, an object can get either accusative Case or nominative Case, as shown in (9).

- (9) Taro-ga zyoozuni sakana-o/ga tabe-rare-ru.
 Taro-NOM properly fish-ACC/NOM eat-can-PRES
 ‘Taro can eat fish properly.’

There are a number of different analyses of the potential construction (Tada 1992, Koizumi 1994, Saito and Fukui 1998, Ura 1999, Takano 2003, Nomura 2005, Bobaljik and Wurmbrand 2007, Takahashi 2010, 2011, Funakoshi and Takahashi 2014; see also Koizumi 2008 for an overview). Most of these analyses agree that the syntactic environment where accusative-objects appear is different from the syntactic environment where nominative-objects appear.² For example, under Koizumi’s (1994,

²The only exception is Tada’s (1992) analysis. However, I set aside his analysis since it crucially relies on the assumption that the potential suffix (Agro, precisely) rather than T assigns nominative Case to nominative objects. This is an undesirable assumption because it misses a

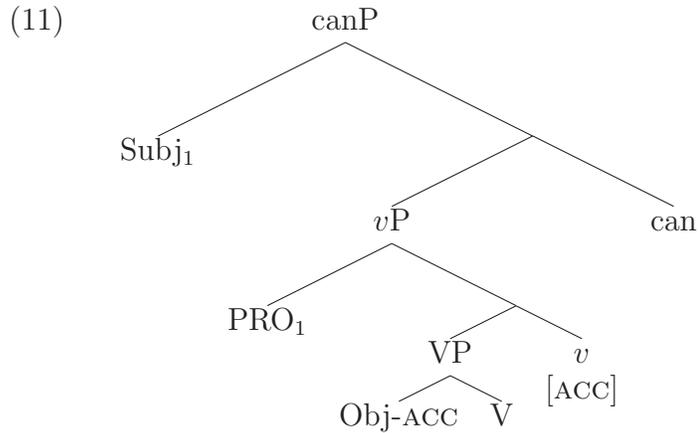
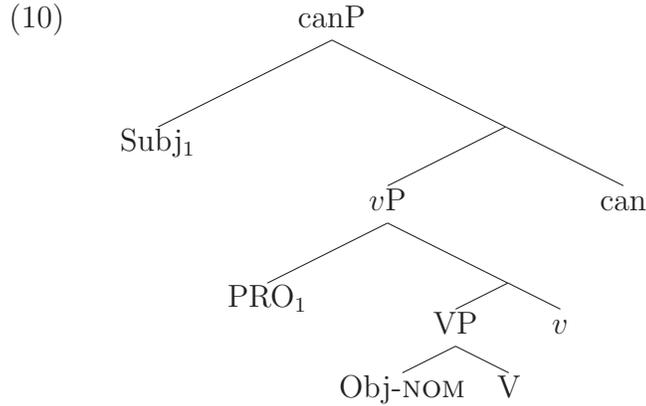
1995, 1999), Takahashi’s (2010, 2011), and Ura’s (1996, 1999, 2000) analyses, the nominative-object version of (9) is derived when the embedded verb *tabe* ‘eat’ (or *v* crosslinguistically well-attested generalization that objects of stative predicates and subjects in general are marked with the same Case (nominative Case). That is, it is unclear why Case that T assigns and Case that a stative predicate assigns have the same form. In order to solve this problem, assuming that nominative Case-assignment/checking on nominative objects takes place in overt syntax, Tada (1992) proposes the generalization that Case that is checked in overt syntax realizes as nominative Case in Japanese: a subject and a nominative object overtly move to the Spec of TP and the Spec of AgroP, respectively. This generalization is problematic because it is unclear why the level in which Case is checked is crucial for the morphological form of Case. Furthermore, the following Icelandic data indicate that the generalization does not hold in Icelandic.

- (i) a. Konunginum voru gefnar ambáttir.
the.king.DAT were given.FEM.PL maidservants.NOM.FEM.PL
‘The king was given maidservants.’
- b. Ambáttin var gefin konunginum.
the.maid servant.NOM.SG was given.FEM.SG the.king.DAT
‘The maidservant was given to the king.’ (Icelandic: Zaenen et al. 1985 : 460)

In (ia), the nominative-marked element *ambáttir* ‘maidservants.NOM.FEM.PL’ stays in situ. Thus, its Case is not checked in overt syntax. On the other hand, in (ib), the nominative-marked element overtly moves to Spec, TP, having its Case checked in overt syntax. Thus, Icelandic does not care about the level where Case is checked in terms of the morphological form of Case. Although Tada (1992) carefully limits the generalization to Japanese, the fact that it does not universally hold suggests that it is difficult to provide a satisfactory explanation of the generalization.

Furthermore, the assumption that nominative objects have their Case checked in overt syntax is not compatible with data that will be provided in 2.4.2 and 2.4.3. The data involve a conjunctive DP that consists of a nominative object and an accusative object. If nominative objects must overtly move to check their Case, it violates the coordinate structure constraint.

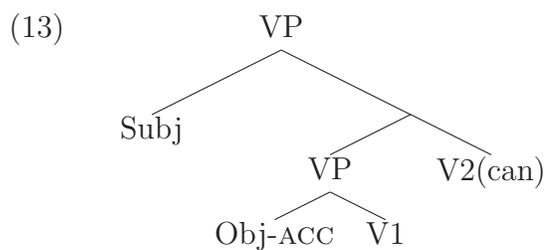
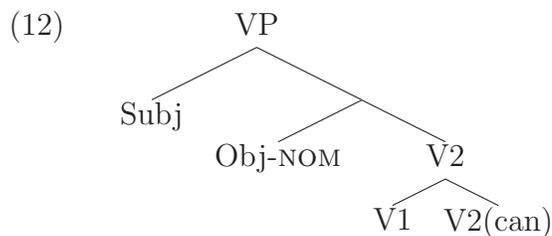
or Agro) somehow loses its accusative-assigning ability while the accusative-object version is derived when the verb retains its ability to assign accusative Case. This is illustrated by the following schematic structures.



In (10), *v* does not have accusative Case to assign. As a result, the object gets nominative Case from T. On the other hand, in (11), *v* has accusative Case to assign, assigning it to the object.

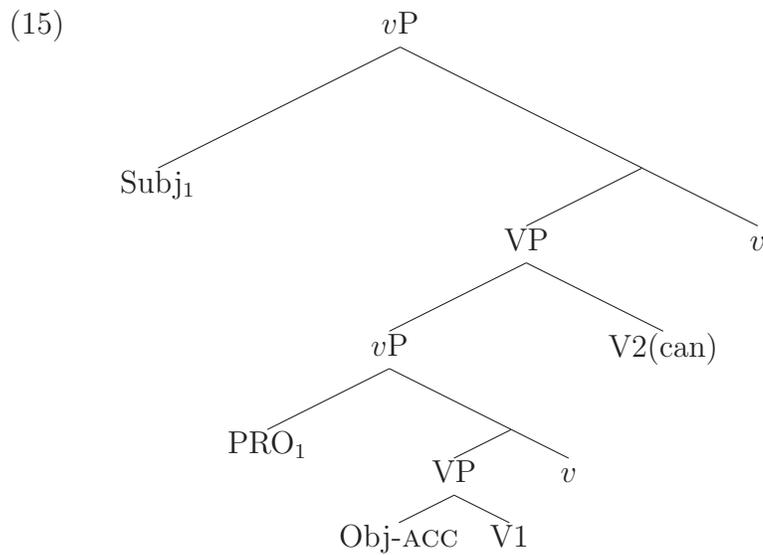
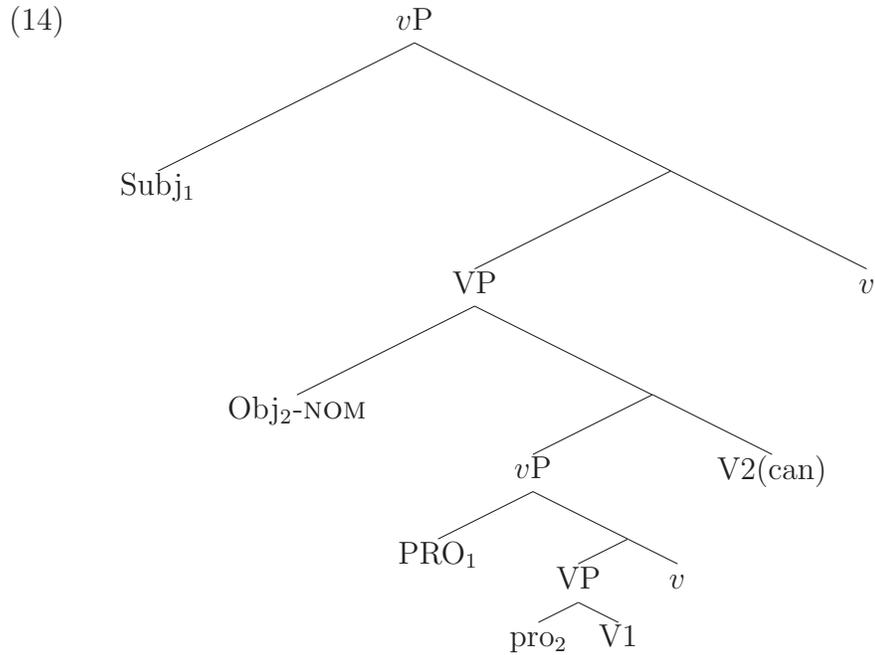
Under Saito and Hoshi's (1998) and Takano's (2003) analyses, the base-generated positions of nominative-objects and accusative-objects are different. Nominative-objects are base-generated above the potential suffix while accusative-objects are base-generated within the projections headed by the embedded verbs. (12) and (13)

are the structures for nominative-objects and accusative-objects, respectively under Saito and Hoshi's (1998) analysis.



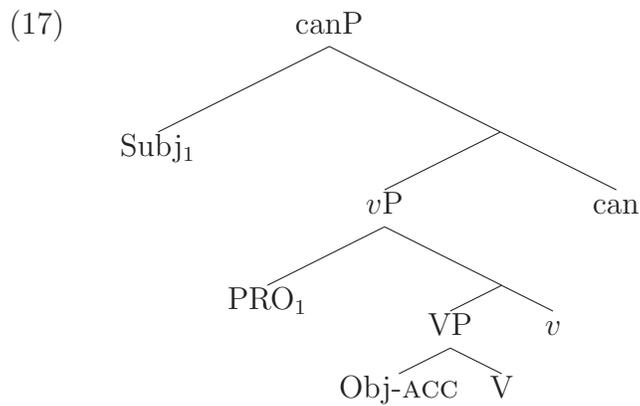
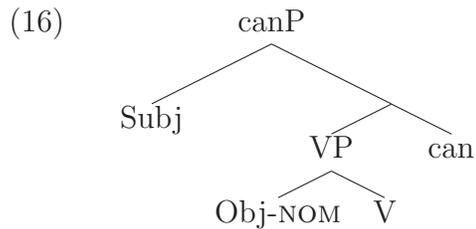
In (12), the embedded verb (V1) and the potential suffix (V2) constitute a complex predicate and the object is the complement of the complex predicate, getting nominative Case from the complex predicate. In (13), the potential suffix (V2) takes VP headed by the embedded verb (V1) and the object is base-generated as the complement of the embedded verb, getting accusative Case from the embedded verb.

(14) and (15) are the structures for nominative-objects and accusative-objects under Takano's (2003) analysis.



In both structures, the potential suffix (V2) takes *vP* as its complement. However, the nominative-object is base-generated in the Spec of VP headed by the potential suffix (V2), getting nominative Case from T while the accusative-object is base-generated as the complement of the embedded verb (V1), getting accusative Case from (the lower) *v*.

Under Bobaljik and Wurmbrand's (2007) analysis, objects get accusative Case when the potential suffix takes VP as its complement whereas objects get nominative Case when the potential suffix takes *v*P as its complement, as (16) and (17) illustrate.



An object gets nominative Case from T when the potential suffix takes VP complement, as (16) shows while it gets accusative Case from *v* when the potential suffix takes *v*P complement, as (17) illustrates.

The one common denominator among these different analyses is that the environment for nominative Case-assignment and that for accusative Case-assignment are mutually exclusive: when one is assigned, the other cannot be assigned. Therefore, it is impossible that both accusative Case and nominative Case are simultaneously assigned to objects in a single clause in the potential construction under these analyses.

2.4.2 Nominative Objects in Conjunctive DPs

2.4.2.1 Observation

Given that nominative objects and accusative objects are complementary in the syntactic environment where they appear, examples like (18) pose an apparent problem for every analysis of the potential construction. In (18), the accusative-objects and the nominative-objects appear to be conjoined. In (18a), the first conjunct is marked with accusative while the second conjunct is marked with nominative. In (18b), the order is reversed.^{3,4}

³Floating numeral quantifiers are put after each DP since otherwise Case-marked DPs cannot be conjoined by conjunction *to* ‘and’, as shown in (i).

- (i) a. *Taro-ga ringo-o to banana-o tabe-ta.
Taro-NOM apple-ACC and banana-ACC eat-PAST
‘Taro ate an apple and a banana.’
- b. Taro-ga ringo to banana-o tabe-ta.
Taro-NOM apple and banana-ACC eat-PAST
‘Taro ate an apple and a banana.’

See Koizumi 2000 for the reason for this restriction.

⁴Here, I idealize the data. For some speakers, examples in (18) sound slightly marginal, compared to examples like (i), where both conjuncts are marked with the same Case.

- (i) a. Taro-ga tyoosyoku-ni ringo-o mit-tu to banana-o ni-hon tabe-rare-ru.
Taro-NOM breakfast-for apple-ACC three-CL and banana-ACC two-CL eat-canPRES
‘Taro can eat three apples and two bananas.’
- b. Taro-ga tyoosyoku-ni ringo-ga mit-tu to banana-ga ni-hon tabe-rare-ru.
Taro-NOM breakfast-for apple-NOM three-CL and banana-NOM two-CL eat-can-PRES
‘Taro can eat three apples and two bananas.’

- (18) a. Taro-ga tyoosyoku-ni [ringo-o mit-tu] to [banana-ga
Taro-NOM breakfast-for apple-ACC three-CL and banana-NOM
ni-hon] tabe-rare-ru.
two-CL eat-can-PRES
'Taro can eat three apples and two bananas for breakfast.'
- b. Taro-ga tyoosyoku-ni [ringo-ga mit-tu] to [banana-o
Taro-NOM breakfast-for apple-NOM three-CL and banana-ACC
ni-hon] tabe-rare-ru.
two-CL eat-can-PRES
'Taro can eat three apples and two bananas for breakfast.'

The crucial point in (18) is that nominative and accusative are assigned to the objects in a single clause.

One might argue that the peculiar case-marking pattern in (18) is due to the conjunction structure because it is well-known that conjunctive DPs exhibit unusual case-marking patterns, as illustrated in (19).

- (19) a. He and I ate apples.
b. He and me ate apples.

In (19a), both the first conjunct and the second one are marked with nominative while in (19b), the first conjunct gets nominative but the second one accusative.

However, in the case of (18), we cannot attribute the unusual case-marking pattern

Furthermore, (18a) sounds slightly better than (18b) for some speakers while for other speakers, (18b) sounds slightly better than (18a). They are equally acceptable for other speakers including the author. Assuming that the slight marginality of (18) and the preference of one sentence over the other for some speakers are due to extra-syntactic factors, which is not a trivial assumption, discussion in this section is based on judgments by speakers who equally accept (18a) and (18b).

to conjunction. This is so because both the first conjunct and the second one must be marked with accusative when the predicate is not accompanied with the potential suffix *-(rar)e*, as shown in (20).

- (20) a. *Taro-ga tyoosyoku-ni [ringo-o mit-tu] to [banana-ga
Taro-NOM breakfast-for apple-ACC three-CL and banana-NOM
ni-hon] tabe-ru.
two-CL eat-PRES
'Taro eats three apples and two bananas for breakfast.'
- b. *Taro-ga tyoosyoku-ni [ringo-ga mit-tu] to [banana-o
Taro-NOM breakfast-for apple-NOM three-CL and banana-ACC
ni-hon] tabe-ru.
two-CL eat-PRES
'Taro eats three apples and two bananas for breakfast.'
- c. *Taro-ga tyoosyoku-ni [ringo-ga mit-tu] to [banana-ga
Taro-NOM breakfast-for apple-NOM three-CL and banana-NOM
ni-hon] tabe-ru.
two-CL eat-PRES
'Taro eats three apples and two bananas for breakfast.'
- d. Taro-ga tyoosyoku-ni [ringo-o mit-tu] to [banana-o
Taro-NOM breakfast-for apple-ACC three-CL and banana-ACC
ni-hon] tabe-ru.
two-CL eat-PRES
'Taro eats three apples and two bananas for breakfast.'

Therefore, the availability of nominative Case in (18) must be attributed to the existence of the potential suffix *-(rar)e* rather than special properties of conjunction.⁵

⁵A nominative-marked DP and an accusative-marked DP cannot be conjoined also when they appear in the environment where only nominative Case can be assigned, as shown in (i), where the conjoined DPs appear in the subject position.

- (i) a. *[Otokonoko-ga san-nin] to [onnanoko-o san-nin] hasittei-ru.
boy-NOM three-CL and girl-ACC three-CL be.running-PRES

In sum, (18) poses an apparent problem for the existing analyses of the potential construction if we assume that (18) involves DP conjunction since as I reviewed in section 2, the environment for nominative Case-assignment and that for accusative Case-assignment in the potential construction are mutually exclusive under every analysis of the potential construction (but see note 2).

2.4.2.2 Verb Movement

However, if verb movement out of verbal projection is allowed in Japanese, (18) ceases to be problematic at least under the Koizumi type analysis (10) and (11), Saito and Hoshi’s analysis (12) and (13), and Takano’s analysis (14) and (15). Let us first consider a possible structure for (18) under the Koizumi type analysis. If verb movement out of vP is possible in Japanese, (18a) and (18b) can have structures like (21a) and (21b), respectively.

- (21) a. Subj [vP [vP Obj-ACC FNQ $t_V t_v$] and [vP Obj-NOM FNQ $t_V t_v$]] V- v -
 ‘Three boys and three girls are running.’
- b. *[Otokonoko-o san-nin] to [onnanoko-ga san-nin] hasittei-ru.
 boy-ACC three-CL and girl-NOM three-CL be.running-PRES
 ‘Three boys and three girls are running.’
- c. *[Otokonoko-o san-nin] to [onnanoko-o san-nin] hasittei-ru.
 boy-ACC three-CL and girl-ACC three-CL be.running-PRES
 ‘Three boys and three girls are running.’
- d. [Otokonoko-ga san-nin] to [onnanoko-ga san-nin] hasittei-ru.
 boy-NOM three-CL and girl-NOM three-CL be.running-PRES
 ‘Three boys and three girls are running.’

Both the first conjunct and the second conjunct must be marked with nominative in this environment.

can-T

- b. Subj [_{vP} [_{vP} Obj-NOM FNQ t_V t_v] and [_{vP} Obj-ACC FNQ t_V t_v]] V-*v*-
can-T

In (21a) and (21b), it is *v*P s rather than DPs that are conjoined. V moves to *v* and *v* containing V moves out of *v*P in an across-the-board (ATB) fashion. Suppose that in (21a), *v* in the first conjunct retains its accusative Case-assigning ability while *v* in the second conjunct loses it. Then, the object in the first conjunct can get accusative Case from *v* and the object in the second conjunct gets nominative Case from T. The opposite holds in (21b). In this way, the peculiar Case-marking pattern in (18) can be explained under the Koizumi type analysis if we assume that verb movement is allowed in Japanese.

Saito and Hoshi's analysis is also compatible with (18) if verb movement is allowed in Japanese. (22a) and (22b) are possible structures for (18a) and (18b), respectively, under this analysis (FNQs are ignored for space reason).

- (22) a. Subj [_{canP} [_{canP} t_{Subj} [_{VP} Obj-ACC t_V] t_{can}] and [_{canP} t_{Subj} Obj-NOM $t_{V-\text{can}}$]
] V-can-T
- b. Subj [_{canP} [_{canP} t_{Subj} Obj-NOM $t_{V-\text{can}}$] and [_{canP} t_{Subj} [_{VP} Obj-ACC t_V]
 t_{can}]] V-can-T

In these structures, canPs are conjoined and *can* consisting of V and *can* moves out of canP in an ATB fashion (the subject also moves out of canP in an ATB fashion). In (22a), the object in the first conjunct is the complement of the embedded verb,

getting accusative Case while the object in the second conjunct is the complement of the complex predicate, getting nominative Case. The opposite holds in (22b). In this way, the Case-marking pattern in (18) ceases to be problematic under Saito and Hoshi’s analysis if verb movement is possible in Japanese.

Takano’s analysis is also compatible with (18) if verb movement is allowed. (23a) and (23b) are possible structures for (18a) and (18b), respectively, under Takano’s analysis (FNQs are ignored).

- (23) a. Subj [_{canP} [_{canP} [_{vP} [_{VP} Obj-ACC t_V] t_v] t_{can}] and [_{canP} Obj-NOM [_{vP} [_{VP} t_V] t_v] t_{can}]] V-*v*-can-T
- b. Subj [_{canP} [_{canP} Obj-NOM [_{vP} [_{VP} t_V] t_v] t_{can}] and [_{canP} [_{vP} [_{VP} Obj-ACC t_V] t_v] t_{can}]] V-*v*-can-T

In (23a) and (23b), canPs are conjoined and *can* with *v* and V moves out of canP in an ATB fashion. In (23a), the object in the first conjunct is base-generated as the complement of the embedded verb, getting accusative Case while the object in the second conjunct is base-generated at the Spec of canP, getting nominative Case. The opposite holds in (23b). Thus, the Case-marking pattern in (18) can be accommodated under Takano’s analysis if Japanese has verb movement.

It is unclear whether Bobaljik and Wurmbrand’s analysis is compatible with this verbal projection conjunction analysis. (24a) and (24b) are possible structures for (18a) and (18b), respectively, under Bobaljik and Wurmbrand’s analysis.

- (24) a. Subj [_{canP} [_{canP} t_{Subj} [_{vP} [_{VP} Obj-ACC t_V] t_v] t_{can}] and [_{canP} t_{Subj} [_{VP}

Obj-NOM t_V] t_{can}]] V-*v*-can-T

- b. Subj [_{canP} [_{canP} t_{Subj} [_{VP} Obj-NOM t_V] t_{can}] and [_{canP} t_{Subj} [_{vP} [_{VP} Obj-ACC t_V] t_v] t_{can}]] V-*v*-can-T

In these structures, canPs are conjoined. In (24a), the first conjunct includes *vP* while the second conjunct does not. Thus, the object in the first conjunct is marked with accusative Case by *v* while the object in the second conjunct gets nominative Case. The opposite holds in (24b). The problem is that these structures involve an unusual type of ATB movement where the element that is moved out of the first conjunct and the element that is moved out of the second conjunct are different. For example, in (24a), *can* that is moved out of the first conjunct contains *v* and V whereas *can* that is moved out of the second conjunct contains only V. If ATB movement is allowed only if the moved element in the first conjunct and that in the second conjunct are exactly the same, this kind of ATB movement should be impossible. On the other hand, if ATB movement is possible only if the two moved elements are not distinct in terms of the phonological form, this kind of ATB movement should be possible since the existence of *v* does not affect the form of the moved element. At this point, I have no idea how to tease apart these two possibilities.

To sum up, the peculiar Case-marking pattern in (18) constitutes an apparent problem for every existing analysis of the potential construction. However, we saw that if (18) involves verbal projection (canP or *vP*) conjunction rather than DP conjunction, the data ceases to be problematic and that the relevant data can be analyzed as verbal projection conjunction if verb movement is allowed. However,

we cannot conclude from this that there is verb movement in Japanese. This is so because there might be other strategies than verb movement that make verbal projection conjunction possible in the relevant construction. In the next section, I will consider other strategies and show that they do not work.

2.4.3 Alternatives

In this section, I consider whether we can analyze (18) as involving verbal projection conjunction without positing verb movement. One possibility is Fukui and Sakai’s (2003) gapping-like analysis (the PF reduction analysis in their terms). According to Fukui and Sakai 2003, a predicate in the first conjunct can be deleted under identity with a predicate in the second conjunct. Thus, (18a) can have structures like (25) (irrelevant details omitted):⁶

- (25) Taro-NOM [_{vP} [_{vP} apple-ACC three-CL ~~eat~~] and [_{vP} banana-NOM two-CL eat]] can

In (25), *vP*s are conjoined. Thus, Case-marking on the objects is not problematic. Crucially, (25) does not involve verb movement at all. Therefore, if this analysis is correct, (18) is no longer evidence for the existence of verb movement in Japanese.

However, I reject this analysis because the sequence “Obj FNQ and Obj FNQ” (“apple-ACC three-CL and banana-NOM two-CL” in (25)) is not a constituent under this analysis. This leads to a prediction that this string of words cannot be moved,

⁶In what follows, I use the Koizumi type analysis for demonstration.

which is incorrect, as shown in (26).

- (26) a. Taro-ga tyoosyoku-ni t_1 tabe-rare-ru no-wa [[ringo-o mit-tu]
 Taro-NOM breakfast-for eat-can-PRES C-TOP apple-ACC three-CL
 to [banana-ga ni-hon]]₁ da.
 and banana-NOM two-CL COP
 ‘It is three apples and two bananas that Taro can eat for breakfast.’
- b. Taro-ga tyoosyoku-ni t_1 tabe-rare-ru no-wa [[ringo-ga mit-tu]
 Taro-NOM breakfast-for eat-can-PRES C-TOP apple-NOM three-CL
 to [banana-o ni-hon]]₁ da.
 and banana-ACC two-CL COP
 ‘It is three apples and two bananas that Taro can eat for breakfast.’

In these examples, the relevant string of words is cleft-moved.⁷ The PF reduction analysis wrongly predicts that these sentences are unacceptable.

On the other hand, the relevant string of words is a constituent under every variation of the verb movement analysis (see (10)–(15)). Thus, (26) is compatible with the verb movement analysis but not with this PF-reduction analysis.

⁷That the Case-marking pattern in (26) is possible due to the presence of the potential suffix is evidenced by (i) and (ii), where there is no potential suffix.

- (i) *Taro-ga tyoosyoku-ni t_1 tabe-ru no-wa [[ringo-o mit-tu] to [banana-ga
 Taro-NOM breakfast-for eat-PRES C-TOP apple-ACC three-CL and banana-NOM
 ni-hon]]₁ da.
 two-CL COP
 ‘It is three apples and two bananas that Taro can eat for breakfast.’
- (ii) *Taro-ga tyoosyoku-ni t_1 tabe-ru no-wa [[ringo-ga mit-tu] to [banana-o
 Taro-NOM breakfast-for eat-PRES C-TOP apple-NOM three-CL and banana-ACC
 ni-hon]]₁ da.
 two-CL COP
 ‘It is three apples and two bananas that Taro can eat for breakfast.’

Another possibility is a remnant phrasal movement analysis. Suppose that (18a) involves canP conjunction and that the objects (along with the FNQs) in each conjunct move out of and adjoin to each canP, as illustrated in (27a) (FNQs are omitted). Then, if the lower segments of canPs in each conjunct move in an ATB fashion somewhere between the conjunction phrase and T, as illustrated in (27b), we can derive sentence (18a) without positing verb movement.

- (27) a. [canP [canP Obj-ACC [canP *t*_{Obj} eat *v* can]] and [canP Obj-NOM [canP *t*_{Obj} eat *v* can]]]
- b. [canP [canP Obj-ACC *t*_{canP}] and [canP Obj-NOM *t*_{canP}]] [canP *t*_{Obj} eat *v* can] T
-

Note that the sequence “Obj FNQ and Obj FNQ” is a constituent under this analysis. Thus, (26) is compatible with the remnant phrasal movement analysis.

However, I reject this analysis, based on examples like (28), where each conjunct consists of a subject, an object, and an FNQ.⁸

⁸Both objects must be accusative-marked when the potential suffix does not appear, as shown in (i).

- (i) a. *Tyoosyoku-ni [Taro-ga ringo-o mit-tu] to [Hanako-ga banana-ga breakfast-for Taro-NOM apple-ACC three-CL and Hanako-NOM banana-NOM ni-hon] tabe-ru.
two-CL eat-PRES
‘For breakfast, Taro eats three apples and Hanako eats two bananas.’
- b. *Tyoosyoku-ni [Taro-ga ringo-ga mit-tu] to [Hanako-ga banana-o breakfast-for Taro-NOM apple-NOM three-CL and Hanako-NOM banana-ACC ni-hon] tabe-ru.
two-CL eat-PRES
‘For breakfast, Taro eats three apples and Hanako eats two bananas.’

- (28) a. Tyoosyoku-ni [Taro-ga ringo-o mit-tu] to [Hanako-ga
breakfast-for Taro-NOM apple-ACC three-CL and Hanako-NOM
banana-ga ni-hon] tabe-rare-ru.
banana-NOM two-CL eat-can-PRES
'For breakfast, Taro can eat three apples and Hanako can eat two
bananas.'
- b. Tyoosyoku-ni [Taro-ga ringo-ga mit-tu] to [Hanako-ga
breakfast-for Taro-NOM apple-NOM three-CL and Hanako-NOM
banana-o ni-hon] tabe-rare-ru.
banana-ACC two-CL eat-can-PRES
'For breakfast, Taro can eat three apples and Hanako can eat two
bananas.'

The string of words "Subj Obj FNQ and Subj Obj FNQ" in (28) is a constituent since it can be cleft-moved, as shown in (29).

- (29) a. Tyoosyoku-ni t_1 tabe-rare-ru no-wa [[Taro-ga ringo-o mit-tu]
breakfast-for eat-can-PRES C-TOP Taro-NOM apple-ACC three-CL
to [Hanako-ga banana-ga ni-hon]]₁ da.
and Hanako-NOM banana-NOM two-CL COP
(Lit.) 'It is [Taro three apples] and [Hanako two bananas] that can eat
for breakfast.'
- b. Tyoosyoku-ni t_1 tabe-rare-ru no-wa [[Taro-ga ringo-ga
breakfast-for eat-can-PRES C-TOP Taro-NOM apple-NOM
mit-tu] to [Hanako-ga banana-o ni-hon]]₁ da.
three-CL and Hanako-NOM banana-ACC two-CL COP
(Lit.) 'It is [Taro three apples] and [Hanako two bananas] that can eat
-
- c. *Tyoosyoku-ni [Taro-ga ringo-ga mit-tu] to [Hanako-ga banana-ga
breakfast-for Taro-NOM apple-NOM three-CL and Hanako-NOM banana-NOM
ni-hon] tabe-ru.
two-CL eat-PRES
'For breakfast, Taro eats three apples and Hanako eats two bananas.'
- d. Tyoosyoku-ni [Taro-ga ringo-o mit-tu] to [Hanako-ga banana-o
breakfast-for Taro-NOM apple-ACC three-CL and Hanako-NOM banana-ACC
ni-hon] tabe-ru.
two-CL eat-PRES
'For breakfast, Taro eats three apples and Hanako eats two bananas.'

- (32) a. Taro-ga migime-dake-o tumu-re-ru.
 Taro-NOM right.eye-only-ACC close-can-PRES
 ‘Taro can close only the right eye.’ (can > only, *only > can)
- b. Taro-ga migime-dake-ga tumu-re-ru.
 Taro-NOM right.eye-only-NOM close-can-PRES
 ‘Taro can close only the right eye.’ (%can > only, only > can)

If string-vacuous scrambling of objects were possible, (32a) should be able to have a structure like (33).

- (33) [_{TP} Subj [_{TP} Obj [_{TP} *t*_{Subj} *t*_{Obj} V can T]]]

In (33), the object adjoins to TP and the subject adjoins to the higher segment of TP, crossing the adjoined object. The object in the TP-adjoined position c-commands *can*. Thus, the object should be able to take scope over the potential suffix, contrary to fact. Note that scrambling of objects that affects word order makes the wide scope reading possible, as shown in (34).

- (34) Migime-dake-o₁ Taro-ga *t*₁ tumu-re-ru.
 right.eye-only-ACC Taro-NOM close-can-PRES
 (Lit.) ‘Only the right eye, Taro can close.’ (can > only, only > can)

Given this fact, I conclude that string-vacuous scrambling is prohibited (see Hoji 1985, Fujii 2004, and Takita 2009). Then, there is no way to derive sentences like (28) and (29) by remnant phrasal movement.

On the other hand, (28) as well as (29) are compatible with the present analysis that assumes verb movement if verbs can move up to C. This is illustrated by (35).

- (35) [TP [TP Subj Obj-ACC FNQ t_{eat} t_v t_{can} t_T] and [TP Subj Obj-NOM FNQ t_{eat} t_v t_{can} t_T]] eat-*v*-can-T-C

In (35), TPs are conjoined and T consisting of *can*, *v*, and *eat* moves out of each TP in an ATB fashion, deriving (28a). The string of words “Subj Obj FNQ and Subj Obj FNQ” is a constituent. Thus, if it is cleft-moved, (29a) can be derived.

Note that the PF reduction analysis, like the remnant phrasal movement analysis, cannot derive (29) because the cleft-moved string of words in (29) is not a constituent under this analysis. Thus, given that only the present analysis is compatible with all the data that we have seen so far, I conclude that Japanese has verb movement.

Note that (29) suggests more than that Japanese has verb movement. It indicates that verb movement can feed cleft movement. Cleft movement should be considered syntactic movement for the following reasons. First, it is island-sensitive: although Cleft movement can take place across a clausal boundary, as shown in (36), it cannot across a relative clause island, as shown in (37).

- (36) Taro-ga [Hanako-ga t_1 tabe-ta to] it-ta no-wa [ringo-o
Taro-NOM Hanako-NOM eat-PAST C say-PAST C-TOP apple-ACC
mit-tu]₁ da.
three-CL COP
‘It is three apples that Taro said that Hanako ate.’

- (37) *Taro-ga [[t_2 t_1 tabe-ta] hito]₂-o sagasitei-ru no-wa [
Taro-NOM eat-PAST person-ACC looking.for-PRES C-TOP
ringo-o mit-tu]₁ da.
apple-ACC three-CL COP
(Lit.) ‘It three apples that Taro is looking for the person who ate.’

This indicates that cleft sentences are derived by movement of some kind. Second, cleft movement cannot be considered PF movement nor LF movement since it affects both word order and interpretation. Given this, the only possibility is that cleft movement is syntactic movement. (29) shows that verb movement can feed cleft movement. Thus, (29) leads us to conclude that (at least some instances of) verb movement, a kind of head movement, should be treated as syntactic movement.

2.5 Conclusion

In this chapter, we have seen that some instances of head movement affect LF representations, are subject to a syntactic constraint, and feed another syntactic movement. Given this evidence for the existence of syntactic head movement, I conclude that at least some instances of head movement are syntactic.

Chapter 3: Theory of Syntactic Head Movement

3.1 Introduction

In chapter 2, I showed that at least some instances of head movement must be syntactic. Thus, syntactic head movement exists in grammar. Then, we need to construct a theory of syntactic head movement. This is the aim of this chapter. I will propose a theory of syntactic head movement in which head movement is assimilated as far as possible to phrasal movement and differences between them can be derived from independent factors.

First, in section 3.2, I consider the question of when head movement, rather than phrasal movement, applies and why. I argue that the distributional difference between head movement and phrasal movement can be explained by the interaction between a locality condition and an anti-locality condition that regulate syntactic movement.

It has been generally assumed that head movement, unlike phrasal movement, has only one mode: adjunction. Section 3.3 deals with this difference between head movement and phrasal movement. I simply eliminate this difference and propose that the computational system of natural languages allows head movement via substitution as well as head movement via adjunction. I argue that the possibility of

head movement via substitution is subject to structural and locality constraints.

In section 3.4, I consider the question of why head movement, unlike phrasal movement, does not proceed successive cyclically in long-distance contexts. I argue that this difference between head movement and phrasal movement immediately follows from the locality constraint that is established in 3.2.1.

In 3.5, I consider how we can accommodate long head movement under the proposed theory of syntactic head movement. 3.6 presents a typology of movement that is expected under the proposed theory of syntactic head movement.

3.2 When does Head Movement Apply?

3.2.1 Locality

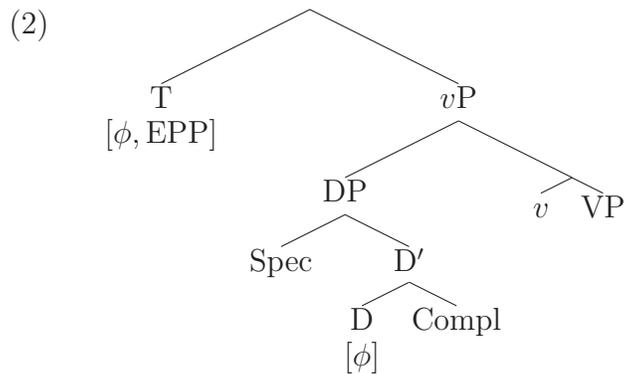
Under Copy Theory of Movement and Probe-Goal Theory of movement, movement is decomposed into Agree, Copy, and Merge (and Copy Deletion). (1) illustrates this.

- (1) a. $P_{[F]} \dots G_{[F]}$ Agree ([F] of P, [F] of G)
b. $G_{[F]} P_{[F]} \dots G_{[F]}$ Copy(G) and Merge (P, G)

First, the feature [F] that the probe P bears enters into an Agree relation with the matching feature [F] of the goal G. The operation Copy applies to G that bears [F]. Finally, Merge applies to the created copy of G and P.

A question is, why does Copy not apply to a feature ([F] in (1)), but apply to a category that bears the [F] (G in (1)). This question is reasonable because an Agree relation is a relation between features not categories. The default hypothesis should be that in (1), Copy applies to the [F] of G and Merge applies to the created copy of the [F] of G and the [F] of P (see Chomsky 1995c:262 for relevant discussion).

One might argue that P has some property that requires a category rather than a feature in its specifier position, that is, the EPP property (see Lasnik 2001a for discussion about different interpretations of the EPP property). This explanation works if G is a minimal projection (a head). However, what if G is not a minimal projection, that is, a phrasal category? To see the problem more clearly, let us consider the following schematic structure, where T has the ϕ -features and the EPP property and the subject D has the matching ϕ -features.



The ϕ -features of T are probes and enter into an Agree relation with the ϕ -features of D. If Copy applies to the ϕ -features of D and Merge applies to the created copy and the ϕ -features of T, the derivation will crash since the EPP property of T is not satisfied. This is a welcome result because sentences like the following are indeed unacceptable (the sentence is supposed to be a declarative sentence):

(3) *Will [_{DP} [_{D'} the picture of John]] surprise his mother.

What if Copy applies to the category D that bears the ϕ -features? The EPP is satisfied if the created copy of D is merged into the specifier of T. This option, however, should be prohibited because sentences like the following are still unacceptable:

(4) *_D The] will [_{DP} [_{D'} t_D picture of John]] surprise his mother.

Copy applying to D' should also be ruled out, as indicated by the following example:¹

(5) *_{D'} Picture of himself] will [_{DP} John's $t_{D'}$] surprise his mother.

The sole acceptable option is the one in which Copy applies to the maximal projection, DP, as shown in the following:

(6) [_{DP} John's [picture of himself]] will t_{DP} surprise his mother.

The question is, why is this so? The unavailability of the Copying-D' option could be attributed to the inert nature of intermediate projections that intermediate projections are somehow syntactically invisible (Chomsky 1995c, Speas 1990, Travis 1984). On the other hand, we cannot say that minimal projection is also syntactically invisible since heads can be moved in syntax, as we saw in chapter 2.

¹Here, I assume that 's is a realization of a genitive case rather than the head of DP. If 's is a D, 's *picture of himself* rather than *picture of himself* is a D'.

I argue, following the spirit of Hornstein 2009 (see also Donati 2006:72–74 and Roberts 2010:33–38 for relevant discussion), that a locality condition explains why DP is the sole option to be Copied in this case. I assume that a locality condition is incorporated into the definition of Agree, as shown in (7).

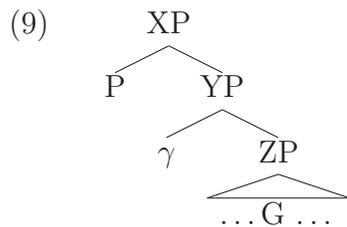
- (7) Agree(P, G) iff
- a. P matches G and
 - b. P c-commands G and
 - c. there is no γ that intervenes for Agree(P, G).

Interveners for Agree are defined as follows:

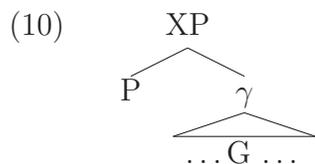
- (8) γ intervenes for Agree(P, G) iff
- a. every category that dominates γ also dominates G and
 - b. every category that dominates P also dominates γ and
 - c. $\gamma \neq G$ and
 - d. γ matches P and G.

What is the most crucial for the present purpose is the condition (8a). This condition amounts to saying that either a c-commanding element or a dominating element can be an intervener. As a result, this definition has the combined effect of Relativized Minimality or the Minimal Link Condition (or their equivalents) (Rizzi 1990, Chomsky 1995c) and the A-over-A Principle (Chomsky 1964a, 1973, Bresnan 1976).

Take the following schematic structure, for example:

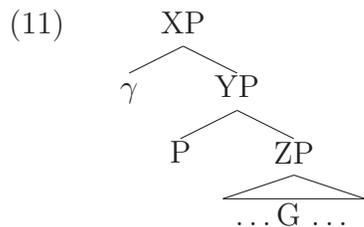


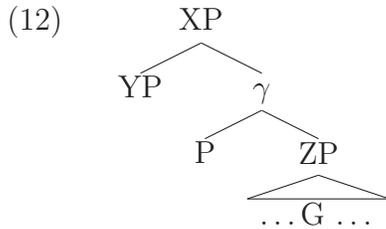
This structure illustrates Relativized Minimality (or Minimal Link Condition) effects. γ could intervene for $\text{Agree}(P, G)$ since every category that dominates γ also dominates G (i.e. XP and YP). On the other hand, the following structure illustrates A-over-A Principle effects:



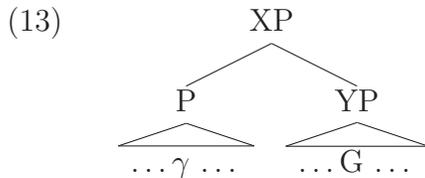
Every category that dominates γ also dominates G (i.e. XP). Thus, γ could intervene for $\text{Agree}(P, G)$ (if the other conditions in (8) are satisfied). I will discuss how (8a) can be justified in 3.2.5.

The condition (8b) characterizes the structural relationship between a probe and an intervener. The following structures satisfy (8a) but not (8b).





In (11), there is a category that dominates P but not γ (i.e. YP), and also in (12) there is a category that dominates P but not γ (i.e. γ).² On the other hand, (13) satisfies (8b) but not (8a).



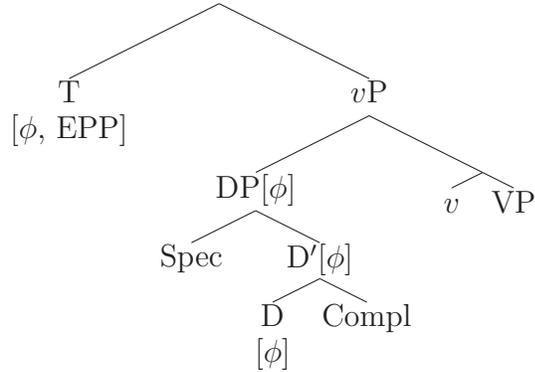
Although every category that dominates P also dominates γ , there is a category that dominates γ but not G (i.e. P).

The condition (8c) is required to prevent an element γ from intervening between a probe P and γ itself. For example, in (9), it is trivially true that every category that dominates G dominates G. As a result, without (8c), G intervenes for Agree(P, G). This means that nothing can be a goal of Agree because everything intervenes between a probe and itself. The statement in (8c) overcomes this self-intervening problem.

Given this locality condition, let us consider the case of subject raising again. DP and D' are projections of the D head, which means that DP and D' have the ϕ -features if D does. Thus, the structure in (2) should look like the following:

²Here, the dominance relation is defined as irreflexive.

(14)



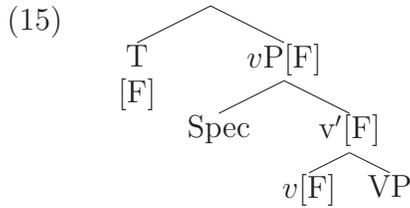
In this structure, the ϕ -features of DP (and also that of D') intervene for Agree(ϕ of T, ϕ of D). Due to this A-over-A Principle effect, the ϕ -features of D cannot enter into an Agree relation with the ϕ -features of T.³ As a result, Copying DP is the sole option in the case of subject raising.

To sum up, the locality condition that covers A-over-A Principle effects as well as Relativized Minimality effects explains why XP (a phrase) is Copied.

3.2.2 Anti-Locality

As Hornstein (2009) points out, if we take the A-over-A Principle into consideration, it appears to rule out head movement in general. To see this, let us consider the case of *v*-to-T movement. Suppose that T has the feature [F] that triggers head movement and *v* has a matching feature [F]. Then, the following is the structure where *v* is supposed to undergo head movement:

³The ϕ -features of D' also cannot enter into an Agree relation with the ϕ -features of T due to the presence of DP.



vP (and also v') has the feature $[F]$. The $[F]$ feature of vP intervenes for $\text{Agree}([F]$ of T , $[F]$ of v). As a result, the $[F]$ feature of v cannot enter into an Agree relation with the $[F]$ feature of T . Thus, v cannot move. This holds true for head movement in general. This is an undesirable consequence since there is syntactic head movement in natural language, as we saw in chapter 2.

Tacitly assuming something like (16),⁴ Hornstein (2009) suggests that head movement would be saved if we assume a morphological condition that prohibits a non-head from becoming a part of a head.

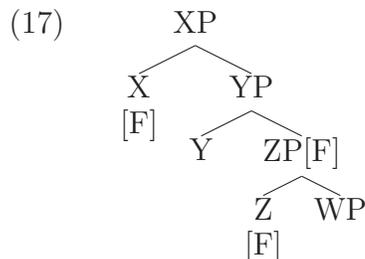
- (16) Only elements that can potentially be a target of the relevant movement can be interveners.

According to the morphological condition, vP (and also v') as a non-head cannot be a target of movement to T in (15). v is the only movable element. Under the assumption (16), vP does not intervene for $\text{Agree}([F]$ of T , $[F]$ of v).

I do not adopt this approach since it is unclear why a morphological condition regulates syntactic dependencies and more importantly this approach does not say anything about when head movement occurs. Head movement is subject to the

⁴Rackowski and Richards (2005 : 578–579) also adopt a similar assumption about a potential intervener.

Head Movement Constraint (HMC, Travis 1984), which states that head movement of Z to X cannot skip an intervening head Y. (17) illustrates this.



In (17), Z cannot move to X according to the HMC. Hornstein’s approach, however, does not explain why this is so, that is, why head movement is subject to the HMC, since in (17), like in (15), the [F] feature of ZP does not intervene for Agree([F] of X, [F] of Z): ZP cannot be a target of movement to X due to its non-head status.

Maintaining Hornstein’s assumption (16), I argue that anti-locality explains the HMC. Although several different versions of anti-locality have been proposed (Abels 2003, Bošković 2005, Grohmann 2003), every version of anti-locality derives the following generalization:

(18) *Anti-Locality Generalization*

A complement of X cannot move to a specifier of X.

Given this and (16), it follows that vP does not intervene for Agree([F] of T, [F] of v) in (15): for vP in (16) is not movable due to anti-locality. Given that intermediate projections are syntactically invisible, v' does not intervene for Agree([F] of T, [F] of v) either. Therefore, only the head, v , can be Copied (i.e. moved) in (15).

On the other hand, in (17) the [F] feature of ZP intervenes for Agree([F] of X, [F] of Z) since ZP is movable (i.e. ZP is not the complement of X). As a result, our locality constraint requires that only ZP be Copied (i.e. moved).

To sum up, from our locality constraint (8) and anti-locality, it follows that a head X moves when its maximal projection XP is the complement of a probe and a maximal projection XP moves when it is not the complement of a probe. Note that this is exactly what Pesetsky and Torrego's (2001) head movement generalization, which is repeated below, states.

(19) *Head Movement Generalization* (Pesetsky and Torrego 2001:363)

Suppose a head H attracts a feature of XP as part of a movement operation.

- a. If XP is the complement of H, copy the head of XP into the local domain of H.
- b. Otherwise, copy XP into the local domain of H.

We do not need an ad-hoc assumption that regulates the distribution of head movement and phrasal movement. The head movement generalization can be deduced from our locality constraint (8) and anti-locality.

A crucial assumption in this explanation is that the computational system does not discriminate head movement from phrasal movement in terms of locality: the presence of phrasal categories could block head movement.⁵ This accords with the main aim of this thesis, which tries to assimilate head movement as far as possible

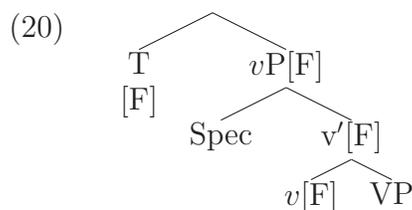
⁵In chapter 4, we will see a case where the presence of heads blocks phrasal movement.

to phrasal movement.

3.2.3 Is Anti-Locality Compatible with Syntactic Head Movement?

One might wonder if the conception of anti-locality is compatible with syntactic head movement. In what follows, I show that at least some versions of anti-locality are compatible with syntactic head movement; Grohmann's (2003) and Bošković's (2005) anti-locality is compatible with it while Abels' (2003) is not.

Abels' (2003) version is based on the Last Resort Principle that movement takes place only if it is motivated by feature checking. A complement of a head X is already in the feature checking relation with X . Movement of the complement to a specifier of X does not yield any new feature checking relation. Therefore, a complement of X cannot move to a specifier of X (anti-locality). Given this, let us consider structures like (15), repeated here as (20).

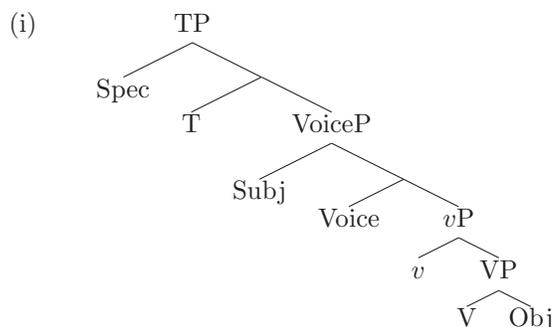


Suppose that the $[F]$ feature of X requires that a category whose feature has entered into an Agree relation with it be merged with X , which can be considered a version of the EPP property. In (20), T can enter into an Agree relation with v since neither vP nor v' intervene for it. In spite of this, v cannot move to T because the requirement by the $[F]$ feature of T has already been satisfied by vP . Movement of v to T violates the Last Resort Principle. Therefore, syntactic head movement never

takes place according to Abels' anti-locality, as Abels (2003) points out.

Grohmann's (2003) anti-locality is defined on the basis of his three-way partition of the clause: discourse-related projections (the Ω -domain), agreement-related projections (the Φ -domain), and thematic projections (the Θ -domain). Grohmann's anti-locality prohibits movement within the same domain. VP is the Θ -domain and TP is the Φ -domain. It is unclear if v P belongs to the Θ -domain or Φ -domain under the Agr-less phrase structure theory, for v involves both agreement and theta-assignment. If we suppose that v P belongs both to Θ -domain and to Φ -domain, both V-to- v movement and v -to-T movement are unproblematic under Grohmann's anti-locality; V-to- v movement crosses Θ - Φ -boundary since VP belongs to the Θ -domain while v P belongs to Φ -domain (as well as Θ -domain); v -to-T movement crosses Θ - Φ -boundary because v P belongs to Θ -domain (as well as Φ -domain) while TP belongs to Φ -domain. Therefore, syntactic head movement is compatible with Grohmann's anti-locality.⁶

⁶Alternatively, we do not have to resort to the unclear status of v if we adopt the phrase structure theory where a head assigning Case to an object is different from a head introducing a subject (e.g. Koizumi's (1993) split VP hypothesis). For example, suppose that a subject is introduced by a Voice head and v assigns accusative Case, which is illustrated in the following structure:



Bošković's (2005) anti-locality is also compatible with syntactic head movement:

(21) *Bošković's Anti-Locality* (Bošković 2005:16)

Each chain link must be at least of length 1, where a chain link from A to B is of length n if there are n XPs that dominate B but not A.

This condition amounts to saying that movement must cross at least one maximal projection. It is obvious that all instances of head movement cross one maximal projection. Therefore, syntactic head movement is allowed under Bošković's anti-locality.

3.2.4 Validity of the Head Movement Constraint

In 3.2.2, I showed that the distribution of phrasal movement and head movement can be explained by our locality constraint and anti-locality. I presupposed the validity of the HMC. However, this is not uncontroversial especially because not a few languages seem to have head movement that violates the HMC (i.e. long head movement), as I will discuss in 3.5. In this section, I consider whether we really need to rule out head movement that violates the HMC and conclude that VoiceP belongs to the Θ -domain and v P belongs to the Φ -domain. V -to- v movement crosses a domain boundary between the Θ -domain and the Φ -domain. The same holds of both v -to-Voice movement and Voice-to-T movement (the former crosses the Φ - Θ -boundary and the latter Θ - Φ -boundary). Therefore, Grohmann's anti-locality is compatible with syntactic head movement under this specific phrase structure theory even without resorting to the unclear status of v .

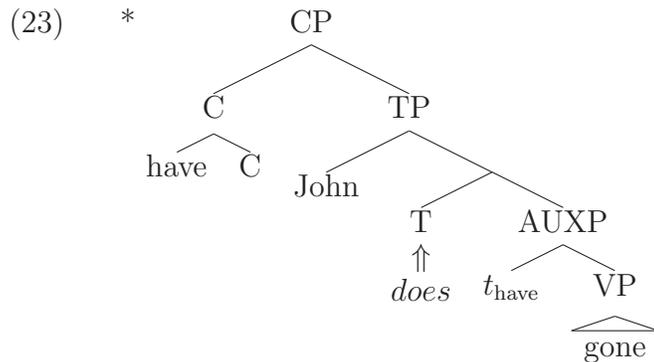
the HMC holds at least for AUX-to-T movement in English, noun incorporation in Niuean, and preposition incorporation (or applicative constructions) in Chichewa.⁷

3.2.4.1 Verb Movement in English

One might consider that the following examples from Roberts 1991 could be evidence for the HMC:

- (22) a. *Have John does *t* gone?
 b. *Be John did *t* arrested? (Roberts 1991b:212)

Suppose that *do* is inserted in order to support stranded inflectional information on T. If head movement can skip an intervening head, sentences like (22a) would be derived like the following:



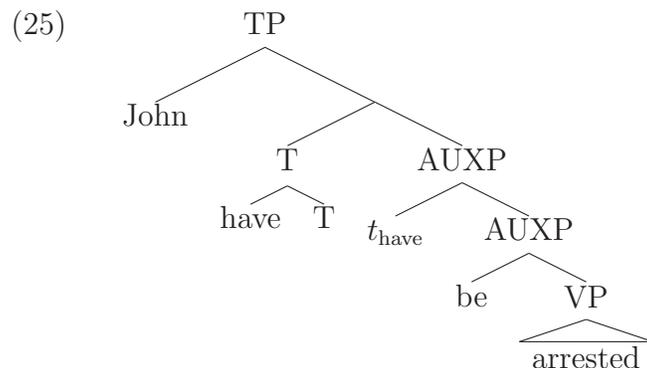
⁷Note that I will not argue that the HMC is a universal generalization, but argue that it holds at least in some constructions in some languages. In fact, in 3.5, I will argue that the HMC is parameterized and that the relevant parameter is reduce to the EPP property of an intervening head; if the intervening head has the EPP property, the HMC does not hold.

In this derivation, *have* moves directly to *C*. *Do* is inserted into T to support stranded inflectional information on T. The HMC can rule out this derivation since movement of *have* skips the intervening head T. However, although the HMC is compatible with (22), it is not supported by (22) since a derivation like (23) could be ruled out independently of the HMC. Suppose that AUX-inversion in a question sentence is driven by a feature that only T has. Then, movement of *have* in (23) can be ruled out because *have* lacks the feature relevant to this movement to begin with without resorting to the HMC. Thus, the data in (22) do not constitute conclusive argument for the validity of the HMC.

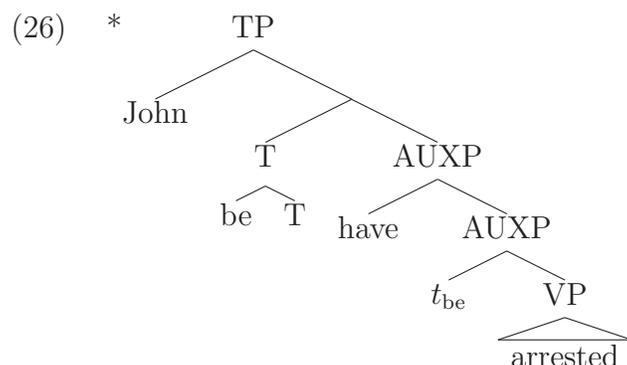
The contrast between (24a) and (24b) provides a more convincing argument for the HMC.

- (24) a. John has been arrested.
 b. *John is have arrested.

Suppose that the perfective auxiliary *have* is base-generated higher than the passive auxiliary *be*. Then, (24a) can be derived by head movement that observes the HMC, as illustrated in the following:



If head movement can skip an intervening head (i.e. the HMC is not operative), however, unacceptable sentences like (24b) would also be generated, as illustrated in the following:

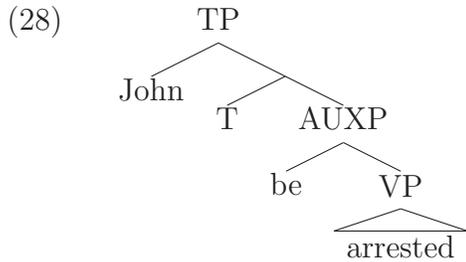


In this derivation, *be* rather than *have* moves to T, skipping *have*. Unlike the AUX-inversion case, movement of *be* to T itself should not be problematic since *be* can move to T if there is no intervening head, as shown in the following:

(27) John was arrested.

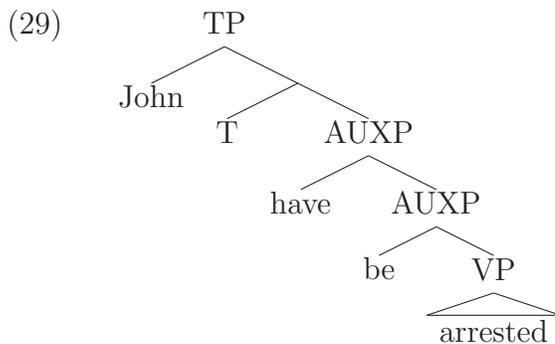
Therefore, the HMC is required to rule out sentences like (24b).

One might argue that the unacceptability of (24b) could be attributed to a morphological constraint. Suppose that inflected auxiliary verbs are derived by a morphological operation such as affix hopping or m-merger rather than syntactic head movement and that this morphological operation combines T with an auxiliary verb that adjacent to T (see Lasnik 1981, 1995b, Halle and Marantz 1993, Bobaljik 1994). Then, a sentence like (27) can be derived without head movement of *be* to T, as illustrated in the following:



The morphological operation can combine T with *be* since they are adjacent.

The contrast between (24a) and (24b) can be explained by this adjacency constraint. Consider the following structure:



The morphological operation can combine T with *have* but not with *be* since only the former is adjacent to T. In this way, if we assume that inflected auxiliary verbs are derived by a morphological operation that is subject to the adjacency constraint, we do not need to posit the HMC.

However, the assumption that inflected auxiliary verbs are derived by a morphological operation is problematic. An argument against this assumption can be constructed on the basis of the following classic paradigm of English verbal morphology that Chomsky (1957) discusses:

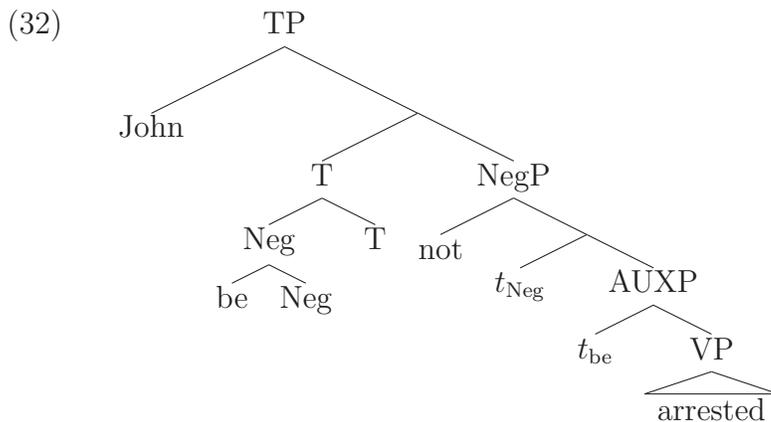
- (30) a. The policeman did not arrest John.
 b. *The policeman arrested not John.

- (31) a. *John did not be arrested.
 b. John was not arrested.

The contrast between (30a) and (30b) can be explained by the the morphological adjacency constraint if we assume that inflected main verbs in English are derived by a morphological operation. (30b) is ruled out because T is not adjacent to *arrest* due to the presence of *not*. Since the morphological operation cannot combine T with a main verb, *do*-support takes place, resulting in (30a).

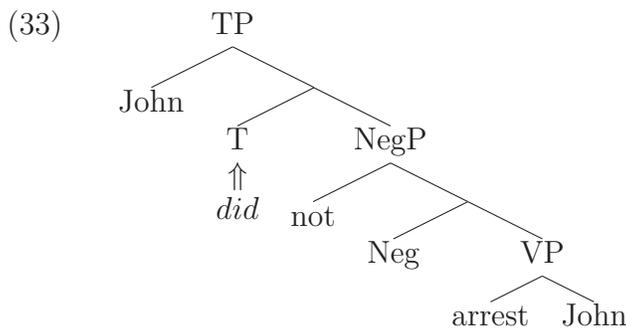
If inflected auxiliary verbs, as main verbs, were derived by the morphological operation, the contrast between (31a) and (31b) should be reversed. (31b) should be ruled out since T is separated from *be* by *not* while (31a) should be acceptable because *do*-support takes place to support the stranded T.

On the other hand, if we assume, as standardly assumed, that in English, inflected auxiliary verbs are derived by head movement while inflected main verbs are derived by a morphological operation, this paradigm can be accounted for. Suppose that there is NegP immediately below TP and *not* is in the specifier of NegP rather than the head of NegP. Then, (31b) can be derived as in the following:



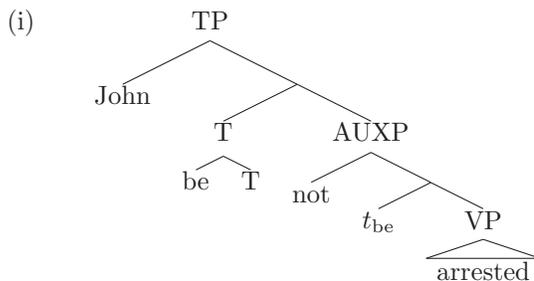
be first moves to Neg and Neg containing *be* moves to T.⁸ *be* can be inflected since it constitutes a complex head with T (and Neg). (31a) is unacceptable since *do*-support is a last resort operation that is performed in order to support stranded inflectional information on T; In this case, inflectional information on T is not stranded because the raised *be* can support it.

On the other hand, (30a) is derived like the following:



The main V, *arrest*, does not move to T. Furthermore, the morphological operation cannot combine T with *arrest* since *not* intervenes between T and *arrest*. As a result, *do* is inserted into T to support stranded inflectional information on T. (30b) is never generated because English main verbs never move to T by hypothesis.

⁸Alternatively, we can assume that there is no projection like NegP and *not* is adjoined to AUXP, as illustrated in the following:



In this way, the difference between auxiliary verbs and main verbs in English can be accounted for under the assumption that inflected auxiliary verbs are derived by head movement while inflected main verbs are derived by a morphological operation. On the other hand, if we assume that both auxiliary verbs and main verbs get inflection via the morphological operation, the difference remains a mystery. From this, I conclude that inflected auxiliary verbs in English are not derived by the morphological operation.

Now let us go back to (24), repeated here as (34).

- (34) a. John has been arrested.
b. *John is have arrested.

The contrast between (34a) and (34b) can be accounted for by the morphological adjacency constraint only if we assume that inflected auxiliary verbs are derived by the morphological operation. As I illustrated above, this assumption is problematic. Therefore, (34) cannot be accounted for by the adjacency condition. On the other hand, if we assume that English auxiliary verbs move to T and that this movement is subject to the HMC, (34) can be easily accounted for. From this discussion, I conclude that the HMC holds in AUX-to-T movement in English.

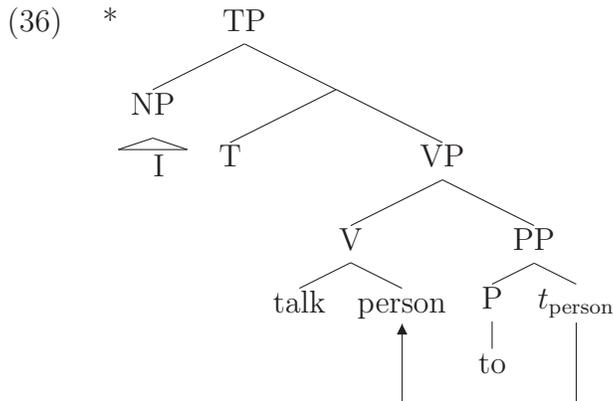
3.2.4.2 Noun Incorporation in Niuean

Baker (1988) observes that in languages that allow noun incorporation, no language allows noun incorporation that takes a noun root out of PP. This generalization is

illustrated by the following Niuean examples:

- (35) a. Ne-tutala a-au [PP ke he [NP tau-tagata]].
 PAST-talk ABS-I to PL-person
 ‘I was talking to (the) people.’
- b. *Ne-tutala-tagata a-au [PP (ke he) t].
 PAST-talk-person ABS-I (to)
 (Lit.) ‘I was people-talking (to).’ (Niuean: Baker 1988:85)

tagata ‘person’ is the complement of a preposition *ke he* ‘to’. (35b) shows that *tagata* cannot be incorporated into V. This fact can be easily accounted for if we assume that noun incorporation is subject to the HMC. In order for N (i.e. *tagata*) to move to V, the N has to skip P, as illustrated by the following structure:



Given this, I conclude, with Baker (1988), that the HMC holds in noun incorporation at least in Niuean.

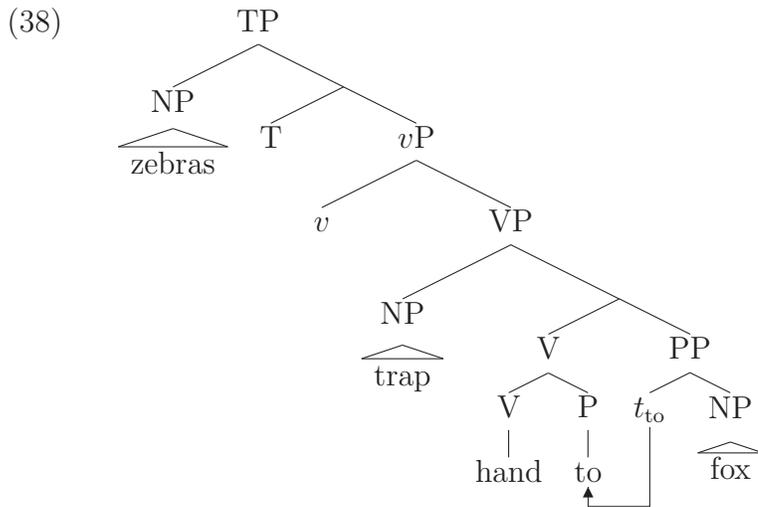
3.2.4.3 Preposition Incorporation in Chichewa

The HMC holds also in preposition incorporation (aka applicative constructions) in Chichewa. Preposition incorporation is illustrated by the following examples:

- (37) a. Mbidzi zi-na-perek-a msampha **kwa** nkhandwe.
zebras SP-PAST-hand-ASP trap to fox
‘The zebras handed the trap to the fox.’
- b. Mbidzi zi-na-perek-**er**-a nkhandwe msampha.
zebras SP-PAST-hand-to-ASP fox trap
‘The zebras handed the fox the trap.’ (Chichewa: Baker 1988:229)

In (37a), the verb takes an NP and a PP complement. (37b) is a thematically equivalent sentence to (37a). (37b) is different from (37a) in that the verb appears with a suffix called the applicative suffix and the PP complement becomes an NP.

Baker (1988) analyzes this construction as preposition incorporation. This analysis is illustrated by the following structure:



In this structure, the preposition undergoes head movement to V. After V moves to T and the NP *fox* moves to the specifier of *vP*, (37b) results.

Baker (1988) argues that preposition incorporation is subject to the HMC on the basis of the observation that it never takes place out of embedded structures. This is illustrated in the following examples:

- (39) a. Mbuzi zi-na-dy-a [kalata [**kwa** Mavuto]].
 goats SP-PAST-eat-ASP letter to Mavuto
 ‘The goats ate the letter to Mavuto.’
- b. *Mbuzi zi-na-dy-**er**-a [kalata [t_P Mavuto]].
 goats SP-PAST-eat-to-ASP letter Mavuto
 (intended) ‘The goats ate the letter to Mavuto.’
 (Chichewa: Baker 1988:236)

The PP *kwa Mavuto* ‘to Mavuto’ is the complement of *kalata* ‘letter’. (39b) shows that *kwa* cannot be incorporated into V. This fact can be accounted for by the HMC since in order for the P to move to V, it must skip the N *kalata* ‘letter’. From this data, thus, we can conclude that the HMC holds in preposition incorporation in Chichewa.

To summarize this section, we have seen that the HMC holds in AUX-to-T movement in English, noun incorporation in Niuean, and preposition incorporation in Chichewa. Thus, we have to conclude that the HMC as a generalization is operative at least in some constructions in some languages. As I showed in 3.2.2, the HMC effects follow from our locality constraint (8) combined with anti-locality. Thus, all the facts about English, Niuean, and Chichewa that we have seen in this section can be explained by the locality constraint.

3.2.5 A-over-A Principle

Another crucial aspect of the locality constraint in (8) is that the A-over-A Principle as well as Relativized Minimality is incorporated into it. In this section, I discuss how this can be justified.

3.2.5.1 A Conceptual Argument

First, I would like to point out that we need to add an additional condition to the locality constraint if we want to limit the range of a locality constraint to the cases of Relativized Minimality. This is so because c-command is a derivative notion that is defined based on dominance, as shown in the following:

- (40) α c-commands β iff every category that dominates α also dominates γ and α does not dominate β and β does not dominate α .

Intervention in terms of Relativized Minimality is thus defined as the following:

- (41) γ intervenes for Agree(P, G) iff
- a. every category that dominates γ also dominates G and
 - b. every category that dominates P also dominates γ and
 - c. γ does not dominate G and G does not dominate γ and
 - d. $\gamma \neq G$ and
 - e. γ matches P and G.

Note that our locality constraint in (8) is simpler and more restrictive than this version of locality constraint because it does not have the additional condition (41c). Therefore, the locality constraint that has Relativized Minimality and the A-over-A Principle (i.e. (8)) is conceptually favored over the locality constraint that only has Relativized Minimality (i.e. (41)).

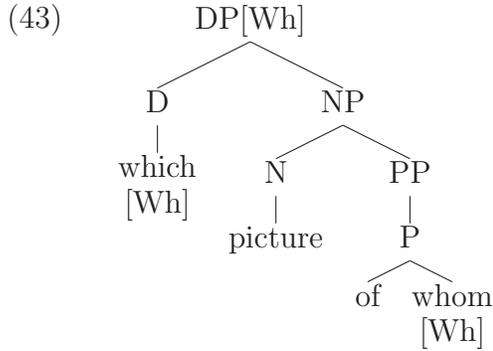
3.2.5.2 An Empirical Argument: Improper Movement

Empirical arguments in favor of (8) over (41) are more difficult to construct than conceptual arguments. This is so because most of the cases that violate the A-over-A Principle also violate Relativized Minimality or some other constraint. For example, one might consider that (42b) and (42c) are instances of an A-over-A Principle violation.

- (42) a. Which picture of whom do you like *t*?
b. *Who do you like which picture of *t*?
c. *Of whom do you like which picture *t*?

In these sentences, a Wh-DP (*who(m)*) is dominated by a larger Wh-DP (*which picture of whom*). Therefore, (42b) and (42c) can be ruled out by the A-over-A Principle.

However, a careful consideration of the structure of the larger Wh-DP in these sentences reveals that (42b) and (42c) can also be ruled out by Relativized Minimality. That the larger Wh-DP has a feature that is relevant to Wh-movement (i.e. the [Wh]-feature) means that its head also has the same feature. Given this, the larger Wh-DP in these sentences should have a structure like the following:

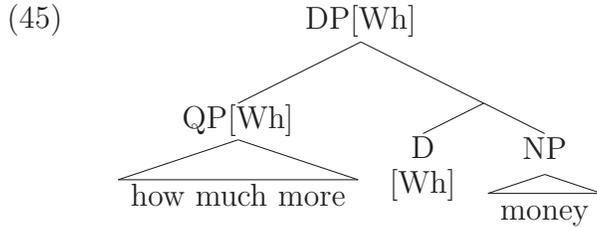


Note that in this structure, *whom* is both dominated by the [Wh]-feature of the DP and c-commanded by the [Wh]-feature of D. Therefore, (42b) and (42c) violate both Relativized Minimality and the A-over-A Principle. (42b) and (42c) then do not constitute evidence for (8) although they are compatible with it.

The following examples, which are instances of so-called left-branch extraction, might be attributed to the A-over-A Principle:

- (44) a. [How much more money] is it *t*?
 b. *[How much more] is it [*t* money]? (Bresnan 1976:22)

In these sentences, a Wh-QP (*how much more*) is dominated by a larger DP (*how much more money*). The acceptability of (44a) suggests that the DP *how much more money* also bears a [Wh]-feature. Suppose that the [Wh]-feature of the Wh-QP somehow “percorates” up to the entire DP. Then the structure of the DP looks like the following given that the Wh-QP is a specifier of the DP:



In this structure, the [Wh]-feature of the DP dominates the [Wh]-feature of the QP. On the other hand, the D does not c-command the QP. Therefore, even if the D has the [Wh]-feature because the DP is its projection, (44b) does not violate Relativized Minimality. Only the A-over-A Principle can rule out (44b).

However, this explanation presupposes an unmotivated assumption that feature percolation is obligatory. If percolation of the [Wh]-feature of the Wh-QP to the entire DP is optional, the A-over-A Principle is insufficient to rule out (44b). Indeed, there is evidence that feature percolation is optional. Evidence comes from languages that allow left-branch extraction such as Tzotzil. In Tzotzil, in a situation like (44), either the entire DP or the Wh element in its specifier can move, as shown in the following:

- (46) a. [Buch'u s-tot] av-il-be t?
 who A3-father A2-see-IO
 'Whose father did you see?'
- b. Buch'u av-il-be [t s-tot]?
 who A2-see-IO A3-father
 (Lit.) 'Whose you saw father?' (Tzotzil, Aissen 1996:456–457)

The acceptability of (46a) shows that the [Wh]-feature of *buch'u* 'who' can percolate to the entire DP *buch'u s-tot* 'whose father'. However, as (46b) shows, the Wh-phrase itself can move out of the entire DP. If feature percolation were obligatory, the A-

over-A Principle would rule out (46b). Therefore, we have to conclude from the acceptability of (46b) that feature percolation is optional. The unacceptability of (44b) then cannot entirely be reduced to an A-over-A Principle violation; some other constraint is required in order to rule out (44b) when feature percolation does not apply (see Bošković 2005, to appear, Corver 1992 and the references cited therein).⁹ Therefore, (44b) does not support (8) although it is compatible with it.

A more convincing argument for (8) can be constructed on the basis of improper movement (Chomsky 1973, 1981, Fukui 1993, May 1979, Obata and Epstein

⁹Alternatively, we might argue that the obligatoriness of feature percolation is parameterized. In English, it is obligatory while in Tzotzil, it is optional. However, as far as there is no independent evidence for this parameter, (44b) does not constitute strong evidence for the A-over-A Principle. Furthermore, given Chomsky's (1973) analysis of P-stranding, the fact that Wh-movement can either pied-pipe or strand a preposition in English, as illustrated by (i), indicates that feature percolation is optional in English.

- (i) a. **To whom** do you think (that) John talked.
 b. **Who** do you think (that) John talked **to**.

Chomsky (1973) proposes that the Wh-feature on a Wh-phrase can optionally percolate to the PP that dominates it. In (ia), feature percolation apply, resulting in movement of the PP *to whom*. On the other hand, in (ib), the preposition is stranded since feature percolation does not apply. Given this analysis of P-stranding, Lasnik (2010) suggests that the difference between languages that do and do not allow P-stranding can be reduced to the difference between these languages in the optionality of feature percolation: feature percolation is optional in P-stranding languages while it is obligatory in non-P-stranding languages. If this is correct, we cannot assume that feature percolation is obligatory in English.

2008, Richards 1998, Ura 2001). Improper movement is a sequence of movement consisting of movement from an A-position to an A'-position and then to an A-position (A-A'-A). The ban on improper movement is required to rule out sentences like the following:

- (47) a. *[How many people]₁ are known [CP it was told *t*₁]?
 (Richards 1998:162)
- b. *Who₁ has not yet been decided [CP it will be told *t*₁ that Mary has left]?
 (Ura 2001:171)
- c. *John₁ was decided [CP *t*₁ to leave at noon] (Fukui 1993:113)

All of these sentences involve A-movement out of a CP complement. The Wh-phrases in (47a) and (47b) are moved from the object position in the embedded clause to the subject position in the matrix clause. In (47c), the embedded subject moves to the matrix subject position. One possible derivation for these sentences, where the moving elements move from their original positions to the matrix clause in one fell swoop, can be ruled out by an absolute locality constraint such as Phase Impenetrability Condition (PIC: Chomsky 2000), which prohibits movement from crossing a CP complement unless it stops by the CP-edge (specifier or adjoined position) on its way to the matrix clause.¹⁰

(48) *Phase Impenetrability Condition*

In phase α with head H, the domain of H is not accessible to operations

¹⁰(47a) and (47b) can also be ruled out by Relativized Minimality in such a derivation.

outside α , only H and its edge are accessible to such operations.
(Chomsky 2000:108)

Another possible derivation for (47), however, cannot be ruled out in the same way. Suppose that the moved elements move to the CP-edge before they move to the matrix subject position, as illustrated in the following:

- (49) a. *[How many people]₁ are known [_{CP} t_1 [it was told t_1]]
b. *Who₁ has not yet been decided [_{CP} t_1 [it will be told t_1 that Mary has left]]?
c. *John₁ was decided [_{CP} t_1 [t_1 to leave at noon]]

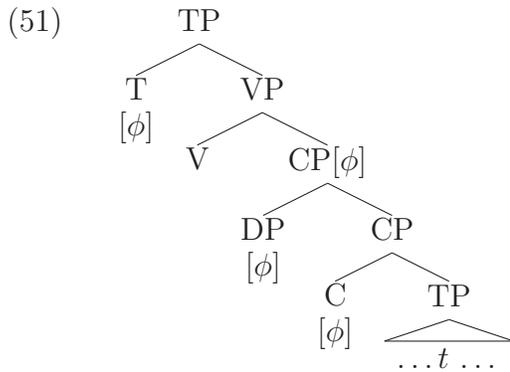
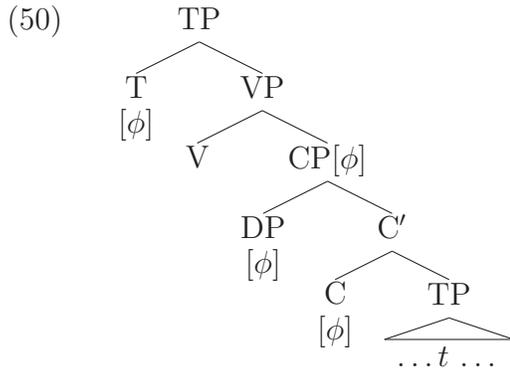
The first movement does not violate Relativized Minimality in (49a) and (49b) even if the embedded subject *it* c-commands the embedded object position because this movement is A'-movement. The second movement from the embedded CP-edge to the matrix subject position, which is A-movement, is unproblematic in terms of the PIC.¹¹ Therefore, neither Relativized Minimality nor the PIC can explain the unacceptability of these sentences. Some other constraint is required to rule out the derivation in (49) that involves improper movement.

If we assume, following Picallo 2002, Tanaka 2004, and Quer 2008, that CP has ϕ -features, the ban on improper movement can be reduced to the A-over-A Principle.¹² To see how this is possible, let us consider the following structures

¹¹If a passive *vP* is a phase, as Legate (2003) argues, the second movement must target the specifier of the matrix *vP*.

¹²Ura (2001) suggests a similar analysis.

(irrelevant details omitted):



In (50), DP is in a specifier of the embedded CP while in (51), it is adjoined to the embedded CP. In both cases, the A-over-A principle can rule out movement of the DP (every category that dominates the CP also dominates the DP). On the other hand, Relativized Minimality cannot rule out this movement because neither the CP nor the C c-commands the DP. In this way, if we incorporate the A-over-A Principle into a locality constraint, we can deduce the ban on improper movement from a general locality constraint. I take this as empirical evidence for our locality constraint (8).¹³

In sum, our locality constraint (8) is both conceptually and empirically motivated. Conceptually, it is simpler and more restrictive than the alternative (41).

¹³I thank Sayaka Goto for suggesting to me this analysis of improper movement.

Empirically, it can reduce the ban on improper movement to a general locality constraint.

3.3 Is Head Movement an Adjunction Rule?

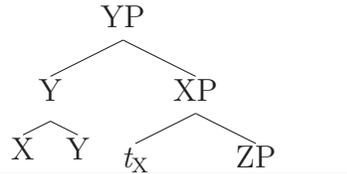
It has been generally assumed (with the exception of Rizzi and Roberts 1989, Roberts 1991a, 1994) that head movement, unlike phrasal movement, has only one mode, adjunction.¹⁴ This is another unusual property of head movement that Chomsky (2001) points out. This section concerns this property of head movement. I simply reject the assumption that head movement is always an adjunction operation and propose the following hypothesis:

(52) *“Two Types of Head Movement” Hypothesis*

The computational system of natural languages allows head movement via substitution (HMS) as well as head movement via adjunction (HMA).

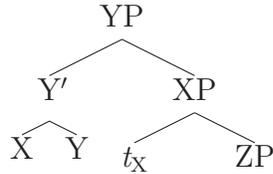
The two types of head movement are illustrated in the following schematic structures:

(53) *Head Movement of X to Y via Adjunction*



¹⁴This section is based on Funakoshi 2012:section 5.

(54) *Head Movement of X to Y via Substitution*



In (53), X moves to Y by adjunction, which is standard head movement. On the other hand, in (54), X moves to Y but via substitution, projecting Y into Y'.¹⁵ HMS described in (54) corresponds to Pesetsky’s Under-Merge and Uriagereka’s Sub-Merge (Pesetsky 2007, Uriagereka 2010). Takano (2007) also proposes the same type of operation for phrasal movement (complement-forming movement in his terms).

The aim of this section is to examine the validity of this hypothesis and explore its consequences.

3.3.1 “Two Types of Head Movement” Hypothesis

First, I argue that (52) is the null hypothesis. the computational system of natural languages has two independently motivated structure-building operations, as Chomsky (1995b, 2000, 2004) argues, adjunction/substitution in GB-terms, Pair-merge/Set-Merge in Chomsky’s (2000, 2004) terms. Thus, unless we make stipulations to the contrary, we should postulate the two types of the operations not only for phrasal movement but also for head movement.

However, one might wonder if the configuration that HMS creates would violate any principles. First, HMS of X to Y in (54) results in the complement of Y

¹⁵See 4.10 for how to implement this idea in a Bare Phrase Structure Theory without using X-bar theoretic notions like substitution and adjunction. There, substitution and adjunction are reinterpreted into labeled Merge (L-Merge) and unlabeled Merge (Concatenate).

being a head (X) rather than maximal projection. This is problematic under X-bar theory since it requires that every complement and specifier be a maximal projection (cf. Chomsky 1986). However, under the Bare Phrase Structure theory, this ceases to be problematic since under this theory, notions like minimal projections (heads) and maximal projections (phrases) are considered entirely relational notions:

- (55) Given a phrase marker, a category that does not project any further is a maximal projection XP and one that does not project at all is a minimal projection X^0 ; any other is an X' $\langle \dots \rangle$. (Chomsky 1995a: 61)

In (54), the higher copy of X is simultaneously minimal and maximal since it does not project further and does not project at all even if the lower copy of X is a minimal projection.¹⁶ Therefore, (54) is unproblematic under the Bare Phrase Structure theory. Although I have used X-bar theoretic notions like adjunction and substitution, the present system is compatible with the Bare Phrase Structure theory, as we will see in 4.10.

Second, in (54), HMS of X leads to the situation where the original complement of Y, XP, becomes a specifier of Y, given a relational definition of complement and specifier:

- (56) The head-complement relation is the ‘most local’ relation of XP to a termi-

¹⁶The higher copy does not inherit the minimal/maximal status from the lower copy since minimal projections and maximal projections, as I said, are relational notions rather than inherent properties that categories have.

nal head Y, all others within YP being head-specifier (apart from adjunction
(...)). (Chomsky 1995a : 63)

Thus, the potential problem with the structure in (54) is that XP becomes a specifier of Y even though Y subcategorizes for XP. However, as Takano (2007) argues, this is unproblematic if we adopt the derivational approach to syntactic relations (cf. Epstein et al. 1998). Under the derivational approach, Y's subcategorization requirement is derivationally satisfied when Y is merged with XP before HMS of X to Y. Therefore, HMS of X to Y does not affect the relation already derivationally satisfied between Y and XP.¹⁷ In fact, as I will show in chapters 4 and 5, the fact that HMS turns an original complement into a derived specifier plays a crucial role for a reduction of the cross-linguistic variation in the applicability of Takano's Generalization and Lasnik's Generalization to a multiple specifier parameter.

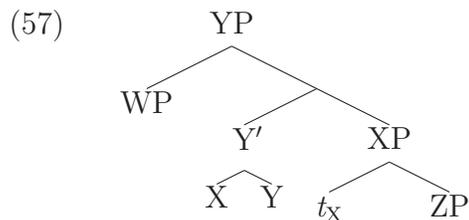
Given these discussions, I conclude that (i) the "two types of head movement" hypothesis is conceptually well-motivated since it is the null hypothesis and (ii) it is also theoretically tenable under a certain model of syntax in which the Bare Phrase Structure theory and the derivational approach to syntactic relations are adopted.

¹⁷As an LI reviewer points out, this argument does not hold if head movement is derived through what Bobaljik and Brown (1997) call Interarboreal Movement. This is because under this approach, X has to move to Y before Y is merged with XP, whereby Y's subcategorization requirement is satisfied, in order to satisfy the Extension Condition (Chomsky 1993). However, as I discussed in chapter 1, I adopt Featural Cyclicity (Chomsky 1995c, Bošković and Lasnik 1999, Richards 1999, Lasnik 2006) as a way of deriving cyclicity, discarding the Extension Condition. Therefore, I do not have to assume that head movement is derived through Interarboreal Movement.

Furthermore, I will provide empirical evidence for this hypothesis in chapters 4 and 5, where I argue that a crosslinguistic difference in terms of Takano’s Generalization and Lansik’s Generalization can be attributed to a parametric difference in terms of the possible number of specifiers if we adopt the “two types of head movement hypothesis”.

3.3.2 Conditions on Head Movement via Substitution: Multiple Specifiers

The question that immediately arises concerns the distribution of HMA and HMS: when does HMS apply? I assume that although HMA is basically always available, HMS is also an available option under certain circumstances. More specifically, I argue that the (im)possibility of HMS of X to Y is reduced to the possible number of specifiers that Y can take. To see this, recall that HMS turns the original complement into a derived specifier, as I mentioned in 3.3.1. Given this, HMS of X to Y creates the multiple specifier configuration if Y has another (original) specifier. This is illustrated in (57).



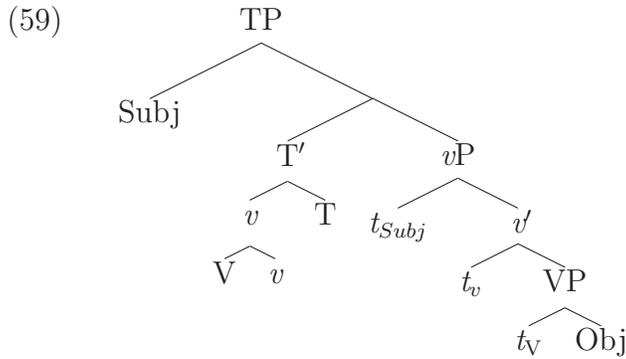
In (57), X head-moves to Y via substitution, turning the former complement XP into a specifier of Y. Note that in (57), Y has another specifier, WP. Thus, Y has multiple specifiers in this structure, WP and XP. If Y does not allow multiple specifiers, the

configuration in (57) must be ruled out. Given these considerations, the following condition follows:¹⁸

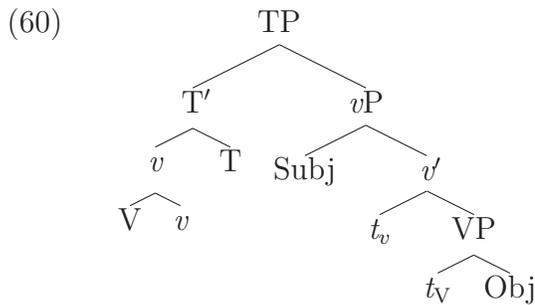
- (58) Head movement of X to Y , the next higher head, can be performed via substitution only if either
- a. Y allows multiple specifiers or
 - b. Y does not have an element in its specifier.

For example, let us consider when HMS of v to T is possible. When a language allows multiple specifiers, v can head-move to T via substitution even if T has a subject in its specifier, as illustrated in the following:

¹⁸This does not follow if we adopt a certain view on a multiple specifier parameter according to which a ban on multiple specifiers for a head H in a language L is reduced to the fact that H in L is not allowed to have the features that would introduce more than one specifier. For example, under Ura's (1994, 2000) conception, the head that allows multiple specifiers, unlike the head that does not, has the ability to check a certain feature of elements in its specifiers multiple times. Under this conception of multiple specifiers, the condition in (58) does not follow. This is because the derived specifier does not have to be licensed as a specifier by the relevant feature since it is introduced as a complement prior to HMS. Given this, one might argue that in order to maintain my argument, I need to adopt a representational view on a ban on multiple specifiers. However, as I will discuss in detail in 4.10, in addition to fitting in with the representational view, the present analysis fits in with Fukui's (2011) view of multiple specifiers (or multiple subjects), according to which in languages like Japanese, unlike English, the number of applications of Merge (substitution or Set-Merge) is unbounded.

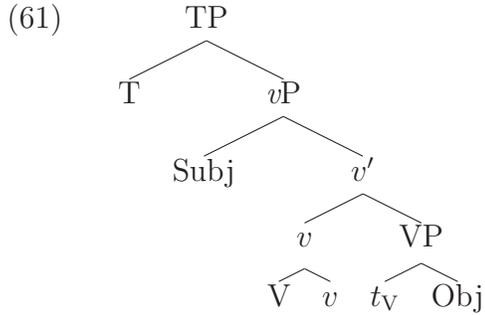


On the other hand, if a subject does not move to a specifier of TP in a language, HMS of v to T is possible even if T does not allow multiple specifiers. This is illustrated in (60).

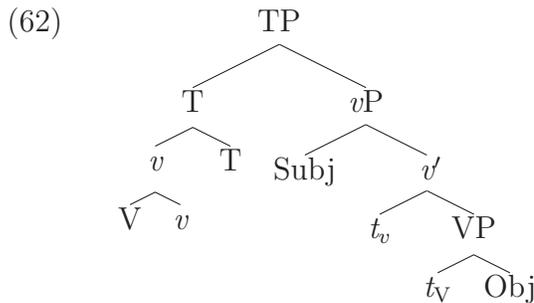


To sum up, a structural condition about the possible number of specifiers regulates the possibility of HMS.

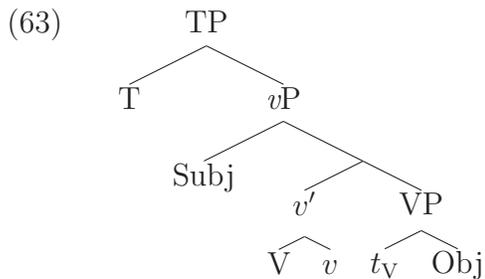
Furthermore, the possibility of HMS is conditioned by a locality constraint. Suppose that there is a language in which V must be combined with T (e.g. inflectional features of T must be supported by V with phonetic contents). In order to fulfill this requirement, movement of V to v must be via adjunction, as illustrated in the following:



In this configuration, v containing V can move to T according to our locality constraint.¹⁹ This movement can be performed either via adjunction like (62) or via substitution like (60) if this language allows multiple specifiers or in-situ subjects.



On the other hand, if V moves to v via substitution, as shown in (63), it is impossible that V supports inflectional features of T .



V , which is dominated by v' , cannot move to T since its maximal projection (i.e. VP) intervenes for $\text{Agree}(T, V)$. v' also cannot move to T due to its defective nature. Therefore, V never combines with T if it moves to an intermediate landing site via

¹⁹ V -to- T movement is impossible by the locality constraint, as we will see in 3.4.

substitution. Given this, the following condition follows.

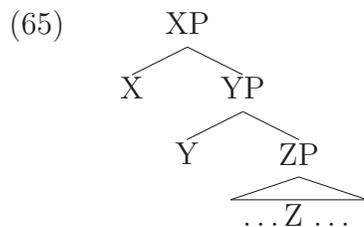
- (64) Head movement of X to Y, the next higher head, can be performed via substitution only if Y is the final landing site for X.

To sum up, head movement, like phrasal movement, has two modes: adjunction (HMA) and substitution (HMS) (see (52)). The possibility of the application of HMS is conditioned by a structural constraint (see (58)) and by a general locality constraint (see (64)).

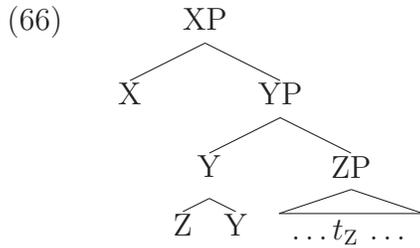
3.4 Why No Successive Cyclic Head Movement?

Another difference between head movement and phrasal movement is that head movement, unlike phrasal movement, does not proceed successive cyclically in long-distance contexts. To put it differently, excorporation is prohibited. In this section, I show that this property of head movement follows from our locality constraint (8).

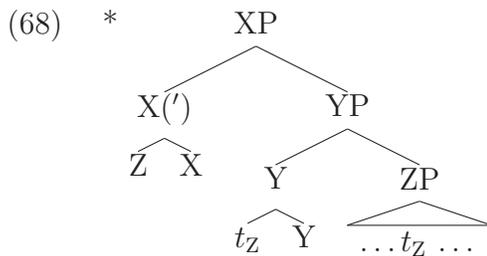
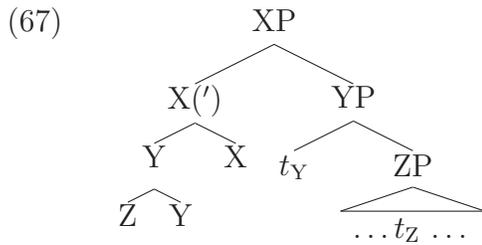
Let us consider the following structure:



Suppose that a head Z has to move up to a head X. First, Z has to move to Y, as illustrated in the following structure (this movement must be HMA since Y is not the final landing site for Z):



Next, Y that contains Z has to move to X, as illustrated in (67). Z cannot move out of Y to X, as shown in (68).



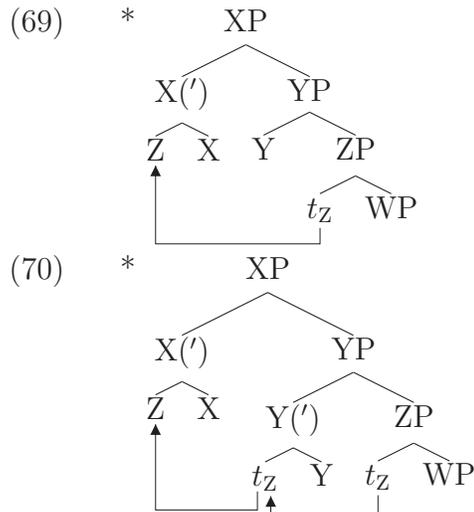
Movement of Z to X in (68) (excorporation) is impossible because an Agree relation between X and Z is intervened by ZP:²⁰ every category that dominates ZP also dominates Z (i.e. XP and YP), every category that dominates X also dominates ZP (i.e. XP), and Z is not equal to ZP. Given that an Agree relation is a prerequisite for movement, excorporation like (68) is impossible.

²⁰Given the distinction between categories and segments, Z could intervene for Agree(X, ZP) since the higher segment of Y in (66) is not a category (i.e. categories that dominate Z are XP and YP not Y). Therefore, in general a head X intervenes for an Agree relation between its maximal projection XP and a probe if X has undergone HMA. In chapters 4 and 5, I will show that this prediction is indeed borne out.

To sum up, the locality constraint (8) explains why head movement does not proceed successive cyclically (i.e. why excorporation is prohibited): excorporation of X is intervened by its maximal projection XP. Note that this explanation is available because we assume that the computational system does not discriminate heads from phrasal categories in terms of locality: the presence of phrasal categories could block head movement.

3.5 Long Head Movement

Under the proposed theory of syntactic head movement, there are at least two ways to derive sentences where a head appears to be skipped by head movement: (i) head movement that violates the Head Movement Constraint and (ii) excorporation. The two ways are illustrated by the following schematic structures:



In (69), Z directly head-moves to X, skipping the intermediate head Y. This derivation is impossible since ZP intervenes for Agree(X, Z) (A-over-A Principle effects).

In (70), first Z head-moves to Y and next it head-moves out of Y (or Y') to X. The

second head movement is impossible because ZP intervenes for Agree(X, Z) (Relativized Minimality effects). Thus, both derivations are ruled out by the locality constraint (8).

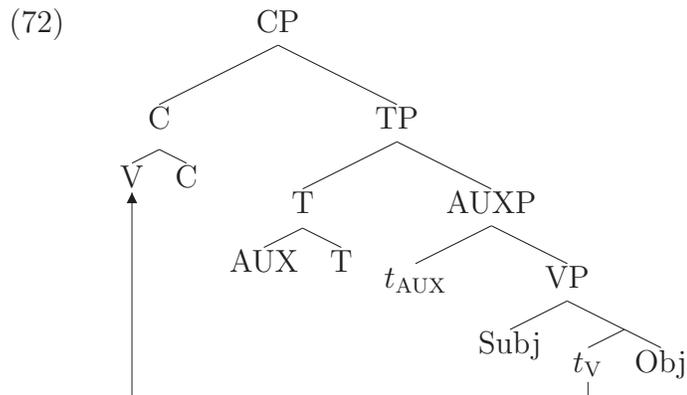
3.5.1 Data and Analyses

If (69) and (70) are the only ways to derive sentences where a head appears to be skipped by head movement, we expect that we do not find such sentences in natural languages. However, such sentences are attested in languages like Bulgarian, Czech, Slovak, Serbo-Croatian, Rumanian, Old Spanish, European Portuguese, and Breton. These are so-called long head movement constructions, which are illustrated by the following sentences drawn from Borsley et al. 1996 (see Lema and Rivero 1990, Rivero 1991, 1994, Roberts 1994, 2004, 2005, Borsley et al. 1996, and Toyoshima 2000).

- (71) a. Pročel sŭm knigata.
 read have.1SG book-the
 ‘I have read the book.’ (Bulgarian)
- b. Koupil jsem knihy.
 bought have.1SG books
 ‘I have bought books.’ (Czech)
- c. Napisal som list.
 written have.1SG letter
 ‘I have written a letter.’ (Slovak)
- d. Citao sam knjigu.
 read have.1SG book
 ‘I read a book.’ (Serbo-Croatian)

- e. Spune mi va?
 tell me will.3SG
 ‘Wii she/he tell me?’ (Rumanian)
- f. Dar-te he un exemplo.
 give-you will.1SG an example
 ‘I will give you an example.’ (Old Spanish)
- g. Seguir-te ei por toda a parte.
 follow-you will.1SG by all the part
 ‘I will follow you everywhere.’ (European Portuguese)
- h. Lennet en deus Yann al levr.
 read 3SG.M has Yann the book
 ‘Yann has read the book.’ (Breton)

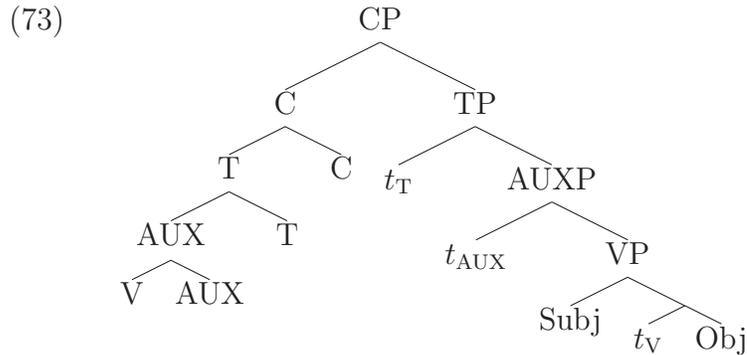
In these sentences, main verbs appear in sentence-initial position, followed by finite auxiliary verbs. A standard analysis of sentences like these is that a main verb undergoes head movement to C, skipping the intermediate heads (i.e. T and AUX), as illustrated in the following:²¹



One might argue that a main verb and an auxiliary verb in sentences like (71) constitute a complex head and it could be derived by successive application of local head movement without using long head movement or excorporation. This is

²¹In what follows in this section, I ignore *vP* and present a subject as if it is base-generated in a specifier of VP for expository purpose. This simplification does not affect the present discussion.

illustrated by (73), where the main verb V head-moves to AUX, AUX containing V head-moves to T, and T containing AUX and V head-moves to C. The main V-finite AUX order can be derived in this derivation.



However, this approach cannot apply to sentences that contain two auxiliary verbs given the Mirror Principle in Baker 1985. As shown in the following Breton and Bulgarian examples, when a sentence contains two auxiliary verbs, one finite and the other non-finite, a main verb can be in initial position:²²

- (74) a. Kavet am eus bet al levr.
 found 1SG have had the book
 ‘I have found the book.’

²²An intermediate non-finite auxiliary verb can also be placed in initial position.

- (i) a. Bet am eus kavet al levr.
 had 1SG have found the book
 ‘I have found the book.’
 b. Bet eo lennet al levr gant Yann.
 been is read the book by Yann
 ‘The book has been read by Yann.’

(Breton: Borsley et al. 1996:64)

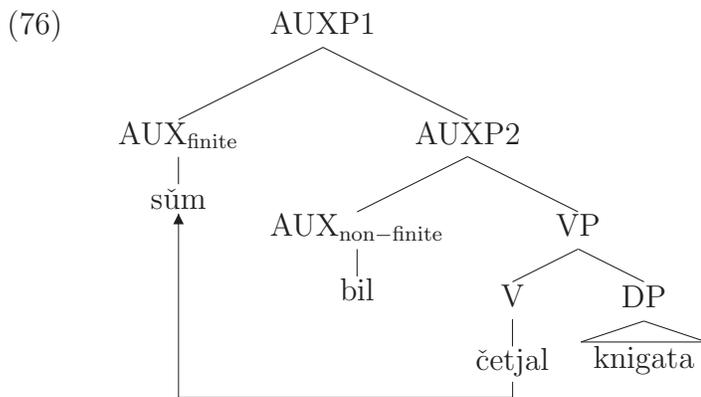
- (ii) Bil süm četjal knigata.
 Had have.1SG read book.the
 ‘According to someone, I am reading the book.’

(Bulgarian: Rivero 1991:326)

- b. Lennet eo bet al levr gant Yann.
 read is been the book by Yann
 ‘The book has been read by Yann.’ (Breton: Borsley et al. 1996:64)

- (75) Četjal sŭm bil knigata.
 read have.1SG had book.the
 ‘According to someone, I am reading the book.’
 (Bulgarian: Rivero 1991:326)

For example, in (75), *sŭm* ‘have.1SG’ is a finite auxiliary and *bil* ‘had’ a non-finite one. The main verb *četjal* ‘read’ is in the sentence-initial position. Under the complex head analysis, the initial main verb and the two auxiliary verbs constitute a complex head. Given the Mirror Principle, the morpheme order in a word must reflect the order of application of syntactic process that yields the word. Then, the V-AUX_{finite}-AUX_{non-finite} order in (75) means that the first application of head movement yields the V-AUX_{finite} complex (i.e. *četjal-sŭm*) and the second instance of head movement yields the V-AUX_{finite}-AUX_{non-finite} complex (i.e. *četjal-sŭm-bil*). The first application of head movement must cross the non-finite auxiliary, as illustrated in the following structure:



Thus, even under the complex head approach, sentences like (74) and (75) cannot be derived without an appeal to long head movement. From this discussion, I conclude that the complex head analysis is not the correct analysis of the long head movement constructions.

Another possible approach to the long head movement constructions is a remnant VP movement analysis. According to this analysis, the sentences in (71) involve movement of VP-internal elements out of VP and movement of the remnant VP to the sentence-initial position, as illustrated in the following:

(77) $[_{VP} V t_{Obj}] \text{ AUX Subj Obj } t_{VP}$

Borsley et al. (1996) argues that this analysis does not work either since a long head movement sentence is acceptable even when (non-remnant) VP-fronting is prohibited in the same context, as the following Bulgarian, Czech, and Breton examples show:

(78) a. *Pročel knigata sŭm.
 read book.the have.1SG
 ‘I have read the book.’ (Bulgarian: Borsley et al. 1996:60)

b. Pročel sŭm knigata.
 read have.1SG book.the
 ‘I have read the book.’ (Bulgarian: Borsley et al. 1996:58)

(79) a. *Koupil knihy jsem.
 bought books have.1SG
 ‘I have bought books.’ (Czech: Borsley et al. 1996:60)

b. Koupil jsem knihy.
 bought have.1SG books
 ‘I have bought books.’ (Czech: Borsley et al. 1996:58)

- (80) a. *Lennet al levr en deus Yann.
 read the book 3SG.M has Yann
 ‘Yann has read the book,’ (Breton: Borsley et al. 1996:60)
- b. Lennet en deus Yann al levr.
 read 3SG.M has Yann the book
 ‘Yann has read the book.’ (Breton: Borsley et al. 1996:53)

The a-examples show that VP-fronting crossing the perfect auxiliary is impossible in these languages while the b-examples show that long head movement can cross the perfect auxiliary. This contrast between VP-fronting and long head movement is unexpected under the remnant VP movement analysis. From this, I conclude that the remnant VP movement analysis is not the correct analysis of the long head movement constructions.

Given the above discussion, I conclude that the long head movement constructions involve a genuine case of long head movement that move a head, skipping (an) intervening head(s). The question is, how can we accommodate long head movement under our locality constraint (8)? As we saw above (see (69) and (70)), our locality constraint (8) appears to rule out such movement in a principled manner. In what follows, I argue that there is derivation that can yield a long head movement sentence without violating the locality constraint (8).

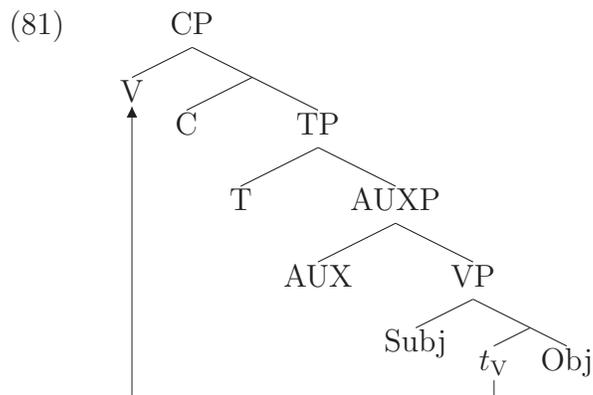
3.5.2 Hybrid Analysis

My analysis is a hybrid analysis of two existing analyses of the long head movement constructions. There are two major approaches to long head movement: one attributes long head movement to properties of intervening heads, relying on the

functional/lexical-head distinction (Rivero 1991 and Borsley et al. 1996) or the A/A'-head distinction (Rivero 1994 and Roberts 1994) while the other attributes it to head-to-Spec movement (Toyoshima 2000, see also Matushansky 2006).

Let us first consider how the first approach works. Suppose that C is an A'-head while T and the auxiliary verbs in (71) are A-heads. V-to-C movement in (72) then is a kind of A'-head-movement. Thus, the intervening A-heads (T and AUX) do not induce Relativized Minimality effects for this movement. However, this approach is incompatible with our locality constraint (8). Under the locality constraint (8), it is not the intervening heads (T and AUX) that intervene for V-to-C movement in (72). Rather, VP is the intervener for this long head movement. Therefore, even if we assume that the functional status of the intervening heads (A or A') is different from that of C, the intervention effect cannot be avoided.

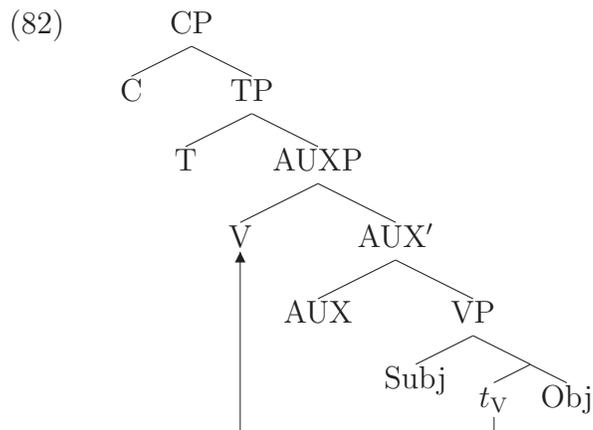
The head-to-Spec movement analysis argues that the landing site of head movement is always a specifier position. Under this analysis, long head movement is analyzed as movement of V to a specifier of CP, as illustrated in the following.



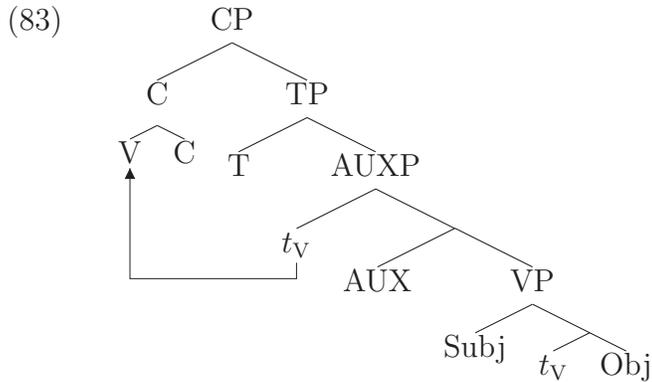
The intermediate heads do not intervene for this movement simply because a head does not block movement to a specifier position. This analysis also does not work

under our locality constraint (8). This is because the landing site of movement is irrelevant to intervention effects according to (8): VP is the intervener for movement of V even if the landing site of this movement is a specifier position.

My alternative analysis of the long head movement constructions is a hybrid analysis that relies both on a special property of an intermediate head and on head-to-Spec movement. Suppose that the auxiliary verbs that are skipped by long head movement in (71) have the EPP property that they require that their specifier positions be filled by heads with which they enter into an Agree relation. Then, movement of V to a specifier of AUXP, as illustrated in (82), is allowed in terms of the locality constraint (8).



VP does not intervene for Agree(AUX, V) since VP is the complement of AUX (anti-locality effects). Then, the EPP property of AUX requires that V move to Spec, AUXP. Once V moves to Spec, AUXP, V is out of VP's intervening domain: it is not the case that every category that dominates VP dominates V at a specifier of AUXP (i.e. AUX' dominates VP but not V). This means that VP does not intervene for Agree(C, V). Thus, V can move to C, as illustrated in (83).



In this way, V-to-C movement can skip the intervening heads (i.e. AUX and T) without violating the locality constraint (8) if the intervening AUX has the EPP property. This analysis is a hybrid analysis of the two existing analyses because it relies on the possibility of head-to-Spec movement and it attributes the availability of head-to-Spec movement to the property of AUX. Movement of V to Spec, AUXP is possible because the AUX has the EPP property.

This analysis is compatible with the following data that show that in Breton and Czech, the perfect auxiliary can be skipped by long head movement while the progressive auxiliary or the future auxiliary cannot:

(84) a. Lennet-en **deus** Anna al levr.
 read-PPRT has Anna the book
 ‘Anna has read the book.’ (Breton: Roberts 2010:194)

b. *O lenn **emañ** Yann al levr.
 PRG read is Yann the book
 ‘Yann is reading the book.’ (Breton: Roberts 2010:195)

(85) a. Koupil **jsem** knihy.
 bought have.1SG books
 ‘I have bought books.’ (Czech: Borsley et al. 1996:58)

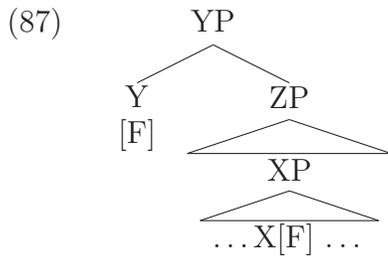
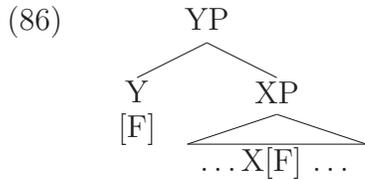
- b. *Kupovat **budu** knihy.
buy will.1SG books.
'I will buy books.'
(Czech: Borsley et al. 1996:60)

Under the present analysis, this fact indicates that the perfect auxiliary has the EPP property while the progressive or future auxiliaries do not. The derivations described by (69) and (70) are the only derivations available for sentences with the progressive or future auxiliary. Both derivations are ruled out by the locality constraint (8). On the other hand, the derivations described by (82) and (83) are available for sentences with the perfect auxiliary because the perfect auxiliary has the EPP property. This derivation accords with the locality constraint (8).

To sum up, the existing analyses of long head movement are both incompatible with our locality constraint (8). I proposed a hybrid analysis according to which long head movement is possible only if an intervening auxiliary has the EPP property that makes it possible for V to move to a specifier of the auxiliary verb.

3.6 Landing Sites for Movement

The analysis of long head movement that I proposed in the last section relies on head-to-Spec movement. Head-to-Spec movement must be allowed under the proposed theory of head movement, in which head movement and phrasal movement are different only in the structural relation of a probe of Agree with a goal of Agree. A head X moves when its maximal projection XP is the complement of the probe of Agree while a phrasal category XP moves when XP is not the complement of the probe of Agree. This is illustrated in the following schematic structures:

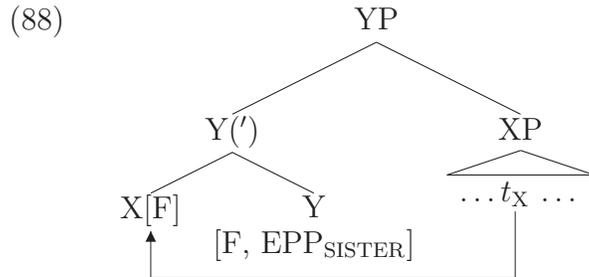


In (86), the maximal projection of the goal X (the [F] feature of X, precisely) is XP, which is the complement of the probe Y (the [F] feature of Y). In this configuration, XP does not intervene for Agree(Y, X) since it is the complement of Y (anti-locality effects). As a result, X moves (head movement). In contrast, XP intervenes for Agree(Y, X) in (87) because the maximal projection of the goal is not the complement of the probe. This means that XP is the closest goal to Y (A-over-A Principle effects). Therefore, XP moves (phrasal movement). What is important is that what is moved (XP or X) is purely determined by the structural relation between the probe and the goal.

Landing sites for movement are determined independently of what moves. An element moves to a specifier position of a probe if and only if the probe has the EPP property irrespective of the structural status of the moving element. If Y in (86) has the EPP property, X moves to a specifier of YP. This is head-to-Spec movement. There is nothing in our system that prohibits such movement.

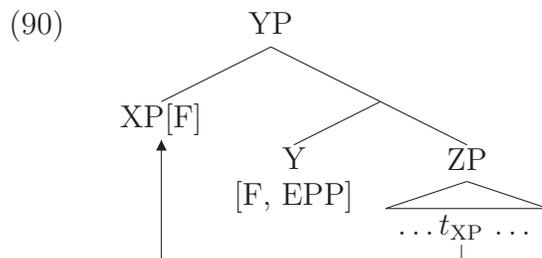
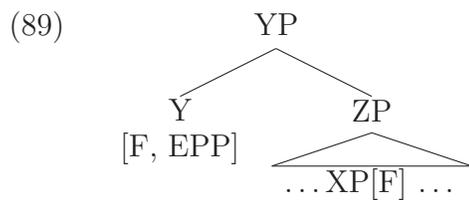
Head-to-head movement is movement whose landing site is the sister of a probe. Analogously to movement to a specifier position, suppose that an element

moves to a sister position of a probe when the probe has a special property, which I call the EPP_{SISTER} property. For example, if Y has the EPP_{SISTER} property in (86), X-to-Y movement results, as illustrated in (88).



Likewise, V-to-*v* movement, *v*-to-T movement, and T-to-C movement take place when *v*, T, or C have the EPP_{SISTER} property, respectively.

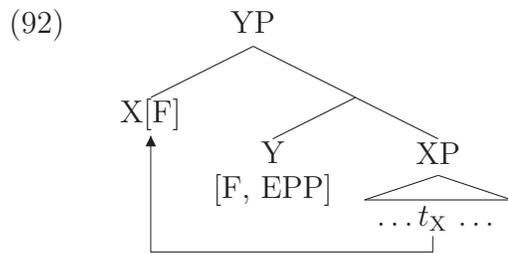
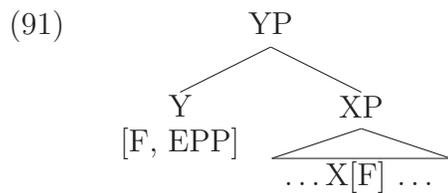
Given this, movement can be classified into four types in terms of what is moved (XP or X) and where it moves (a specifier position or a sister position of a probe): (i) XP movement to a specifier position of a probe, (ii) XP movement to a sister position of a probe, (iii) X movement to a specifier position of a probe, and (iv) X movement to a sister position of a probe. (i) is ordinary phrasal movement such as subject raising, which is illustrated in the following:



Y is a probe and has the EPP property. The maximal projection of the goal, XP, is not the complement of Y. As a result, XP moves to a specifier position of YP.

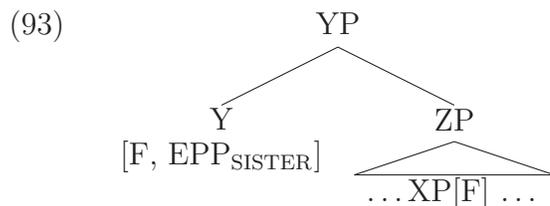
(iv) is ordinary head movement such as V-to-*v* movement. This is illustrated in (88) above.

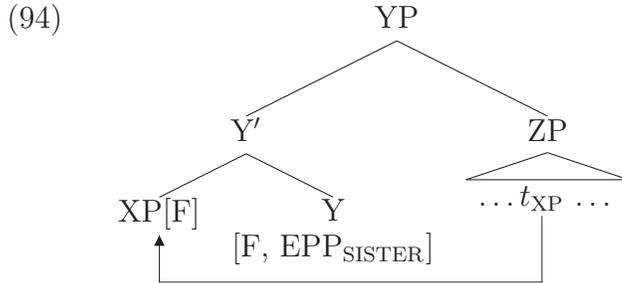
(iii) is head-to-Spec movement that the long head movement constructions involve, as illustrated in the following:



The probe Y has the EPP property. The maximal projection of the goal, XP, is the complement of Y. Thus, X moves to a specifier of YP, resulting in head-to-Spec movement.

The last type of movement (ii) is what Takano (2007) calls *complement-forming movement*, which results when the probe has the EPP_{SISTER} property and the maximal projection of the goal is not the complement of the probe, as illustrated in the following:





XP, a phrasal category, moves to a sister position of the probe to satisfy the EPP_{SISTER} property of the probe.²³ Such seemingly eccentric phrasal movement has been actually attested in the literature. Takano (2007) provides arguments that rightward scrambling in Turkish must be analyzed as complement-forming movement to C. Likewise, McCloskey (1984) argues for complement-forming phrasal movement in Irish. According to McCloskey 1984, Irish has a raising construction in which the subject of the complement clauses raises into the matrix clause to become the object of a preposition. (95) exemplifies this construction.

- (95) a. B' éigean **do-n-a ainm** [a bheith i mbéal na ndaoine].
 COP.PAST must to-his name to be in mouth of.the people
 (Lit.) ‘His name must have been in the mouth of the people.’
 = ‘He must have been very famous’ (Irish: McCloskey 1984:455)
- b. Ní thig **le Ciarán** [a bheith i bhfad ar shiúl].
 NEG can.PRES with Ciarán to be far away
 ‘Ciaran can’t be far away.’ (Irish: McCloskey 1984:466)

In (95a) and (95b), the embedded subject DPs move to the complement position of *do* ‘to’ and *le* ‘with’, respectively. The acceptability of (95a) under the idiomatic reading indicates that the DP originates from the embedded clause. Furthermore,

²³This movement must be performed via substitution since XP-adjunction to Y results in a word containing a phrase, which I assume that a morphological principle prohibits.

the fact that a matrix adverb can intervene between the subject DP and the embedded clause, as shown in (96), shows that the subject DP is in the matrix clause in the surface structure.

- (96) Is dóiche daobhtha **go mór** ruaig dhearg ionnsuighthe a thabhairt ar
 COP likely to.them greatly rush red attack.GEN to give on
 Thír Chonaill.
 Donegal
 ‘They are far more likely to launch a ferocious attack on Donegal.’
 (Irish: McCloskey 1984:465)

We can conclude from these data that this construction is a raising construction.²⁴ Prepositions like *do* ‘to’ and *le* ‘with’ are selected by the matrix predicates. Therefore, we are led to a conclusion that this construction is derived via movement of the embedded subject DP to the complement of the matrix P.²⁵

To summarize this section, at least four types of movement are expected to exist under the present system of movement, in which differences between head

²⁴See McCloskey 1984 for other arguments for this analysis.

²⁵Stowell (1989) argues against McCloskey’s (1984) analysis, proposing an alternative analysis according to which *do* and *le* in sentences like (95) are not prepositions but inherent case that is attached to the embedded subject DPs. However, his argument is on the basis of theoretical devices specific to the Government-Binding framework such as the Projection Principle and the Empty Category Principle. In particular, his empirical argument for his claim that *do* and *le* are inherent case is not convincing. Although Stowell (1989) argues that the obligatory application of raising to the embedded subject in this construction supports this claim, it is not clear how it does. McCloskey’s (1984) analysis can account for the obligatory movement in this construction: the embedded subject DP cannot get case in the embedded clause since the embedded clause is non-finite. This is why the embedded subject DP must move.

movement and phrasal movement are minimized. The four types of movement are summarized in the following table:

(97)

	Complement	Non-Complement
EPP	Head-to-Spec	Ordinary Phrasal Movement
EPP _{SISTER}	Head-to-Head	Complement-Forming Movement

When the maximal projection of the goal is the complement of the probe, head-to-Spec movement takes place if the probe has the EPP property while head-to-head movement occurs if the probe has the EPP_{SISTER}. On the other hand, when the maximal projection of the goal is not the complement of the probe, ordinary phrasal movement such as subject raising results if the probe has the EPP property while complement-forming movement occurs if the probe has the EPP_{SISTER}.²⁶ Head-to-Spec movement that my analysis of long head movement in 3.5.2 relies on fits well in this typology of movement.

²⁶An important question that I set aside here is why most phrasal movement is triggered by the EPP property rather than the EPP_{SISTER} property. To put it differently, why is complement-forming movement so rare? There seems to be a tight connection between head movement and the EPP_{SISTER} property. At this point, I have no satisfactory answer to the question of why this is so. I thank Thomas Grano for drawing my attention to this issue.

3.7 Conclusion

In this chapter, I proposed a theory of syntactic head movement in which stipulated differences between head movement and phrasal movement are minimized. Under this theory, the unusual properties of head movement that I discussed in chapter 1 disappear or are deduced from general principles. The distributional difference between head movement and phrasal movement can be explained by the interaction of the locality constraint (8) and anti-locality. There is no difference between head movement and phrasal movement in mode via which they are performed: both can be performed via substitution as well as adjunction. Finally, the ban on excorporation is deduced from our locality constraint (8).

As I mentioned at the end of 3.2.2, a crucial assumption for the explanation of the distributional difference between phrasal movement and head movement is that the computational system of natural languages does not discriminate head movement from phrasal movement in terms of locality: the presence of phrasal categories could intervene for head movement. In the next chapter, I will show that there is an opposite situation where the presence of heads could intervene for phrasal movement.

3.8 Appendix: Roberts 2010

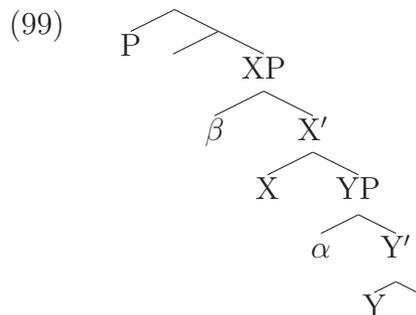
Roberts (2010) argues that his theory of syntactic head movement can deduce the distribution of phrasal movement and head movement. In this appendix, I review

Roberts' (2010) idea and argue that his deduction does not work.

Roberts (2010) adopts Rackowski and Richards' (2005) locality constraint, which requires that a probe enter an Agree relation with the closest available goal. They define *closest* as follows:

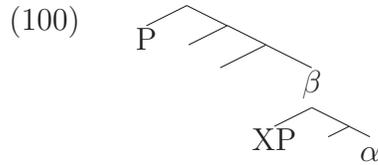
- (98) A goal α is the closest one to a given probe if there is no distinct goal β such that for some X (X a head or maximal projection), X c-commands α but does not c-command β . (Rackowski and Richards 2005:579)

They assume that a potential goal is anything that is capable of moving and all and only phases are capable of moving (see Chomsky 2000, 2001). This definition of the closest goal, like the locality constraint (8), has the combined effect of Relativized Minimality and the A-over-A Principle. To see this, let us consider the following structure:



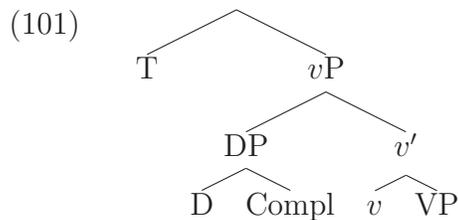
This structure represents Relativized Minimality effects. Suppose that β is a phase, hence capable of moving. Then, α cannot be the closest goal to P since there is a distinct goal β such that X c-commands α but not β . Thus, β intervenes for Agree(P, α).

On the other hand, the following structure represents A-over-A Principle effects:



In this structure, β also intervenes for $\text{Agree}(P, \alpha)$ because there is XP that c-commands α but not β .

With this locality constraint in mind, let us consider the case of subject raising in which the subject does not have a possessor DP:²⁷



Suppose that DPs are phases. Then, the head D cannot enter into an Agree relation with T since there is an intervener; DP is an intervener since there is X that c-commands D but not DP (i.e. Compl). On the other hand, T can Agree with DP

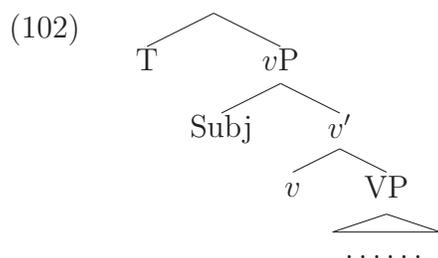
²⁷Roberts (2010:37) assumes that phases always come with a specifier since they always have Edge Features. However, there are numbers of cases in which phases lack a specifier such as the following:

- (i) a. [DP the dog] bite [DP John].
- b. I think [CP that John is a genius].

In (ia), both the subject DP and the object DP do not have their specifier filled, as in (101). In (ib), the specifier of the embedded CP is not filled.

since there is no intervener; neither v , v' , nor VP are interveners since they are not phases, hence not capable of moving; vP is not an intervener because there is nothing that c-commands DP but not vP . Thus, DP is the only closest goal to T. This is why the maximal projection DP rather than the head D moves in this case.

Let us next consider the case of v -to-T movement:

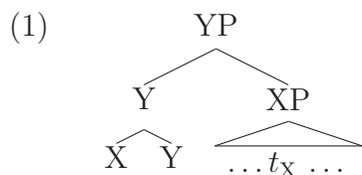


Roberts (2010:159) argues that “neither [vP] nor [v'] can count as the distinct goal β since they do not c-command [v]; in fact, they are arguably not distinct from [v].” However, this is not true. vP intervenes for $\text{Agree}(T, v)$. First of all, we have to consider a head and its projections are distinct since if they were not, the DP should also not be an intervener in (101). Given that vP is distinct from v in (102), vP intervenes for $\text{Agree}(T, v)$ because there is X that c-commands v but not vP (i.e. Subj or VP). Whether vP itself c-commands v or not does not matter when we decide if vP intervenes for $\text{Agree}(T, v)$ under Rackowski and Richards’ (2005) locality constraint; vP can be an intervener as far as it is a phase and there is something that c-commands v but not vP . Therefore, contrary to Roberts’ (2010) claim, Rackowski and Richards’ (2005) constraint prohibit head movement in principle.

Chapter 4: Headless XP Movement

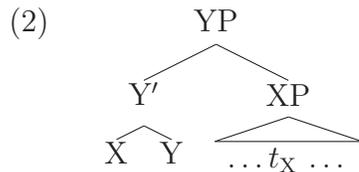
4.1 Introduction

In 3.2, I showed that by eliminating the difference between head movement and phrasal movement in terms of locality, we can explain the distributional difference between these two types of movement. In particular, if we assume that the presence of phrasal categories could intervene for head movement, the distributional difference between head movement and phrasal movement can be deduced from the locality constraint and anti-locality. A question that immediately arises is, could the presence of heads also intervene for phrasal movement? What I call *headless XPs* provide a testing ground for this question. By a headless XP, I mean a phrase whose head has moved out of it. For example, the XP in (1) is a headless XP.



In this structure, a head, X, moves to Y, resulting in a headless XP.¹ Note that the X could intervene for an Agree relation of the headless XP with a probe because every category that dominates the X also dominates the XP (i.e. YP; the higher Y is a segment rather than a category). Therefore, if heads could intervene for phrasal movement, we predict that headless XPs cannot move.

The headless XP in (1) is derived via head movement of X via adjunction. Recall that in 3.3, I proposed the “two types of head movement” hypothesis, according to which the computational system allows head movement via substitution (HMS) as well as head movement via adjunction (HMA). Given this hypothesis, let us consider a structure in which a headless XP is derived via HMS:



In this configuration, the X does not intervene for an Agree relation of the headless XP with a probe because Y' is a category rather than a segment that dominates X but not XP. Therefore, if the presence of heads could intervene for phrasal movement, and head movement can be performed either via adjunction or via substitution, we predict that headless XP-movement is possible only if the headless XP are derived through HMS.

¹It does not matter whether the lower copy of the head, which is expressed as t_X in (1), is actually pronounced or not. Even if the lower copy is pronounced, the XP in (1) is headless because the head X has moved out of it.

In 4.2 and 4.4, I show that headless XPs cannot be moved in Dutch, English, and German while they can in Hebrew and Polish. Given the discussion above, this crosslinguistic variation in terms of the availability of headless XP-movement can be accounted for if we assume that Hebrew and Polish allow HMS while Dutch, English, and German do not.

The next question that immediately arises is, why do languages like Hebrew allow HMS while languages like English do not? In 4.6.2, I argue that the availability of HMS in a language is reduced to the possible number of specifiers in the language. Recall that in 3.3.2, I discussed conditions on HMS, one of which is a structural condition, repeated here as (3).

- (3) Head movement of X to Y, the next higher head, can be performed via substitution only if either
- a. Y allows multiple specifiers or
 - b. Y does not have an element in its specifier.

Now suppose that Hebrew and Polish allow multiple specifiers while Dutch, English, and German do not. Then, the difference between these languages in the availability of headless XP-movement follows. In 4.6.3 and 4.6.4, I present empirical evidence for the assumption that languages like Hebrew allow multiple specifiers while languages like English do not.

To sum up, in this chapter, I will argue that if the presence of heads could intervene for phrasal movement, and head movement can be performed either via

adjunction or via substitution, the crosslinguistic variation in terms of the availability of headless XP-movement can be reduced to a parameter that is responsible for the possible number of specifiers.

This chapter is organized as follows. In 4.2, I review Takano's Generalization (Takano 2000), which states that headless XP-movement is prohibited, showing that Takano's Generalization holds in Dutch, English, and German. In 4.3, I argue that Takano's Generalization can easily be explained by the locality constraint that I proposed in chapter 3 if we assume that heads could intervene for phrasal movement. In 4.4, I point out that there are exceptions to Takano's Generalization, providing data that indicate that Takano's Generalization does not hold in some constructions in some languages. The data are concerned with predicate cleft constructions in Hebrew and remnant VP-fronting in Polish. In 4.6, I argue that exceptions to Takano's Generalization can be explained under the "two types of head movement" hypothesis, and the crosslinguistic variation of the applicability of Takano's Generalization can be attributed to parameters that are responsible for the availability of multiple specifiers. In 4.7, I will consider some data concerning extraction out of headless XPs in English and Polish and argue that it is prohibited by the Condition on Extraction Domains (Huang 1982).

4.2 Takano's Generalization

Takano (2000) argues that the following generalization holds:

(4) *Takano's Generalization*

XP-movement is prohibited if the head of XP has moved out of XP (i.e. headless XPs cannot be moved).

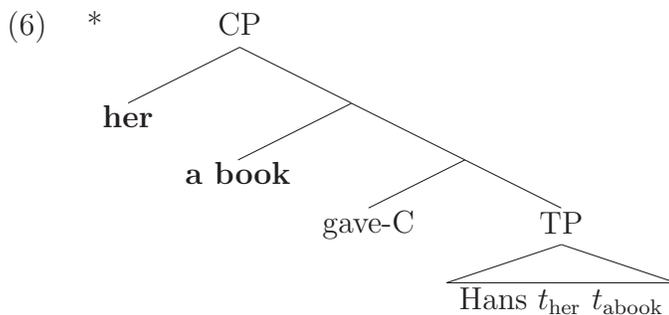
In this section, I show that this generalization holds in multiple topicalization in Dutch, English, and German and verb-particle constructions in German.

4.2.1 Multiple Topicalization in Dutch, English, and German

In German, topicalization of multiple elements is impossible, as shown in the following:

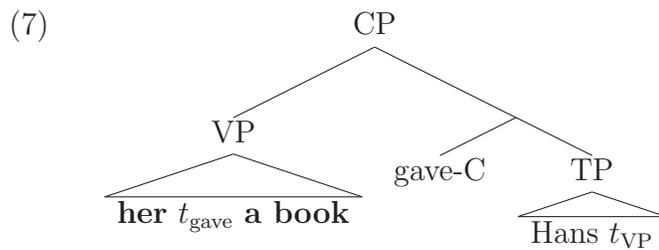
- (5) ***Ihr ein Buch** gab Hans.
her a book gave Hans
'Hans gave her a book.' (German: Takano 2000:145)

In this sentence, the indirect object (IO) *ihr* 'her' and the direct object (DO) *ein Buch* 'a book' are in topic positions. One might consider that the unacceptability of multiple topicalization sentences can be accounted for if we assume that multiple specifiers are prohibited in German. By this assumption, we can rule out a possible structure for (5) like the following:



In this structure, topicalization independently applies to the IO and to the DO and they move to the specifier positions of CP. Given that multiple specifiers are prohibited in German, thus, this representation is ruled out.

However, another possible derivation cannot be ruled out by the ban on multiple specifiers. (5) could be derived by headless VP-movement, as illustrated in the following:



In this structure, the finite verb moves out of VP, resulting in headless VP. If topicalization applies to this headless VP containing the IO and the DO, (5) results. As shown in (8), VP-topicalization is allowed in German if the VP is “headed”.

- (8) [_{VP} Das Hans ein Buch geschenkt] habe ich
 the Hans a book given have I
 ‘I gave Hans a book.’ (German)

Thus, in order to account for the unacceptability of (5), headless VP-movement as well as multiple specifiers must be prohibited in German. This indicates that Takano’s Generalization holds in topicalization in German.

Likewise, in Dutch and English, multiple elements cannot appear in topic positions even though topicalization can apply to VP, as shown in the following:

- (9) a. ***Het boek aan Marie** gaf Jan (waarschijnlijk).
 the book to Marie gave Jan probably
 ‘Jan (probably) gave the book to Marie.’ (Dutch: Takano 2000:145)
- b. [_{VP} Het boek aan Marie gegeven] heeft Jan waarschijnlijk.
 the book to Marie given has Jan probably
 ‘Jan has probably given the book to Marie.’ (Dutch: Takano 2002:253)
- (10) a. ***The book to Mary**, John gave.
- b. [_{VP} Give the book to Mary], John did *t*.

Given the above discussion about German topicalization, these facts suggest that Takano’s Generalization also holds in topicalization in Dutch and English.

Kasai (2001 : 101), who attributes the observation to Akira Watanabe, points out that there is a counterexample in English to Takano’s Generalization.

- (11) a. They all said that John was shrewd and shrewd he was.
- b. *They all said that John was shrewd and shrewd he looks.

The unacceptability of (11b) indicates that an AP cannot be fronted by itself. Thus, it must be the case that in (11a), the moved category is a VP rather than an AP. The fronted category in (11a) can be analyzed as a VP if the verb *was* moves out of the VP and the resulting headless VP is fronted. Notice that the same kind of derivation is impossible in (11b) since *V*, unlike *be*, does not move to *T*. Thus, the acceptability of (11a) could be a counterexample to Takano’s Generalization.

However, as an *LI* reviewer points out, the acceptability of (11b) improves if the copula verb in the first conjunct clause is replaced by verbs like *look* or *seem*.

Thus, sentences like the following are much better than (11b):

(12) ?They all said that John looked/seemed shrewd and shrewd he looks/seems.

This suggests that AP can be fronted. Furthermore, the following sentence makes the same point:

(13) They all said that John might be late and late he probably will be.

Unless non-finite *be* undergoes short head movement, it seems to be the AP that is fronted in (13). If this is correct, we cannot conclude that it is a headless VP rather than an AP that is fronted in (11a) since the AP is a possible candidate for fronting.

To sum up, we saw that Takano's Generalization holds in topicalization in Dutch, English, and German.

4.2.2 Verb-Particle Constructions in German

A similar argument can be constructed on the basis of verb-particle constructions in German, as Wurmbrand (2004) shows. She argues that the following paradigm in German can be attributed to Takano's Generalization (the Headless Fronting Constraint in her terms):

- (14) a. weil Hans seinen Bruder angerufen hat
since Hans his brother up.called has
'since Hans phoned his brother'
- b. Gestern rief der Hans [_{VP} seinen Bruder an *t_V*]
yesterday called the.NOM Hans his.ACC brother up

‘Hans phoned his brother yesterday.’

- c. [_{VP} Seinen Bruder angerufen] hat nur der Hans *t*_{VP}
[his.ACC brother up.called] has only the Hans
‘Only Hans phoned his brother.’
- d. * [_{VP} Seinen Bruder an *t*_V] rief der Hans gestern *t*_{VP}
[his.ACC brother up] called the Hans yesterday
‘It was yesterday that Hans phoned his brother.’
(German: Wurmbrand 2004:7)

All of these examples involve particle-verb constructions. The acceptability of (14b) indicates that a particle can be stranded when a verb moves to C via verb-second movement. The acceptability of (14c) illustrates that topicalization of a VP that includes the object, the verb, and the particle is allowed. Since V-movement stranding a particle is generally allowed and fronting of VP that include a particle is allowed, as shown in (14b) and (14c), respectively, the unacceptability of (14d) must be attributed to the fact that the headless V/*v*P is fronted. Thus, the unacceptability of (14d) indicates that Takano’s Generalization holds in verb-particle constructions in German.

4.2.3 Interim Summary

We have seen that Takano’s Generalization holds in topicalization in Dutch, English, and German and verb-particle constructions in German. That Takano’s Generalization holds in at least some constructions in some languages means that head movement can bleed other movement such as topicalization. Topicalization is clearly syntactic movement since it affects both word order and interpretation. This means

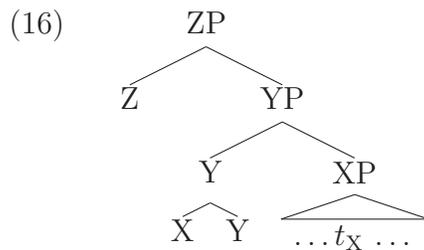
that head movement is also syntactic since head movement bleeds syntactic movement. Therefore, Takano’s Generalization provides additional support for the claim in chapter 2 that natural languages have syntactic head movement.

4.3 Explanation for Takano’s Generalization

In this section, I show that Takano’s Generalization directly follows from the locality constraint that I proposed in 3.2.1, which is repeated here as (15), if heads could intervene for phrasal movement.

- (15) γ intervenes for Agree(P, G) iff
- a. every category that dominates γ also dominates G and
 - b. every category that dominates P also dominates γ and
 - c. $\gamma \neq G$ and
 - d. γ matches P and G.

Given this constraint, consider the following structure where Z is a probe and XP is a goal.



In this structure, X head-moves to Y. X intervenes for Agree(Z, XP) if we assume the distinction between categories and segments. *Categories* that dominate X are

ZP and YP but not the higher segment of Y since it is not a category. Thus, every category that dominates X also dominates XP (i.e. ZP and YP). The other conditions in (15) are also met: (i) every category that dominates Z also dominates XP (i.e. ZP), (ii) $XP \neq X$, and (iii) X matches Z and XP. As a result, X intervenes for Agree(Z, XP). Given that Agree is a prerequisite for movement, it follows that XP, which is a headless XP, cannot move in a configuration like (16).²

Take the German example in (5) for example, which is repeated here as (17).

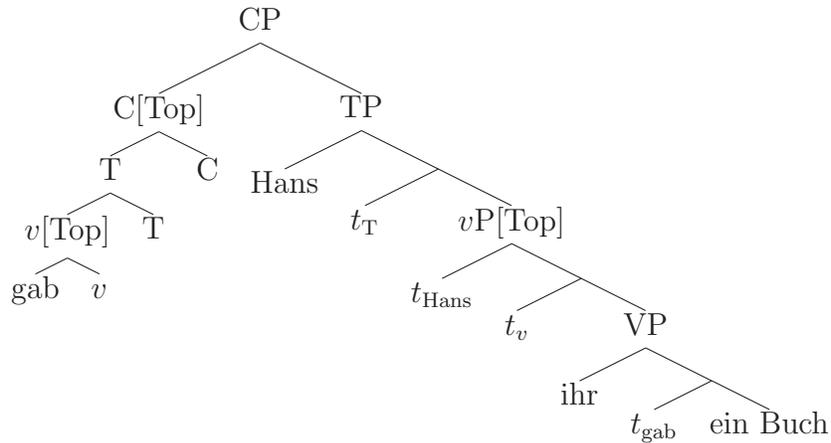
- (17) ***Ihr ein Buch** gab Hans.
her a book gave Hans
‘Hans gave her a book.’ (German: Takano 2000:145)

Suppose that V moves to C in the main clause in German and topicalization is triggered by the [Top] feature on C. Then, (17) cannot be derived by *v*P topicalization.

Consider the following structure:

²Takano (2000) gives an explanation for his generalization, based on Chomsky’s (1995b: 304) condition that only the head of a chain enters into the operation Attract/Move. Although this can account for Takano’s Generalization, the status of Chomsky’s condition is unclear under the Copy Theory of Movement. If a trace is indeed a copy of the moved element, it is not clear why a trace (a copy) is invisible for the operation Attract/Move. But more importantly, this approach remains silent about exceptions to Takano’s Generalization, which I will discuss in 4.4.

(18)



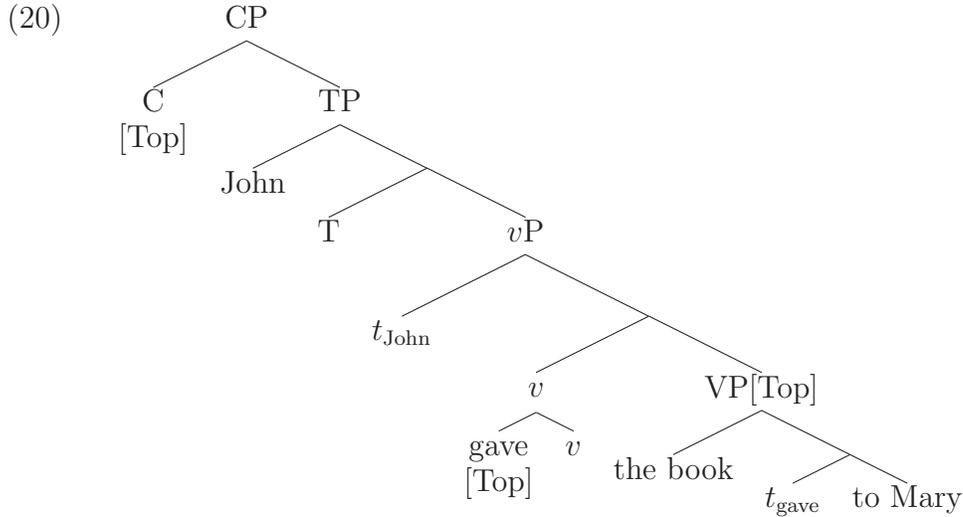
In order to apply topicalization to vP , which is headless, an Agree relation must hold between C and vP . However, in this configuration, v intervenes for Agree(C, vP) since (i) every category that dominates v also dominates vP (i.e. CP), (ii) every category that dominates C also dominates v (i.e. CP), (iii) $v \neq vP$, and (d) v matches C and vP . Therefore, the headless vP cannot be topicalized. The same holds of the headless VP topicalization.

The same explanation can apply to the English example in (10a), repeated here as (19).

(19) ***The book to Mary**, John gave.

Given that V moves to v in English,³ headless VP results, as illustrated in the following:

³See 5.3 for evidence for this assumption.



In this configuration, V (*gave*) intervenes for Agree(C, VP). As a result, the headless VP cannot be topicalized. Thus, (19) cannot be derived by headless VP topicalization.

Although I do not demonstrate it, the data involving Dutch topicalization and German verb-particle constructions can also be explained by the locality constraint in the same way. To sum up, we saw that Takano’s Generalization can be reduced to the locality constraint in (15), which was independently motivated in 3.2.5. Crucially, our explanation of Takano’s Generalization presupposes that the computational system does not discriminate head movement from phrasal movement in terms of locality (i.e. heads could intervene for phrasal movement).

4.4 Exceptions to Takano’s Generalization

In the last section, I provided a principled explanation of Takano’s Generalization. In this section, however, I show that there are cases where Takano’s Generalization does not hold. Exceptions to Takano’s Generalization involve predicate cleft con-

structions in Hebrew (and possibly in Polish) and remnant VP-fronting in Polish. In 4.6, I will show that these exceptions can be explained under the proposed theory of syntactic head movement that contains the “two types of head movement” hypothesis.

4.4.1 Predicate Cleft Constructions

4.4.1.1 Overview

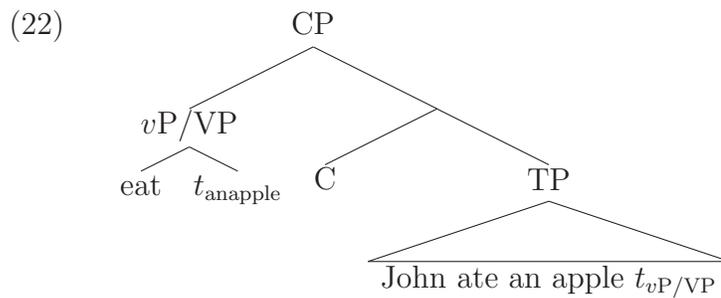
The clearest case where headless XPs move is the so-called predicate cleft construction. Predicate cleft constructions are attested in a number of languages such as, Brazilian Portuguese (Cable 2004), Haitian Creole (Lefebvre and Ritter 1993), Hebrew (Landau 2006), Polish (Bondaruk 2009), Russian (Abels 2001), Spanish (Vicente 2007), Vata (Koopman 1983), and Yiddish (Cable 2004), among others. This construction has at least two sub-types: what Landau (2006) calls phrasal-infinitive fronting (PI-fronting) and bare-infinitive fronting (BI-fronting). These two type of the predicate cleft construction are illustrated by the following pseudo-English sentences:

- (21) a. Eat an apple, John ate. (PI-fronting)
b. Eat, John ate an apple. (BI-fronting)

What is unusual in this construction is that the verb appears in multiple positions: the non-finite form of the verb appears in the sentence-initial position and the finite form of the verb appears in situ. The difference between PI-fronting and BI-fronting

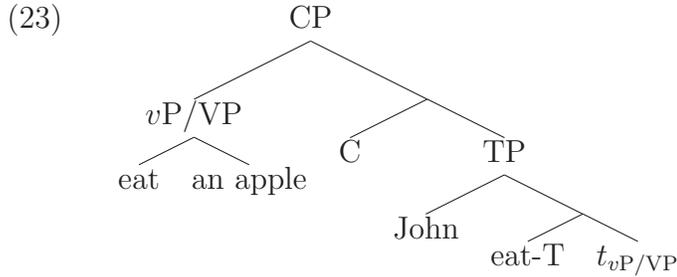
is that a VP-internal element appears along with the fronted verb in the former while it appears along with the in-situ verb in the latter. Some languages allow both of these types (Brazilian Portuguese, Hebrew, Polish, Russian, Spanish, and Yiddish) while others only allow BI-fronting (Haitian Creole and Vata).

BI-fronting sentences like (21b) could be derived by headless XP-movement, as illustrated in the following:



In this structure, the verb and the object move out of the verbal projection before the verbal projection is fronted. If both copies of the verb are pronounced, a sentence like (21b) results. Since the head (V or *v*) has moved out of its maximal projection (VP or *v*P), this is an instance of headless XP-movement even though the head of the fronted verbal projection can be “seen”. Therefore, this is an instance of headless XP-movement. However, in the following discussion, I set aside BI-fronting because BI-fronting can also be derived by head movement of the verb, presumably by long head movement, without resorting to headless XP-movement. Therefore, the existence of BI-fronting does not constitute direct evidence for the availability of headless XP-movement.

PI-fronting sentences like (21a) can also be derived by headless *v*P/VP-movement, as illustrated in the following



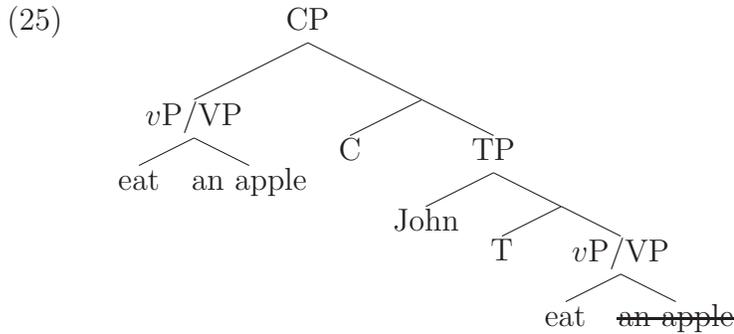
In this structure, the verb moves out of verbal projection to T and the headless *vP/VP* moves to the specifier of CP. If the both copies of the verb are pronounced, PI-fronting sentences like (21a) result.

In order to argue that PI-fronting is indeed derived by headless XP-movement like (23), we need to provide independent evidence for the following statements:

- (24)
- a. It indeed involves movement (i.e. it is not the case that the initial *vP/VP* is base-generated in the initial position).
 - b. V obligatorily moves out of *vP/VP*.
 - c. Topicalization cannot apply to V and a VP-internal element independently.

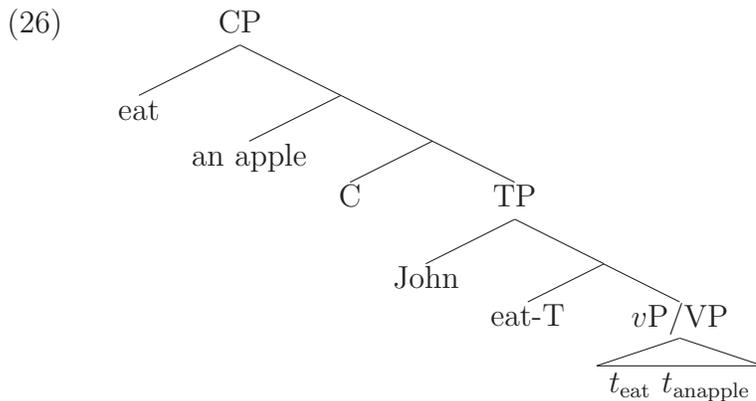
In order to argue for (24a), it is suffice to show that PI-fronting is island-sensitive.

Evidence for (24b) is required because if V can stay within *vP/VP*, a PI-fronting sentence could be derived as the following:



In (25), V does not move. Thus, “headed” *vP/VP* is fronted. If the lower copy of *an apple* is deleted while both copies of *eat* are pronounced for phonological and/or morphological reasons, a PI-fronting sentence results without resorting to headless XP-movement. In order to exclude this analytical possibility, we need to provide evidence that V obligatorily moves out of *vP/VP* (i.e. *vP/VP* is really headless).

We need evidence for (24c) since multiple topicalization could derive a PI-fronting sentence, as illustrated in the following:



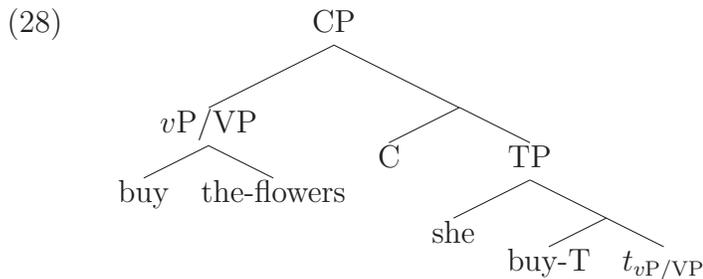
In what follows, I will show that among the languages that have PI-fronting, Hebrew has clear instances of PI-fronting as headless XP-movement.

4.4.1.2 PI-Fronting in Hebrew

Hebrew has PI-fronting, as illustrated by the following examples:

- (27) a. [_{vP/VP} Liknot et ha-praxim], hi kanta.
to.buy ACC the-flowers she bought
‘As for buying the flowers, she bought.’
- b. [_{vP/VP} Le’ha’amin be-nisim], hu ma’amin.
to.believe in-miracles he believes
‘As for believing in miracles, he believes.’ (Hebrew: Landau 2006:37)

Headless *vP/VP*-movement can derive sentences like these. For example, suppose that in (27a), *liknot* ‘to-buy’ moves out of verbal projections to T, yielding a headless *vP/VP*. If the resulting headless *vP/VP* moves to Spec, CP and the copies of *liknot* ‘to-buy’ are pronounced both in the head and the tail of the chain, as illustrated in (28), the sentence in (27a) is derived. Both copies of the verb are pronounced for phonological and morphological reasons (see Landau 2006 for details).



Landau (2006) provides evidence that PI-fronting in Hebrew involves movement by showing that the dependency established by PI-fronting can cross finite clause boundaries, as shown in (29) while it is island-sensitive, as shown in (30). (29) shows that dependence between the initial *vP/VP* (*la’azor le-Rina* ‘to.help to-Rina’) and its copy downstairs can cross two finite clause boundaries.

- (29) [_{vP/VP} La'azor le-Rina], eyn li safek [še-Gil hivtiax [
to.help to-Rina there-isn't to-me doubt that-Gil promised
še-hu ya'azor]].
that-he will-help
'As for helping Rina, I have no doubt that Gil promised he would help.'
(Hebrew: Landau 2006:42)

However, the dependency cannot cross a complex NP island nor an adjunct island, as (30) shows.⁴

- (30) a. * [_{vP/VP} Likro et ha-sefer], Gil daxa [et ha-te'ana še-hu
to.read ACC the-book Gil rejected ACC the-claim that-he
kvar kara].
already read
'As for reading the book, Gil rejected the claim that he had already
read.' (Hebrew: Complex NP Island: Landau 2006:43)
- b. * [_{vP/VP} Likro et ha-sefer], nifgašnu [axarey še-kulam
to.read ACC the-book met.1PL after that-everybody
kar'u].
read.3PL
'As for reading the book, we have met after everybody read.'
(Hebrew: Adjunct Island: Landau 2006:44)

We can safely conclude from these data that PI-fronting in Hebrew involves movement.

Let us next consider whether verb movement is obligatory in Hebrew. The following data suggest that V must move out of *vP/VP* in Hebrew:

- (31) a. Dani hika anušot et šlomo.
Dani hit.PAST.3MS mortally ACC Shlomo
'Dani hit Shlomo mortally.' (Hebrew: Shlonsky 1997:17)

⁴PI-fronting in Hebrew is also sensitive to Wh-islands and Subject islands. See Landau 2006:43.

- b. *Dani anušot hika et šlomo.
 Dani mortally hit.PAST.3MS ACC Shlomo
 ‘Dani hit Shlomo mortally.’ (Hebrew: Shlonsky 1997:238)
- (32) a. Dani patax be-’adinut et ha-delet.
 Dani open.PAST.3MS gently ACC the-door
 ‘Dani opened the door gently.’ (Hebrew: Shlonsky 1997:18)
- b. *Dani be-’adinut patax et ha-delet.
 Dani gently open.PAST.3MS ACC the-door
 ‘Dani opened the door gently.’ (Hebrew: Shlonsky 1997:238)

These examples show that a main verb must precede a manner adverb in Hebrew. Given the standard assumption that a manner adverb indicates the verbal projection-edge, Shlonsky (1997) concludes that verb movement out of verbal projection is obligatory in Hebrew (see also Doron 1983, 1999, Shlonsky 1987, 1991, and Goldberg 2001, 2005) .

Finally, let us consider whether a PI-fronting sentence in Hebrew can be derived by multiple topicalization that applies to V and a VP-internal element. Under this alternative analysis, a sentence like (27a) is derived as in the following:

- (33) [[V to.buy] [[DP the-flowers] [she bought t t]]]
-

This multiple topic analysis is a plausible alternative to the headless XP-movement analysis in Hebrew because V and a VP-internal element can independently be fronted in Hebrew, as the following examples show:

- (34) a. Liknot, hi kanta et ha-praxim.
 to.buy she bought ACC the-flowers
 ‘As for buying, she bought the flowers.’ (Hebrew: Landau 2006:37)

- b. Et ha-xalav, hu sam ba-mekarer.
 ACC the-milk he put in.the-fridge
 ‘The milk, he put in the fridge.’ (Hebrew: Taube 2012:325)

However, I reject this analysis on the basis of the following contrast:

- (35) a. [Le’hagiš et ha-ma’amar le-ktav-ha-et], hu hagiš lifney
 to.submit ACC the-article to-the-journal he submitted before
 ha-dedlyne.
 the-deadline
 ‘Submit the article to the journal, he did before the deadline.’
- b. *[Le’hagiš le-ktav-ha-et], hu hagiš et ha-ma’amar lifney
 to.submit to-the-journal he submitted ACC the-article before
 ha-dedlyne.
 the-deadline
 ‘Submit the article to the journal, he did before the deadline.’
 (Hebrew: Landau 2007:131)

These sentences involve a ditransitive verb. (35a) shows that the sequence of V-DO-IO can be fronted while (35b) shows that V-IO cannot be fronted stranding DO in situ. If multiple applications of topicalization were allowed in Hebrew, it would be a mystery why (35b) cannot be derived by applying topicalization to V and IO independently.⁵ The following examples make the same point:

- (36) a. [Lišlol et zxut ha-bxira me-kol ha-asirim ha-politijim],
 to.deprive ACC right the-voting from-all the-prisoners the-political
 hem šelelu.
 they deprived
 ‘Deprive all the political prisoners of their voting right, they did.’

⁵I will review Landau’s (2007) explanation for the contrast between (35a) and (35b) under the headless XP-movement analysis in 4.7.

- b. **[Lišlol me-kol ha-asirim ha-politijim], hem šelelu et
 to.deprive from-all the-prisoners the-political they deprived ACC
 zxut ha-bxira.
 right the-voting
 ‘Deprive all the political prisoners of their voting right, they did.’
 (Hebrew: Landau 2007:131)*

From these data, I conclude that multiple topicalization that applies to V and an VP-internal element is not allowed in Hebrew.

To sum up, I have shown that (i) Hebrew PI-fronting involves movement, (ii) it cannot be derived by multiple topicalization and (iii) verb movement is obligatory in Hebrew. Given this, we can conclude that Hebrew PI-fronting is derived by headless XP-movement. Thus, Takano’s Generalization does not hold in Hebrew.

4.4.1.3 PI-Fronting in Polish and Brazilian Portuguese: No Obligatory V-to-T

In this section, I examine PI-fronting in Polish and Brazilian Portuguese and conclude that there is no clear evidence that PI-fronting is derived by headless XP-movement in these languages since V-movement out of *vP* is not obligatory in these languages .

Let us first consider Polish. Polish has PI-fronting, as shown in the following example:

- (37) *Kupić kwiaty (to) Maria kupila, ale nie kupila prezentu.*
 to.buy flowers PRT Mary bought but not she.bought present
 ‘As for buying flowers, Mary bought them, but she didn’t buy a present.’

(Polish: Bondaruk 2009:65)

Bondaruk (2009) argues that PI-fronting in Polish involves movement since it can cross a clause boundary while it is island-sensitive, as illustrated by (38) and (39), respectively.

(38) Kupić kwiaty (to) Marek chciał, [żebym kupił], ale nie dał mi
to.buy flowers PRT Mark wanted so-that buy but not gave me
pieniędzy. .
money
'As for buying flowers, Mark wanted me to buy them, but he didn't give
money.'
(Polish: Bondaruk 2009:70)

(39) a. *Kupić kwiaty (to) spotkałam [ęczyznę [który kupił]], ale nie
to.buy flowers PRT I.met man who bought but not
spotkałam tego, który nie kupił.
I.met this who not bought.
'As for buying flowers, I met a man who had bought them, but I didn't
meet the one who hadn't.'

b. ?*Kupić kwiaty (to) spytałam ją [gdzie kupiła], ale nie
to.buy flowers PRT I.asked her where she.bought but not
spytałam jakie.
I.asked which
'As for buying flowers, I asked her where she bought them, but I didn't
ask which ones.'

c. *Zdać egamin (to) [żeby Marek zdał] jest konieczne, ale
to.pass exam PRT so-that Mark would.pass is necessary but
nie jest konieczne, żeby nadal studiował.
not is necessary so-that still would.study
'As for passing the exam, it is necessary for Mark to pass it, but it isn't
necessary for him to continue his studies.'
(Polish: Bondaruk 2009:70)

The unacceptability of (39a), (39b), and (39c) shows that PI-fronting in Polish is sensitive to complex NP islands, Wh-islands, and subject islands, respectively.⁶

⁶Actually, the data that Bondaruk (2009:70) provides involve BI-fronting rather than PI-

From this, we can conclude that Polish PI-fronting involves movement.

Next, we need to consider whether verb movement is obligatory in Polish. I argue that V obligatorily moves out of VP but it does not have to move out of *vP* in Polish. The argument is based on the distribution of *znowu* ‘again’.

In Polish, an adverb like *znowu* ‘again’ can appear either before or after a predicate. However, it receives different interpretations, depending on the position that it occupies. *Znowu* ‘again’ yields a repetitive reading when it immediately precedes the verb, as shown in the following:

- (40) Jan **znowu** otworzył okno. (repetitive)
Jan.NOM again opened window.ACC
(intended) ‘Jan opened the window and he had opened the window before.’
(Wiland 2008:442)

On the other hand, when *znowu* is placed between the verb and the object, it receives a restitutive reading, as shown in (41).

- (41) Jan otworzył **znowu** okno. (restitutive)
Jan.NOM opened again window.ACC
(intended) ‘Jan opened the window and this window had been opened before
by Jon or any other person.’ (Wiland 2008:442)

Building on Stechow 1996 and Beck and Johnson 2004, Wiland (2008) argues that the two readings of *znowu* depend on the projection that it modifies. The repetitive reading is yielded when *znowu* adjoins to *vP* while the restitutive reading obtains fronting. However, Bondaruk (2009:70, fn.5) mentions that PI-fronting is also sensitive to island constraints although actual data are omitted due to space limitations.

when it adjoins to VP, as illustrated by the following structures:

- (42) a. [TP Subj T [_{vP} **znouu** [_{tSubj} v [_{VP} V Obj]]]] (repetitive)
 b. [TP Subj T [_{vP} *tSubj* v [_{VP} **znouu** [_{VP} V Obj]]]] (restitutive)

Given this analysis of *znouu*, let us consider (40) and (41) again in terms of verb movement. (41) suggests that V can move at least out of VP since the restitutive *znouu* indicates the left edge of VP.

(40) suggests two things. First, V does not have to move out of *vP* (i.e. verb movement out of *vP* is not obligatory) because the repetitive *znouu* is the *vP*-edge indicator. Second, the fact that (40) lacks the restitutive reading indicates that V has to move out of VP; for if V can stay within VP, (40) should also have the restitutive reading.

From these considerations, I conclude that V obligatorily moves out of VP but not out of *vP* in Polish. Then, we cannot conclude that PI-fronting in Polish involves headless XP-movement since as I mentioned in 4.4.1.1, a non headless XP-movement analysis like (25) is possible if verb movement is not obligatory. Note that I do not argue that Polish PI-fronting cannot be derived by headless XP-movement but just argue that there is no conclusive evidence for the headless XP-movement analysis.

The same holds true of PI-fronting in Brazilian Portuguese (BP). BP has PI-fronting, as illustrated by the following example:

- (43) [_{vP/VP} Temperar aquele peixe] o cozinheiro temperou (mas ...)
to.season that fish the cook seasoned (but ...)
‘As for seasoning that fish, the cook seasoned it (but ...)’
(BP: Bastos-Gee 2009:133)

PI-fronting in BP is not clause-bounded but it is island-sensitive, as shown in the following:⁷

- (44) [_{vP/VP} Temperar aquele peixe], eu acho que o cozinheiro temperou
to.season that fish I think that the cook seasoned
(mas ...)
(but ...)
‘As for seasoning that fish, I think that the cook seasoned it (but ...)’
(BP: Bastos-Gee 2009:135)
- (45) a. * [_{vP/VP} Temperar aquele peixe], eu conheci [o cozinheiro que
to.season that fish I met the cook that
temperou] (mas ...)
seasoned (but...)
‘As for seasoning that fish, I met the cook that seasoned it (but ...)’
- b. * [_{vP/VP} Temperar aquele peixe], o cozinheiro comprou o sal [
to.season that fish the cook bought the salt
antes de temperar] (mas ...)
before of to.season] (but ...)
‘As for seasoning that fish, the cook bought salt before seasoning it
(but ...)’ (BP: Bastos-Gee 2009:135)

Therefore, we can conclude that PI-fronting in BP involves movement.

However, there is evidence that V does not have to move out of *vP* in BP.

⁷According to Bastos-Gee (2009), PI-fronting in BP has two types: PI-fronting with a specific object DP and PI-fronting with non-specific object DP. The former is sensitive to islands, as shown in (45) while the latter is not. See Bastos-Gee 2009 for detailed discussion about the two types of PI-fronting.

Evidence comes from the positions of frequency adverbs like *sempre* ‘always’ and *amiúde* ‘often’. Silva (2001) observes that a frequency adverb can either precede or follow a main verb in BP, as shown in the following examples:

- (46) a. A Bia **sempre** faz o dever de casa.
 the Bia always does the homework
 ‘Bia always does the homework.’
- b. A Bia faz **sempre** o dever de casa.
 the Bia does always the homework
 (Lit.) ‘Bia does always the homework.’ (BP: Silva 2001:60)

In (46a), *sempre* appears between the subject and the verb while in (46b), it appears between the verb and the object.

This fact can be accounted for in at least two ways. The first approach reduces this fact to verb movement. Suppose that frequency adverbs always adjoin to *vP* and verbs optionally move to T in BP. Then, (46a) and (46b) can be derived as the following structures:

- (47) a. [TP Subj [T [_{vP} **Adv** [t_{Subj} V-*v* [_{VP} t_V Obj]]]]]
- b. [TP Subj [V-*v*-T [_{vP} **Adv** [t_{Subj} t_v [_{VP} t_V Obj]]]]]

In (47a), V does not move to T and Adv adjoins to *vP*. Thus, the adverb-verb order results. On the other hand, in (47b), V moves to T and Adv adjoins to *vP*, yielding the verb-adverb order.

Alternatively, it might be the case that verbs always move up to T and a frequency adverb can adjoin to different positions in BP. For example, suppose

that a frequency adverb can adjoin either to T' or to *v*P. Then, (46a) and (46b) can be derived even if verbs obligatorily move to T, as illustrated by the following structures:

- (48) a. [TP Subj [**Adv** [V-*v*-T [*v*P *t*_{Subj} *t*_v [VP *t*_V Obj]]]]]
 b. [TP Subj [V-*v*-T [*v*P **Adv** [*t*_{Subj} *t*_v [VP *t*_V Obj]]]]]

In both these structures, V moves to T. However, in (48a), Adv adjoins to T', resulting in the adverb-verb order while in (48b), Adv adjoins to *v*P, yielding the verb-adverb order.

Given this consideration, it appears that we cannot take (46) as evidence for the optionality of verb movement in BP. However, Silva (2001) argues that the two different positions of an frequency adverb should be attributed to the optionality of verb movement. Silva (2001) observes that a frequency adverb must follow a main verb in an interrogative sentence unlike in a declarative sentence, as shown in the following examples:

- (49) a. Que medidas o governo toma **amiúde**?
 what measures the government takes often
 (Lit.) 'What measures the government takes often?'
 b. *Que medidas o governo **amiúde** toma?
 what measures the government often takes
 (Lit.) 'What measures the government often takes?'
 (BP: Silva 2001:62)

Given that verbs obligatorily move to T in interrogative sentences in BP (see Silva

2001:Chapter 4 for detailed discussion), Silva (2001) argues that the unacceptability of (49b) indicates that a frequency adverb cannot adjoin to T'. If this is correct, we have to attribute the two different positions of a frequency adverb in a declarative sentence to the optionality of verb movement.

From this consideration, I conclude that in BP, V does not have to move to T (i.e. it does not have to move out of *vP*). Then, as in the case of Polish PI-fronting, we cannot conclude that PI-fronting in BP involves headless XP-movement even if there is evidence that it involves movement.

In sum, we do not have conclusive evidence that PI-fronting in Polish and BP involves headless XP-movement even though there is evidence that it involve some kind of movement because V does not obligatorily move out of *vP* in these languages.

4.4.1.4 PI-Fronting in Yiddish: No Movement

Yiddish has PI-fronting, as illustrated by the following example:

- (50) Essen fish set Maks.
to.eat fish eats Max
'As for eating fish, Max eats them.' (Yiddish: Cable 2004:2)

However, there is no evidence that Yiddish PI-fronting involves movement although there is evidence that BI-fronting does. The following examples show that Yiddish BI-fronting is not clause-bounded and is island-sensitive:

- (51) a. Veysn host du mir gezogt [az er veyst a sakh].
to.know have you me told that he knows a lot
‘As for knowing, you told me that he knows a lot.’
- b. *Veysn hob ikh gezen [dem yidn vos veyst a sakh].
to.know had I seen the man that knows a lot
‘As for knowing, I saw the man who knows a lot.’
(Yiddish: Davis and Prince 1986:93)

To the best of my knowledge, however, analogous data for PI-fronting have not been reported in the literature (Davis and Prince 1986, Kallgren and Prince 1989, Hoge 1998, and Cable 2004).⁸

⁸The same holds true of PI-fronting in Russian and Spanish. Although Vicente (2007) argues that predicate cleft constructions in Spanish are derived by movement, he applies island-sensitivity tests only to BI-fronting.

As for Russian PI-fronting, although Abels (2001) argues that it involves movement, he does not apply island-sensitivity tests to it. He provides three arguments for the movement analysis. Two of them are based on differences between predicate cleft constructions and base-generated topics. However, from the fact that predicate cleft constructions behave differently from base-generated topics in some respects, we cannot conclude that the former involves movement.

The other argument is on the basis of the fact that predicate clefting (precisely BI-fronting) out of a finite clause is impossible while that out of an embedded infinitival clause is sometime possible in Russian. Abels (2001) argues that this can be evidence for the movement analysis of predicate cleft constructions since Wh-movement is possible out of an infinitival clause and a subjunctive clause but not out of a finite clause. However, this fact does not support the movement analysis although it is consistent with the movement analysis. This is because there is a case in which other dependency than movement is sensitive to the finite/non-finite distinction. For example, let us consider local anaphors like *zibun-zisin* ‘self-self’ or *kare-zisin* ‘he-self’ in Japanese. Uchibori (2000) observes that dependency between the local anaphor and its antecedent cannot cross a finite

Furthermore, Cable (2004) argues against a movement analysis of Yiddish PI-fronting. One of his arguments is on the basis of a possible mismatch between the fronted VP and the lower VP. Consider the following examples:

- (52) a. ?[Essen **fish**] est Maks **hekht**.
 to.eat fish eats Maks pike
 ‘As for eating fish, Max eats pike.’
- b. ?[Essen **frukht**] est Maks **bananes**.
 to.eat fruit eats Maks bananas
 ‘As for eating fruit, Max eats bananas.’ (Yiddish: Cable 2004:9)

In these examples, the object in the fronted VP is different from that in the lower VP. The lower VP further specifies the fronted VP. This fact is hard to explain under a movement analysis. Under a movement analysis, we have to assume that ‘eat pike’ clause while it can cross a subjunctive clause, as shown in the following examples:

- (i) a. *John₁-ga [iinkai-ga zibun-zisin₁/kare-zisin₁-o suisensi-ta to] it-ta.
 John-NOM committee-NOM self-self/he-self-ACC recommend-PAST C say-PAST
 ‘John said that the committee recommended himself.’
- b. John₁-ga iinkai-ni [PRO zibun-zisin₁/kare-zisin₁-o suisensu-ru yooni]
 John-NOM committee-DAT PRO self-self/he-self-ACC recommend-SBJ C
 motome-ta.
 require-PAST
 ‘John required that the committee would recommend himself.’
 (Japanese: Uchibori 2000:267)

Of course, one might argue that dependency between the local anaphor and its antecedent involve movement and might propose a movement analysis that is compatible with this fact. However, this very fact itself does not argue for nor against a movement analysis of the local anaphor.

Note that I am not arguing that Vicente’s (2007) and Abels’ (2001) analyses are wrong but just arguing that we need more evidence for their analyses.

(56) Jan [_{VP} Marii.DAT *t_V* book.ACC] sent *t_{VP}*

In this section, I review Wiland's (2008) argument for this analysis.

As we saw in 4.4.1.3, an adverb like *znowu* 'again' yields a repetitive reading when it immediately precedes the verb (see (40)) while when *znowu* is placed between the verb and the object, it receives a restitutive reading (see (41)). (57) shows that this generalization holds also in a ditransitive clause.

(57) Jan posłał **znowu** Marii książkę. (restitutive)
Jan sent again Mary.DAT book.ACC
(intended) 'Jan sent Mary the book and Mary had been given the book by
Jan or any other person.' (Wiland 2008:442)

According to Wiland's (2008) analysis, the repetitive *znowu* adjoins to *vP* while the restitutive *znowu* adjoins to *VP*. With this analysis of *znowu* in mind, let us consider the following data from Wiland 2008:440:

(58) a. Jan **znowu** posłał Marii książkę. (repetitive)
Jan again sent Marii.DAT book.ACC
'Jan again sent Marii the book.' (V-IO-DO)

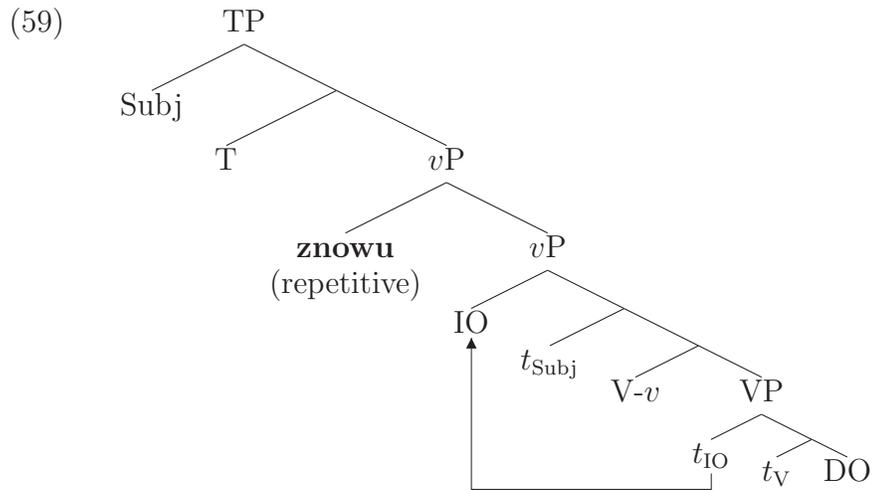
b. Jan **znowu** Marii posłał książkę. (repetitive)
Jan again Marii.DAT sent book.ACC
(Lit.) 'Jan again Marii sent the book.' (IO-V-DO)

c. Jan **znowu** książkę posłał Marii. (repetitive)
Jan again book.ACC sent Marii.DAT
(Lit.) 'Jan again the book sent Marii.' (DO-V-IO)

As we saw in (40), *znowu* in the preverbal position yields the repetitive reading. (58a) shows that the same holds in the case of a ditransitive clause. Furthermore,

scrambling of IO or scrambling of DO do not change the interpretation, as shown in (58b) and (58c).

This fact can be accounted for if we assume that the landing site of scrambling of an object is a specifier of *vP*. For example, let us consider the derivation of (58b), which is illustrated in the following schematic structure:

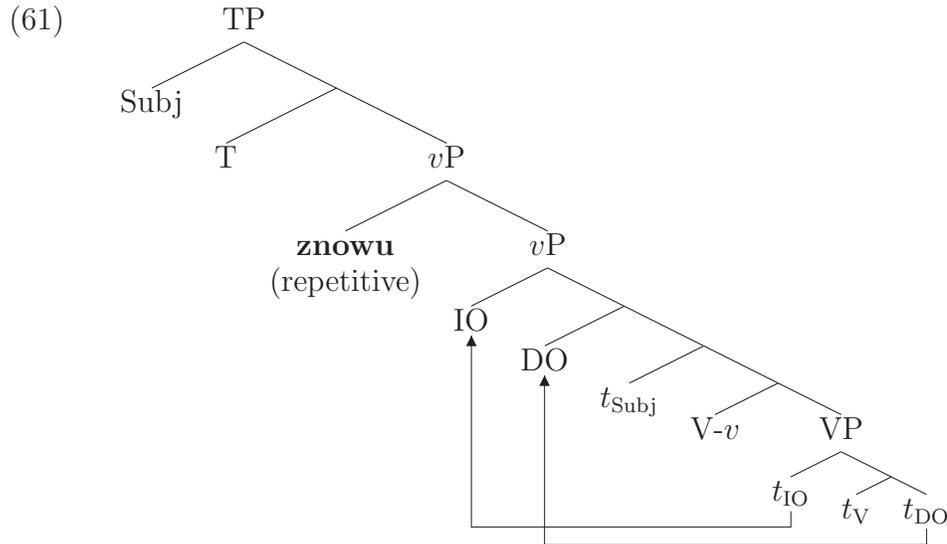


IO is scrambled to the outer specifier of *vP*, resulting in the IO-V-DO order. In order for *znowu* to be placed before the IO, it must adjoin to *vP*. This is why (58b) receives the repetitive reading. The same account can apply to (58c).

With this in mind, let us next consider the case where both IO and DO are preverbal. As shown in (60) (drawn from Wiland 2008:440), *znowu* yields the restitutive reading in this case.

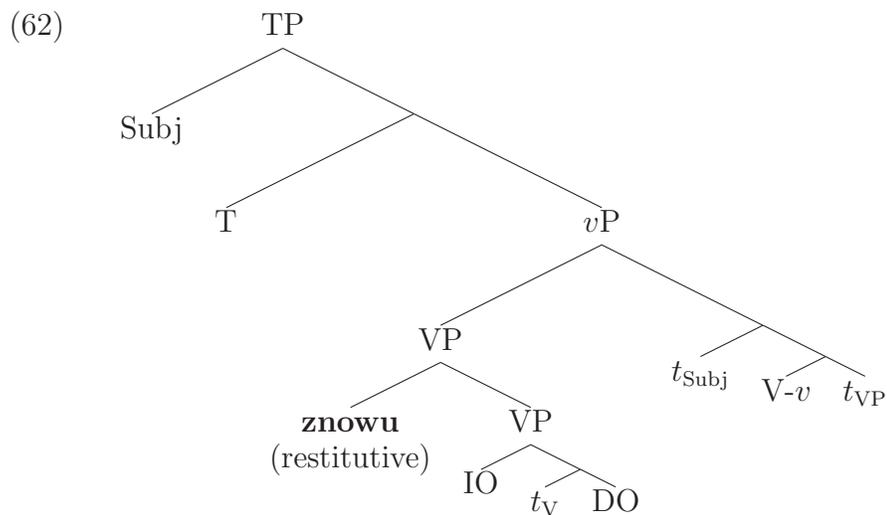
- (60) Jan **znowu** Marii książkę posłał. (restitutive)
 Jan again Marii.DAT book.ACC sent
 (Lit.) ‘Jan again Marii the book sent.’ (IO-DO-V)

This is surprising if we assume that this sentence is derived by multiple applications of scrambling to IO and DO. Under this assumption, (61) is the only possible structure for (60).



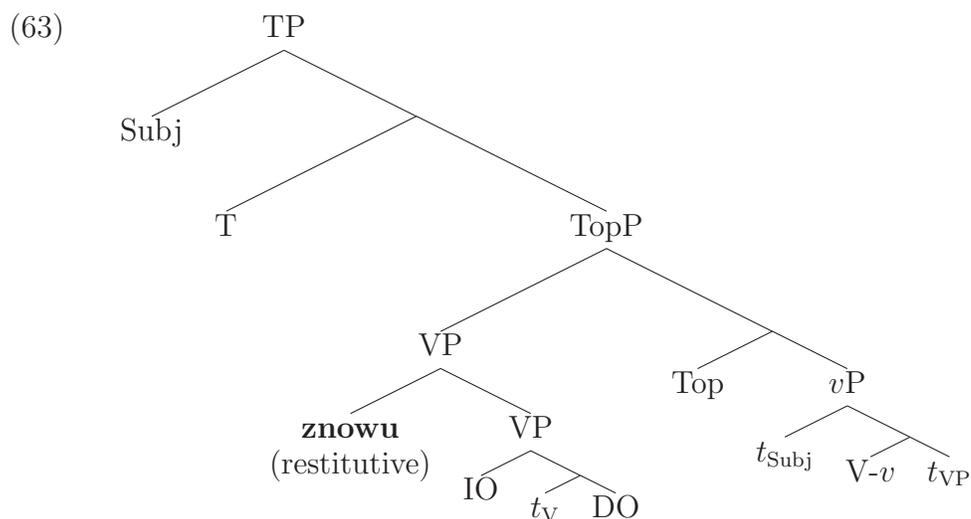
In this structure, *znowu* adjoins to *vP*. Thus, we expect that (60) can only receive the repetitive reading, contrary to fact.

In order to account for (60), Wiland (2008) argues that (60) is derived by movement of headless VP to Spec, *vP*. This analysis is illustrated by the following structure:



In this structure, the headless VP contains IO, DO, and *znouu*. If this headless VP moves to the outer Spec, *v*P, the *znouu*-IO-DO-V order results. Note that *znouu* adjoins to VP in this structure. Therefore, under this analysis, the fact that (60) can receive the restitutive reading is expected. Given this, Wiland (2008) takes (60) as evidence that Polish has headless VP-movement.

One might argue that headless VP-movement in (62) is ruled out by anti-locality since it involves complement-to-Spec movement. In order to avoid this problem, we can assume that there is an additional projection between TP and *v*P and the headless VP moves to a specifier of this projection. Top(ic)P is a plausible candidate for this additional projection. Suppose, along the line of Jayaseelan 2001 and Belletti (2001, 2004, 2009), that there is a TopP in the *v*P periphery. Then, (60) can be analyzed as the following, where the headless VP moves to Spec, TopP in the *v*P periphery:



This movement does not violate anti-locality. I will discuss TopP in the *v*P periphery in more detail in 5.4.3 when I discuss a movement analysis of ellipsis.

4.5 Interim Summary

We have seen that Takano's Generalization holds in some constructions in some languages but not other constructions in other languages. Headless XP-movement is not allowed in topicalization in Dutch, English, and German and in verb-particle constructions in German. On the other hand, it is allowed in predicate cleft constructions in Hebrew and in remnant VP-fronting in Polish. As for PI-fronting in Polish and BP, there is no conclusive evidence that it is derived by headless XP-movement since V does not (have to) move to T in these languages even though there is evidence that it involves movement. As for PI-fronting in Yiddish, there is evidence that it does not involve movement.⁹

In the next section, I will explain why languages like Hebrew and Polish allow headless XP-movement, unlike languages like English under the theory of syntactic

⁹Dekydsporter (1992) argues that French also has headless VP-movement, on the basis of the acceptability of the following example:

- (i) Il insista qu'elle énoncerait sa tirade soigneusement, et [sa tirade
he insisted that.she would.recite her part carefully and her part
soigneusement] elle énonça.
carefully she recited
'He insisted that se would recite her part carefully, and she recited her part carefully.'

(Dekydsporter 1992:128)

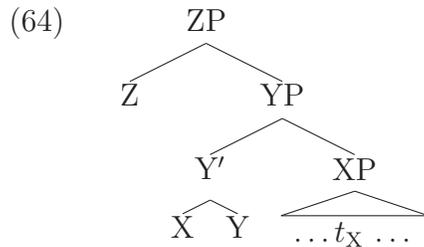
However, my French informant judged this sentence as "odd", pointing out that the sentence is more or less acceptable only if he put a pause between *sa tirade* 'her part' and *soigneusement* 'carefully' in the second clause. Given this, I assume that *soigneusement* 'carefully' is an appositive element in this sentence.

head movement that I proposed in chapter 3.

4.6 Explanation for Exceptions to Takano's Generalization

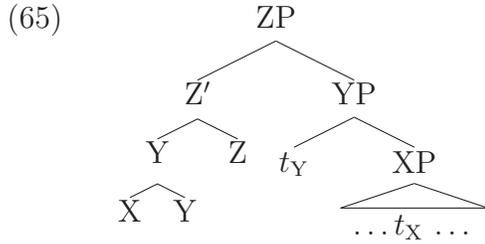
4.6.1 Head Movement via Substitution

When I explained Takano's Generalization in 4.3, I intentionally ignored head movement via substitution (HMS). However, recall that in 3.3, I proposed that head movement can be performed via substitution as well as adjunction. Actually, if we take HMS into consideration, the explanation of Takano's Generalization that I proposed in 4.3 does not always work. Let us consider the following structure, where X head-moves to Y via substitution:



After X is merged with Y, Y projects into a category rather than a segment. As a result, Y' is a category that dominates X but not XP. This means that X does not intervene for an Agree relation of XP with a probe. Therefore, our locality constraint does not prohibit the XP from moving even though the XP is headless when head movement of X is performed via substitution.

Furthermore, also in the case where a head containing X rather than X itself undergoes HMS, X does not intervene for an Agree relation of XP with a probe. Let us consider the following structure:



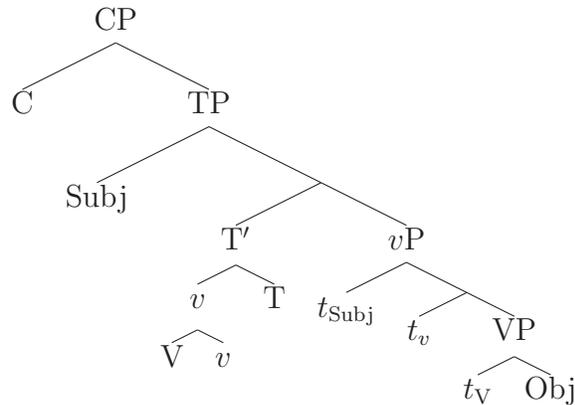
In (65), X head-moves to Y via adjunction and Y containing X undergoes HMS to Z. X does not intervene for an Agree relation of XP with a probe since there is a category that dominates X but not XP (i.e. Z').

Given this consideration, the following condition follows:

- (66) Headless XP-movement is possible only if X or a head containing X undergoes HMS.

Suppose that HMS is possible in the predicate cleft construction (PI-fronting) in Hebrew and the remnant VP-fronting construction in Polish while it is not in topicalization in Dutch, English, and German. Then, we can account for the crosslinguistic difference in the availability of headless XP-movement by the condition (66). To see this, let us first consider a derivation for PI-fronting in Hebrew. Given that this construction is derived by movement of a verbal projection (VP or *vP*) to Spec, CP and that V obligatorily moves up to T in Hebrew (see (58b)), a Hebrew PI-fronting sentence is derived as illustrated by the following schematic structure:

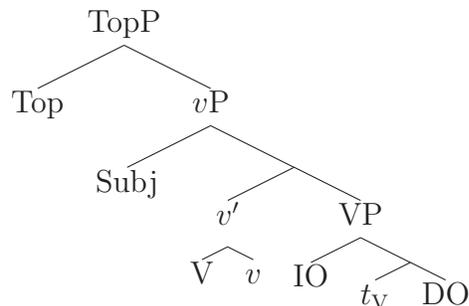
(67)



By assumption, Hebrew allows HMS. Note that HMS can apply only to *v*-to-T movement (i.e. V-to-*v* must be HMA) since as I illustrated in 3.3.2, HMS is possible only if this is the final application of head movement (see (63) in chapter 3). C can enter into an Agree relation with the headless *v*P since *v* does not intervene for it due to the presence of T'. Therefore, the headless *v*P can move to Spec, CP, resulting in a PI-fronting sentence. The same holds of the headless VP. Thus, if we assume that Hebrew allows HMS, we can account for why a Hebrew PI-fronting sentence can be derived by headless XP-movement.

Let us next consider remnant VP-fronting in Polish. Given that V moves up to *v* and that a remnant VP-fronting sentence in Polish is derived by movement to Spec, TopP in the *v*P periphery (see 4.4.1.3 and 4.4.2), remnant VP-fronting is derived as illustrated by the following schematic structure:

(68)



In this structure, HMS applies to V-to-*v* movement. Top can enter into an Agree relation with the headless VP because V does not intervene for it due to the presence of *v'*. Thus, the headless VP can move to Spec, TopP, resulting in a remnant VP-fronting sentence. This is why a remnant VP-fronting sentence in Polish can be derived by headless XP-movement.

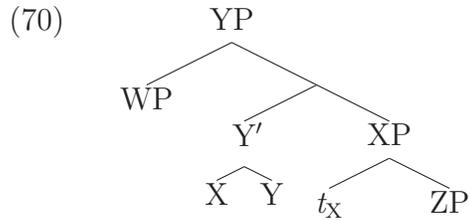
To sum up, we can reduce the crosslinguistic difference in terms of the availability of headless XP-movement to the availability of HMS; headless XP-movement is possible in the predicate cleft construction in Hebrew and remnant VP-fronting in Polish because these languages allow HMS; headless XP-movement is impossible in topicalization in Dutch, English, and German and in the verb-particle construction in German since these languages do not allow HMS.

4.6.2 Multiple Specifiers

The next question that immediately arises is, why do languages like Hebrew and Polish allow HMS while languages like English do not? I argue that the (im)possibility of HMS in a language is reduced to the possible number of specifiers in the language. To see how this reduction is possible, let us consider a condition on HMS that I discussed in 3.3.2 ((58) in chapter 3), repeated here as (69).

- (69) Head movement of X to Y, the next higher head, can be performed via substitution only if either
- a. Y allows multiple specifiers or
 - b. Y does not have an element in its specifier.

To recall the argument that I gave in 3.3.2, consider the following schematic structure:



After X head-moves to Y via substitution, XP becomes a specifier of Y. Y has another specifier (i.e. WP). Therefore, if Y does not allow multiple specifiers, the configuration in (70) should be ruled out. This is why (69) is a necessary condition for HMS.

If we combine this condition with (66), we get the following condition by transitivity:

(71) Headless XP-movement is possible only if

- a. Y allows multiple specifiers or
- b. Y does not have an element in its specifier,

where Y is the next higher head of X or contains the next higher head of X.

Now, suppose that Hebrew and Polish allow multiple specifiers while Dutch, English, and German do not. Then, the difference between these languages in the availability of headless XP-movement follows. First, let us consider PI-fronting in Hebrew. In (67), headless *v*P-movement is possible because T, the next higher head of *v*, allows

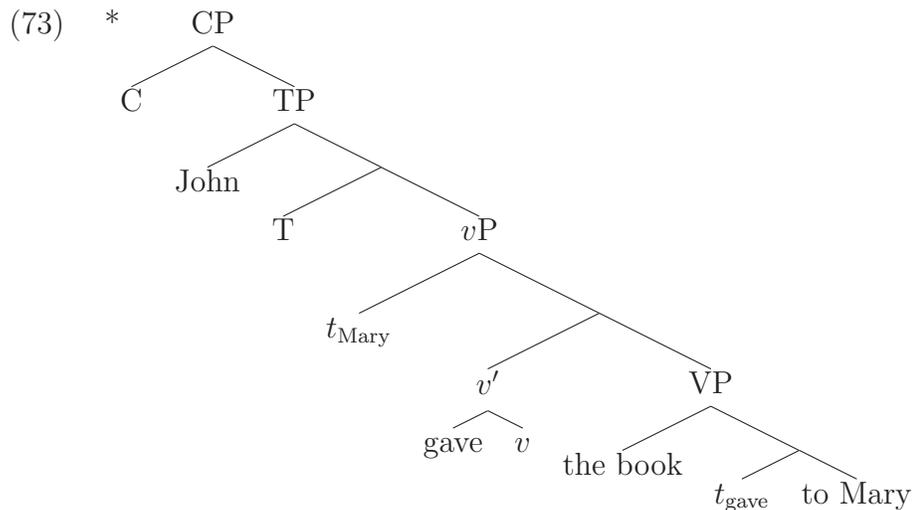
multiple specifiers even though it has an element in its specifier (i.e. Subj). The headless VP can also be moved since T, the head containing the next higher head of V, allows multiple specifiers.

As for remnant VP-fronting in Polish, let us consider (68). In this structure, the headless VP can be moved because *v*, the next higher head of V, allows multiple specifiers.

Let us next consider topicalization in English. In order to generate sentences like (72), headless VP-movement must take place, given that multiple topicalization is prohibited in English.

(72) *The book to Mary, John gave.

In order to move headless VP, V must undergo HMS, as illustrated in the following:



However, in order for V to undergo HMS, *v* must allow multiple specifier or it does not have an element in its specifier. English, by hypothesis, does not allow multiple specifiers and there is a copy of the subject in Spec, *v*P. Therefore, HMS of V is

impossible. This is why headless VP-movement is prohibited in (72).

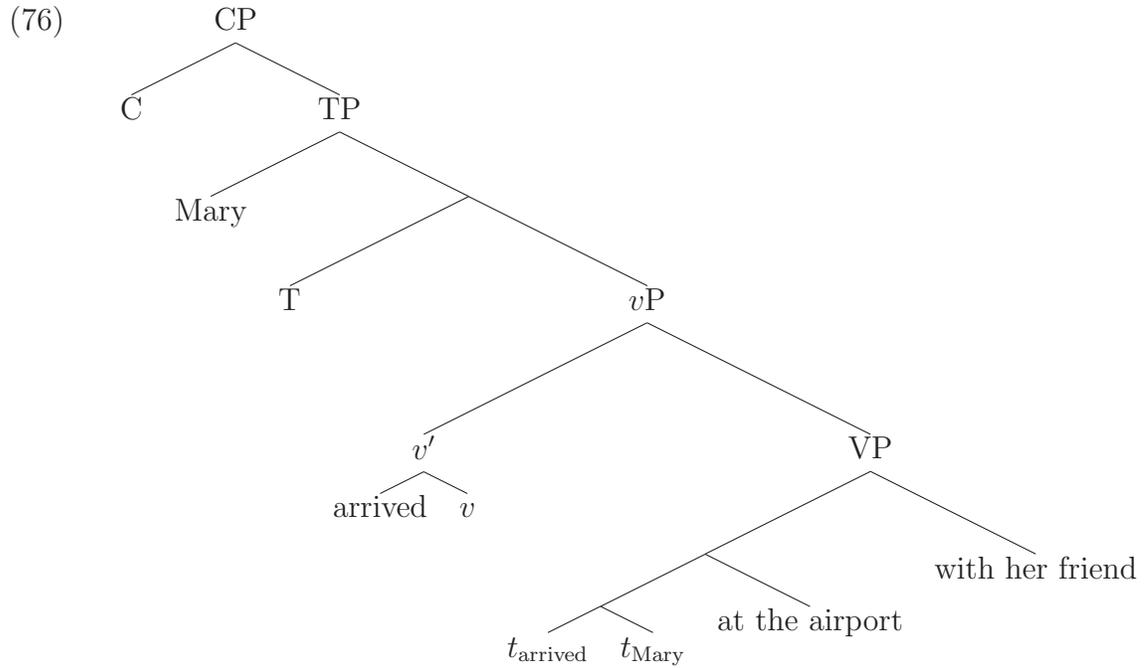
Note that V cannot undergo HMS in (73) because it would result in multiple specifier configuration. HMS of V to *v* results in multiple specifier configuration for *v* has an element in its specifier (i.e. (the trace of) *Mary*). Given this, it appears to be predicted that headless VP-movement is allowed in an unaccusative clause since *v* does not have an element in its specifier in an unaccusative clause. This prediction, however, is not borne out, as shown by the following example:

(74) *At the airport with her friend, Mary arrived.

arrive is an unaccusative verb as confirmed by the following example, where the notional subject *a man* stays in situ:

(75) There arrived a man at the airport.

The unacceptability of (74) cannot be attributed to the ban on multiple specifiers since HMS of V to *v* does not result in multiple specifier configuration since *Mary* is base-generated as the complement of *arrive*. This is illustrated by the following structure:



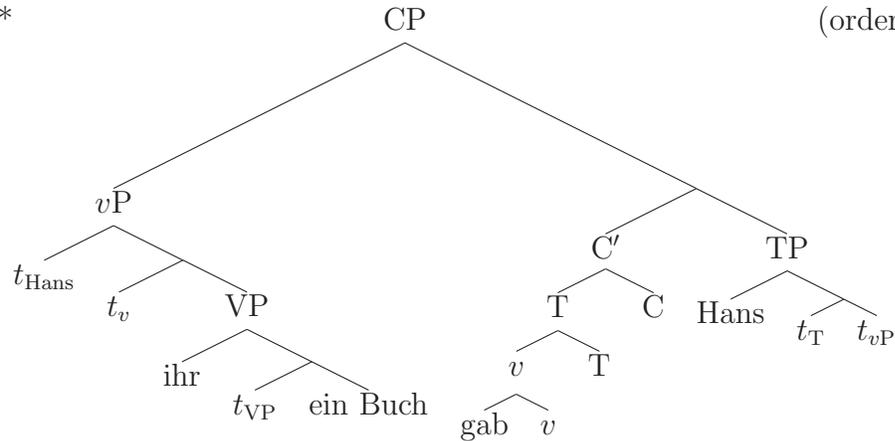
Thus, the headless VP should be able to move, contrary to fact. In 4.7, I will discuss this issue and argue that HMS of V to *v* is impossible in (76) since it makes movement of *Mary* to Spec, TP impossible.

Headless *vP*/*VP*-movement is prohibited also in German since the following sentence is unacceptable:

- (77) *Ihr ein Buch gab Hans.
 her a book gave Hans
 ‘Hans gave her a book.’ (German)

Suppose that a finite verb moves to C in German and that a topicalized element is in Spec, CP. Then, the headless *vP*-movement structure for this sentence is the following:

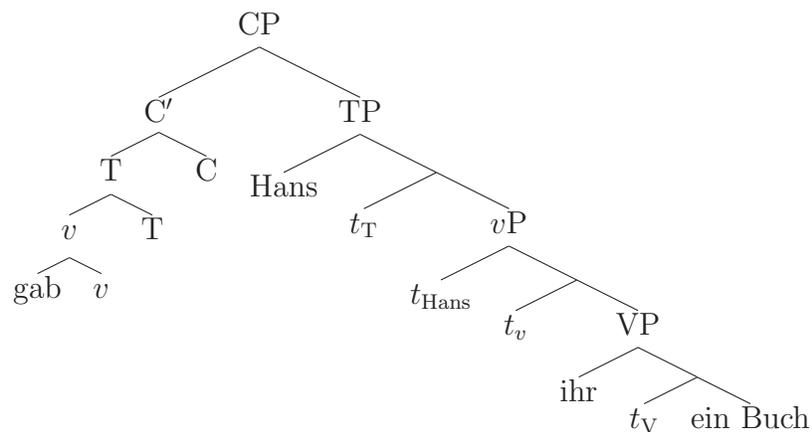
(78) * (order irrelevant)



T-to-C movement must be HMS in order for the headless *vP* to move. However, as a result of HMS of T to C, TP becomes a specifier of C. This yields multiple specifier configuration because the topicalized *vP* is in another specifier position of C. German, by hypothesis, does not allow multiple specifiers. Therefore, headless *vP* cannot be moved in this sentence. The same holds true of the headless VP.

One might wonder if headless *vP*/VP-movement is ruled out in (77) independently of the ban on multiple specifiers. Let us consider the structure before topicalization applies:

(79) (order irrelevant)



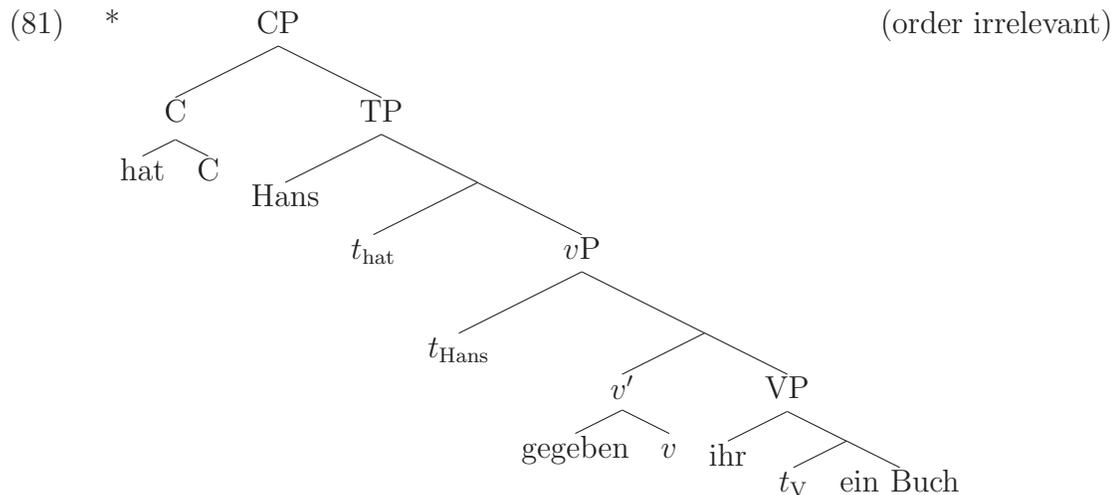
Note that as a result of HMS of T to C, C no longer c-commands *vP*/VP. Thus, C cannot enter into an Agree relation with *vP*/VP. Given that Agree is a prerequisite

of movement, *vP/VP* cannot move to Spec, CP.

This explanation, however, cannot apply to the cases where a main verb does not move to C as the following:

- (80) *Ihr ein Buch hat Hans gegeben.
 her a book has Hans given
 ‘Hans has given her a book.’ (German)

In this sentence, the finite auxiliary verb *hat* ‘has’ rather than the main verb *gegeben* ‘given’ is in C. Suppose that a non-finite verb moves to *v* in German. Then, in order to derive (80) by headless XP-movement, headless VP must be moved. In order for headless VP to move, V-to-*v* movement must be HMS, as illustrated in the following:



The ban on multiple specifiers in German can rule out this configuration since *v* has multiple specifiers (i.e. the trace of *Hans* and VP). Note that C c-commands the headless VP. Therefore, the c-command explanation cannot accommodate the unacceptability of (80).

The fact that headless *vP*/*VP*-movement is impossible in Dutch (see (9a)) can be explained in the same way if we assume that Dutch, like English and German, does not allow multiple specifiers although I do not demonstrate it here.

In sum, the difference between languages like Hebrew and Polish and languages like Dutch, English, and German in the availability of HMS can be reduced to a parameter that is responsible for the availability of multiple specifiers. Given that the possibility of HMS is a necessary condition on headless *XP*-movement (see (66)), then, the availability of headless *XP*-movement can be reduced to the availability of multiple specifiers.

4.6.3 Multiple Specifier Languages

The deduction of the availability of headless *XP*-movement from the availability of multiple specifiers crucially relies on the assumption that Hebrew and Polish allow multiple specifiers while Dutch, English, and German do not. In this section, I will provide justifications of this assumption. In so doing, I will compare these languages with Japanese, which is a typical multiple specifier language.

4.6.3.1 Multiple Subject Constructions: Hebrew

I argue that Hebrew is a multiple specifier language since it has multiple subject constructions like Japanese. First let us examine multiple subject constructions in Japanese and see how this construction can be an indication of a multiple specifier language. Japanese multiple subject constructions are illustrated by the following

examples (Kuno 1973, Saito 1985, Takezawa 1987, Miyagawa 1989, Dubinsky 1993, Tateishi 1994, Ura 1994, Namai 1998):

- (82) a. John-ga asi-ga nagai.
 John-NOM leg-NOM long.PRES
 ‘John has long legs.’
- b. Toyota-ga seerusuman-ga yuusyuuda.
 Toyota-NOM salesperson-NOM distinguished.PRES
 ‘Toyota’s salespeople are distinguished.’ (Japanese)

In (82a), *asi-ga* ‘leg-NOM’ is the notional subject that *nagai* ‘long.PRES’ is predicated of. This sentence has another nominative-marked NP *John-ga* ‘John-NOM’, which is interpreted as a possessor of the legs. Likewise, in (82b) *seerusuman-ga* ‘salesperson-NOM’ is a notional subject and *Toyota-ga* ‘Toyota-NOM’ is another nominative-marked NP.

There is evidence that an additional nominative-marked NP is a subject, which is in outer Spec, TP, rather than is adjoined to TP or in any other A’ position (e.g. Spec, CP). First, it can be an antecedent of the subject-oriented anaphor *zibun* ‘self’, as shown in the following:

- (83) John₁-ga asi-ga zibun₁-no ootoo yorimo nagai.
 John-NOM leg-NOM self-GEN young.brother than long.PRES
 ‘John has longer legs than his young brother.’ (Japanese)

Given that *zibun* can only be bound by a subject, we can conclude that *John-ga* ‘John-NOM’ is a subject. Note in passing that the notional subject can also bind *zibun*, as shown in the following:

- (84) John₁-ga imooto₂-ga zibun_{1/2}-no heya-de naiteiru.
 John-NOM young.sister-NOM self-GEN room-in is.crying
 John's young sister is crying in his/her room.' (Japanese)

These facts strongly suggest that both nominative-marked NPs are subjects in the multiple subject construction.

Furthermore, given that a pronoun like *soko* 'there' needs to be bound by an element in an A-position in order to receive a bound variable reading,¹⁰ the following sentence indicates that the additional nominative-marked NP is in an A-position:

¹⁰This property of *soko* 'there' can be illustrated by the contrast between clause-internal scrambling and long-distance scrambling in terms of variable-binding (see Hoji 2003 for properties of *soko* 'there'). It is well-known that clause-internal scrambling can feed variable-binding while long-distance scrambling cannot, as illustrated by the contrast between (ib) and (iib) (see Saito 1992, Tada 1993 for asymmetries between clause-internal and long-distance scrambling in Japanese).

- (i) a. *Soko₁-no syain-ga mittu-izyoo-no kaisya₁-o tyoosasita.
 there-GEN employee-NOM three-or.more-GEN company-ACC investigated
 'Their employees investigated three or more companies.'
- b. Mittu-izyoo-no kaisya₁-o soko₁-no syain-ga *t*₁ tyoosasita.
 three-or.more-GEN company-ACC there-GEN employee-NOM investigated.
 (Lit.) 'Three or more companies, their employees investigated.' (Takano 2010:84–85)
- (ii) a. *Soko₁-no syain-ga Aya-ni [Ken-ga mittu-izyoo-no kaisya₁-o
 there-GEN employee-NOM Aya-DAT Ken-NOM three-or.more-GEN company-ACC
 tyoosasita to] itta.
 investigated C told
 'Their employees told Aya that Ken investigated three of more companies.'
- b. *Mittu-izyoo-no kaisya₁-o soko₁-no syain-ga Aya-ni [Ken-ga *t*₁
 three-or.more-GEN company-ACC there-GEN employee-NOM Aya-DAT Ken-NOM
 tyoosasita to] itta.
 investigated C told
 (Lit.) 'Three of more companies, their employees told Aya that Ken investigated.'
 (Takano 2010:85)

- (85) [Toyota ka Nissan]₁-ga seerusuman-ga soko₁-no syatyoo-o
 Toyota or Nissan-NOM salesperson-NOM there-GEN president-ACC
 uttaeta.
 sued
 ‘Toyota’s salesperson or Nissan’s salesperson sued its president.’ (Japanese)

Spec, TP is an A-position while Spec, CP and a TP-adjoined position are A'-positions. Therefore, we can conclude from this fact that the additional nominative-marked NP is in Spec, TP rather than Spec, CP or the TP-adjoined position.

Given this, I take multiple subject constructions as an indication of a multiple specifiers language.

Doron and Heycock (1999), Heycock and Doron (2003), and Alexopoulou et al. (2004) argue that Hebrew, like Japanese, has multiple subject constructions, as shown by the following example:

- (86) Ruti sof-a lenaceax.
 Ruti end-hers to.win
 ‘Ruti will end up winning.’ (Hebrew: Doron and Heycock 1999:71)

In (ib), the object *mittu-izyoo-no kaisyaa-o* ‘three-or.more company-ACC’ undergoes clause-internal scrambling, which makes the bound-variable reading of *soko* ‘there’ possible. On the other hand, as shown in (iib), the object that undergoes long-distance scrambling cannot feed variable-binding. This asymmetry between clause-internal and long-distance scrambling can be accounted for if we assume, following Saito (1992) and Tada (1993), that clause-internal scrambling (can) move an element to an A-position while long-distance scrambling must move an element to an A'-position, and that *soko* ‘there’ needs to be bound by an element in an A-position in order to receive a bound variable reading: in (ib), *soko* ‘there’ can receive a bound variable reading since the scrambled element, which is in an A-position, binds it while in (iib), *soko* ‘there’ cannot be interpreted as a bound variable because the scrambled element is in an A'-position.

In this example, *sof-a* ‘end-hers’ is a notional subject that occupies a Spec, TP. *Ruti* is what Doron and Heycock (1999) call a broad subject, which occupies an outer Spec, TP.

Doron and Heycock (1999) provide several arguments that broad subjects are actually subjects rather than left-dislocated elements. However, most of their arguments aim to argue that broad subjects are different from left-dislocated elements. The only direct argument that broad subjects are subjects is on the basis of a particular cleft construction. As shown in the following examples, a subject can be clefted while an object cannot in this construction:

- (87) a. Dani hu še-azar le Dina.
 Dani he that-helped to Dina
 ‘It is Dani who helped Dina.’
- b. *Dina hi še-Dani azar l-a.
 Dina she that-Dani helped to-her
 ‘It is Dina who Dani helped.’ (Hebrew: Doron and Heycock 1999:77)

In (87a), *Dani* is the subject and can be clefted while in (87b), *Dina* is the object and cannot be clefted.

Given this, Doron and Heycock (1999) argue that a broad subject is a subject since it can be clefted in this construction, as shown in the following:

- (88) Še-harey elen hi be-ecem še-haya l-a sade panuy.
 since Ellen she in-reality that-there.was to-her field free
 ‘Since it was really Ellen who had the free field.’
 (Hebrew: Doron and Heycock 1999:77)

In this sentence, the null expletive occupies the inner Spec, TP. *Ellen* is the broad subject that originates from the outer Spec, TP and it can be clefted. From this, Doron and Heycock (1999) conclude that a broad subject is a subject occupying Spec, TP.¹¹

Doron and Heycock (2010) provide further evidence that a broad subject is in Spec, TP. They observe that a broad subject can control PRO, as shown in the following:

- (89) Ruti₁ ha-nisu'im šela₁ nixšelu mibli PRO₁ la-tet le-acma₁
 Ruti the-marriage hers failed without to-give to-herself
 din-ve-xešbon.
 account
 'Ruti failed in her marriage without giving herself an account.'
 (Hebrew: Doron and Heycock 2010:1773)

In (89), *ha-sisu'im šela* 'the-marriage hers' is the notional subject and *Ruti* is the broad subject. *Ruti* can control PRO in the adjunct clause.¹² Given that only an element in an A-position can control PRO, Doron and Heycock (2010) conclude that

¹¹The example (88) is taken from a Hebrew translation of Faulkner's *Absalom, Absalom!*. Doron and Heycock (2010:1769) argue that (88) is grammatical although it is literary, mentioning that "it is the cleft construction that is literary, quite independently of the status of the broad subject." On the other hand, Landau (2011) argues that (88) is ungrammatical as spoken Hebrew, mentioning that "parallel constructed sentences, if presented to Hebrew speakers would certainly be judged ungrammatical."

¹²However, there is also a dispute about the status of this example between Doron and Heycock, on the one hand, and Landau, on the other. Landau (2011) claims that this example is completely ungrammatical, pointing out that only two out of 44 Hebrew speakers who he consulted found it acceptable.

a broad subject is in an A-position, that is, Spec, TP.

To sum up, Hebrew can be considered a multiple specifier language because it has multiple subject constructions like Japanese.

4.6.3.2 A-Scrambling: Polish

Polish can also be considered a multiple specifier language even if it does not have multiple subject constructions, unlike Japanese and Hebrew. This is so because Polish has another property that is characteristic of multiple specifier languages like Japanese: A-scrambling.

Japanese has A-scrambling (as well as A'-scrambling), by which an element is moved to an A-position. A-scrambling feeds anaphor-binding or variable-binding. Consider the following examples:

- (90) a. *Otagai₁-no sensei-ga [John to Mary]₁-o hometa.
 each.other-GEN teacher-NOM John and Mary-ACC admired
 ‘Each other’s teachers admired John and Mary.’
- b. [John to Mary]₁-o otagai₁-no sensei-ga *t*_{Obj} hometa.
 John and Mary-ACC each.other-GEN teacher-NOM admired
 (Lit.) ‘John and Mary, each other’s teacher admired.’ (Japanese)
- (91) a. *Soko₁-no kogaisya-ga [Toyota ka Nissan]₁-o uttaeta.
 there-GEN subsidiary-NOM Toyota or Nissan-ACC sued
 ‘Its subsidiary sued Toyota or Nissan.’
- b. [Toyota ka Nissan]₁-o soko₁-no kogaisya-ga *t*_{Obj} uttaeta.
 Toyota or Nissan-ACC there-GEN subsidiary-NOM sued
 (Lit.) ‘Toyota or Nissan, its subsidiary sued.’ (Japanese)

In (90b) and (91b), the objects undergo scrambling and are moved across the sub-

jects. Crucially, the scrambled objects can bind the anaphor *otagai* ‘each.other’ in (90b) and the variable pronoun *soko* ‘there’ in (91b). Given that only an element in an A-position can bind an anaphor and a variable pronoun, it follows that the scrambled objects in (90b) and (91b) are in A-positions. Assuming that both the specifier of C and the TP-adjoined position are A'-positions and that the subjects are in Spec, TP, we can conclude that the scrambled objects are in the outer Spec, TP in (90b) and (91b).

Given this consideration, we can use A-scrambling as a diagnostic for the availability of multiple specifiers; a language allows multiple specifiers if A-scrambling can target a position above a subject in the language.¹³

In 4.4.2, we saw that Polish has scrambling that targets a position between a subject and a predicate. In addition to this kind of short scrambling, Polish has scrambling that targets a position above a subject. Scrambling of this kind can feed anaphor-binding, as shown in the following examples:

- (92) a. [Nowe książki Kowalskich₁ o sobie_{1/*2}] spodobały się
 new.NOM books Kowalskis' about each.other pleased
 Nowakom₂.
 Nowaks.DAT
 ‘Kowalskis’ new books about each other pleased the Nowaks.’
- b. ?Nowakom₂ [nowe książki Kowalskich₁ o sobie_{1/2}]
 Nowaks.DAT new.NOM books Kowalskis' about each.other
 spodobły się już dawno.
 liked long.time.ago
 ‘The Nowaks got to like Kowalskis’ new books about each other long

¹³See Ura 1994, Richards 1997, McGinnis 1998, and Grewendorf and Sabel 1999 for a multiple specifier analysis of A-scrambling.

time ago.’

(Polish: Witkos 2008:303–304)

In (92a), scrambling does not occur. The anaphor *sobie* ‘each.other’ is contained in the subject and it can only be bound by the possessor *Kowalskich* (the object *Nowakom* cannot bind it). On the other hand, if the object *Nowakom* undergoes scrambling and is moved across the subject, it becomes a possible binder of the anaphor. From this, we can conclude that Polish allows multiple specifiers.

4.6.4 Single Specifier Languages

I will examine English, German, and Dutch and argue that these languages do not allow multiple specifiers since they have neither multiple subject constructions nor A-scrambling across a subject.

4.6.4.1 English

English does not have multiple subject constructions. One might wonder if the following examples correspond to multiple subject constructions:

- (93) a. John, his legs are long.
b. Ford, its salespeople are distinguished. (English)

Although they are superficially similar to multiple subject constructions, they are so-called hanging topic left-dislocation (Chomsky 1977, Lasnik and Saito 1992, Grohmann 2003, among others). In this construction, left-dislocated elements (*John* and *Ford* in the above examples) are not in outer Spec, TP unlike in multiple subject

constructions. First, a left-dislocated element cannot bind an anaphor, as shown in the following example:

- (94) *These students₁, teachers of each other₁ admired them. (English)

If we assume that the left-dislocated element is in an A'-position, this fact can be accounted for. Thus, I take this as an indication that a left-dislocated element is not in outer Spec, TP.

Furthermore, a left-dislocated element can precede a Wh-phrase, as shown in the following examples:

- (95) a. This book, to whom should we give it?
b. John, who do you think saw him? (English: Chomsky 1977:94)

Given that a Wh-phrase in English is in Spec, CP, it follows that a left-dislocated element is at least above CP (probably Spec, TopP). Therefore, these examples support the argument that a left-dislocated element is not in outer Spec, TP.

Given this consideration, I conclude that English does not have multiple subject constructions.

Let us next consider if English has A-scrambling that targets a position above a subject. Sentences like the following are superficially similar to scrambling:

- (96) a. John, Mary likes.
b. This article, Mary criticized.

In these examples, like in the A-scrambling examples in (90b) and (91b), the objects are moved to positions above the subjects. However, the movement operation applying to the objects in (96) is topicalization that targets an A'-position. This is confirmed by the following examples:

- (97) a. Everybody₁ else, I told his_{*1/2} wife that I had called.
(English: Postal 1993:542)
- b. *The guests₁, each other₁'s dance partners criticized.
(Grewendorf and Sabel 1999:8)

The sentence in (97a) is not acceptable under a bound variable reading, indicating that the moved phrase *everybody else* is not in an A-position. The unacceptability of (97b) can also be accounted for if we assume that the moved phrase is not in an A-position. Given this consideration, I assume that English does not allow A-scrambling.

To summarize, English has neither multiple subject constructions nor A-scrambling that targets a position above a subject. This fact can be accounted for if we assume that English does not allow multiple specifiers.¹⁴

¹⁴Here, I assume that in successive-cyclic movement, A'-movement to an intermediate landing site is performed via adjunction rather than substitution. For example, when an object Wh-phrase moves to the specifier of CP, the intermediate movement to the edge of *vP* takes place via adjunction. Therefore, even if a subject occupies the specifier of *vP*, the successive-cyclic movement of the object Wh-phrase does not yield a multiple specifier configuration. I thank Howard Lasnik, Yuji Takano, and an *LI* reviewer for bringing this issue to my attention.

4.6.4.2 German

German has a construction that has a superficially similar structure to multiple subject constructions. Consider the following example:

- (98) [Dieser Mann], ich habe ihn noch nie gesehen.
this.NOM man I.NOM have him yet never seen
‘This man, I’ve never seen him before.’ (German: Grohmann 2003:142)

In this example, there is a nominative-marked element (i.e. *dieser Mann* ‘this.NOM man’) above the notional subject (i.e. *ich* ‘I.NOM’). This additional nominative-marked element is coreferential to the object pronoun *ihn* ‘him’. Although this construction is superficially quite similar to Japanese multiple subject constructions, they are different. (98) is an instance of hanging topic left-dislocation. A sentence-initial nominative-marked element can be followed by a wh-phrase, as in English hanging topic left-dislocation (see (95)):

- (99) Dieser Gast, wann hat ihn der Oberkellner gegrüsst?
this.NOM guest when has him the maître-d’ greeted
‘This guest, when did the maître-d’ greet him?’
(German: Grohmann 2003:145)

Furthermore, this construction, like English hanging topic left-dislocation but unlike Japanese multiple subject constructions, cannot appear in the embedded clause, as shown in the following example:

- (100) *Hans weiß, dass [**die Anne**, der ihr grüner Mantel
 Hans knows that the.NOM Anne the.DAT her.NOM green.NOM coat
 ist schön].
 is beautiful
 ‘Hans knows that Anne, her green coat is beautiful.’
 (German: Sugisaki 2003:104)

In this example, the dislocated nominative-marked phrase appears in the embedded clause, which results in the unacceptability.¹⁵ The same holds true in English hanging topic left-dislocation, as shown in the following example:

- (101) *I believe that **this book**, you should read it.
 (English: Lasnik and Saito 1992:193)

On the other hand, multiple subject constructions in Japanese and Hebrew are allowed in embedded contexts, as shown in the following examples.¹⁶

- (102) a. John-ga Mary-ni [**zibun-ga** asi-ga nagai to] syutyoosita.
 John-NOM Mary-DAT self-NOM leg-NOM long.PRES C claimed
 ‘John claimed to Mary that he has long legs.’ (Japanese)
- b. [Im be’emet **ruti** yeš la savlanut], eyx ze še hi sonet
 if indeed Ruti there-is to.her patience how it that she hates
 tašbecim?
 puzzles
 ‘If indeed Ruti has patience, how come she hates crossword puzzles?’
 (Hebrew: Doron and Heycock 2010:1768)

¹⁵The dative form of the determiner in the notional subject is contingent on the existence of the possessor immediately following the determiner (see Sugisaki 2003:103).

¹⁶However, Landau (2011) claims that sentences like (102b) are quite marginal in Hebrew.

Given these considerations, I assume that (99) is the hanging topic left-dislocation rather than the multiple subject construction (see Grohmann 2003 for a detailed discussion about this construction).

Grewendorf and Sabel (1999) argue that German, unlike Japanese, does not allow A-scrambling (only A'-scrambling is available in German). They observe that a scrambled object cannot bind an anaphor like *sich*, as illustrated in the following examples:

- (103) a. *weil [die Lehrer von sich₁] zweifellos den Studenten₁ in
 since [the teachers of himself]_{nom} undoubtedly the student_{acc} in
 guter Erinnerung behalten haben.
 good memory kept have
 ‘since the teachers of himself have undoubtedly kept the student in
 good memory’
- b. *weil den Studenten₁ [die Lehrer von sich₁] zweifellos t_{Obj}
 since the student_{acc} [the teachers of himself]_{nom} undoubtedly
 in guter Erinnerung behalten haben.
 in good memory kept have
 ‘since the teachers of himself have undoubtedly kept the student in
 good memory’ memory.’ (German: Grewendorf and Sabel 1999:9)

In (103b), the object *den Studenten* ‘the student’ is scrambled across the subject, which contains the anaphor. The scrambled object cannot bind the anaphor even though the former seems to c-command the latter. Grewendorf and Sabel (1999) argue that this is because German scrambling, unlike Japanese scrambling, cannot target the outer Spec, TP (or the outer Spec, AgrsP in their terms) since German does not allow multiple specifiers; German scrambling always targets a TP-adjoined position (or an AgrsP-adjoined position), which is assumed to be an A'-position.

However, a scrambled object in German can bind a variable pronoun, as shown in the following examples:

- (104) a. *weil seine₁ Mutter jeden Studenten₁ liebt.
 since his mother_{nom} every student_{acc} loves
 ‘since his mother loves every student.’
- b. weil jeden Studenten₁ seine₁ Mutter t_{Obj} liebt.
 since every student_{acc} his mother_{nom} loves
 ‘since his mother loves every student.’
 (German: Grewendorf and Sabel 1999:16)

As we saw in 4.6.3.2, the possibility of variable-binding is regarded as an A-movement property. Thus, one might argue that (104b) is evidence that German has A-scrambling that targets a position above a subject. However, Grewendorf and Sabel (1999) argue against this on the basis of the fact that in German, A'-moved elements can bind variable pronouns, as shown in the following examples:

- (105) a. Wen₁ liebt seine₁ Mutter t_{Obj} t_{liebt}?
 who_{acc} loves his mother_{nom}
 ‘Who does his mother love?’
- b. Maria weiß nicht welchen Jungen₁ seine₁ Mutter t_{Obj}
 Maria_{nom} knows not which boy_{acc} his mother_{nom}
 verstoßen hat.
 disowned has
 ‘Mary does not know which boy his mother has disowned.’
- c. Jeden Studenten₁ liebt seine₁ Mutter t_{Obj} t_{liebt}.
 every student_{acc} loves his mother_{nom}
 ‘Every student, his mother loves.’
 (German: Grewendorf and Sabel 1999:17)

In (105a) and (105b), the Wh-moved objects (*wen* ‘who’ and *welchen Jungen* ‘which boy’) bind the variable pronouns contained in the subjects. In (105c), the topicalized object (*jeden Studenten* ‘every student’) binds the variable pronoun contained in the subject. Given that Wh-movement and topicalization are typical instances of A'-movement (i.e. movement to Spec, CP), these examples indicate that the possibility of variable-binding cannot be used as a test for A-movement, at least in German.

One might argue that the sentences in (105) are acceptable under the bound variable reading because A-scrambling applies to the Wh-moving or topicalizing element before Wh-movement or topicalization apply to them. This alternative derivation is illustrated by the following structure:

$$(106) \quad [_{CP} \text{Obj C } [_{TP} t_{Obj} [\text{Subj T } [\dots t_{Obj} \dots]]]]$$

In this derivation, before Obj moves to Spec, CP, it undergoes A-scrambling, landing at the outer Spec, TP wherefrom Obj can bind a variable pronoun contained in Subj. If derivations like this are available for (105), we cannot say that (105) indicates that A'-moved elements can bind a variable pronoun in German.

However, derivations like (106) should be prohibited since there is evidence that a Wh-phrase cannot undergo scrambling in German. This can be illustrated by the following examples:

- (107) a. Wie hat wer gestern das Auto repariert?
 how has who yesterday the car fixed
 ‘Who fixed the car yesterday how?’

- b. Wie hat das Auto gestern wer repariert?
how has the car yesterday who fixed
‘Who fixed the car yesterday how?’
- c. Wie hat der Mann gestern was repariert?
how has the man yesterday what fixed.
‘How did the man fix what yesterday?’
- d. *Wie hat was der Mann gestern repariert?
how has what the man yesterday fixed
‘How did the man fix what yesterday?’ (German: Fanselow 1990:117)

The sentence in (107a) is a multiple Wh-question involving the two Wh-phrases (i.e. *wie* ‘how’ and *wer* ‘who’). (107b) shows that scrambling is compatible with a multiple Wh-question; the object *der Auto* ‘the car’ is scrambled across the subject *wer* ‘who’. (107c) is a multiple Wh-question involving an in-situ object Wh-phrase (i.e. *was* ‘what’). (107d) shows that this in-situ Wh-phrase cannot undergo scrambling. Given that scrambling itself is compatible with a multiple Wh-question (see (107b)), we should attribute the unacceptability of (107d) to the assumption that an Wh-phrase cannot undergo scrambling.

Given these considerations, Grewendorf and Sabel (1999) argue that (104b) cannot be evidence that scrambling can be A-movement in German and conclude that scrambling in German is always A'-movement on the basis of (103b).

To sum up, German, like English, does not have multiple subject constructions nor A-scrambling that targets a position above a subject. I take this as an indication that German does not allow multiple specifiers.

4.6.4.3 Dutch

Dutch does not have multiple subject constructions either. Superficially similar constructions like (108) are again left-dislocation.

- (108) a. **De Hollanders**, die zijn te flegmatiek.
the Dutch they are too phlegmatic
'The Dutch, they are too phlegmatic.'
- b. **Dat portret**, ik geloof niet dat hij het nog heeft.
that portrait I believe not that he it still has
'That portrait, I don't think that he still has it.'
- (Dutch: Riemsdijk and Zwarts 1997:119)

This construction, like hanging topic left-dislocation in English and German, is limited to root contexts, as illustrated by the following example, in which the dislocated phrase appears in the embedded clause:

- (109) *Wij dachten **de post** dat die allang gekomen was.
we thought the mail that it long.ago come had
'We thought that the mail, it had come long ago.'
- (Dutch: Riemsdijk and Zwarts 1997:119)

Furthermore, Dutch does not have A-scrambling that targets a position above a subject. As shown in (110b), it is impossible to place an object before a subject whether it is via A-scrambling or A'-scrambling:

- (110) a. ... dat Jan de mannen daze film toot.
that Jan the men the picture shows
'... that Jan shows the men the picture.'

- b. *... dat deze film Jan de mannen toont.
that the picture Jan the men shows
'...that the picture, Jan shows the men.'
(Dutch: Neeleman 1994:416)

From these facts, I conclude that Dutch does not allow multiple specifiers.

4.7 Headless XP as a CED Island

4.7.1 Headless XP-Movement in an Unaccusative Clause

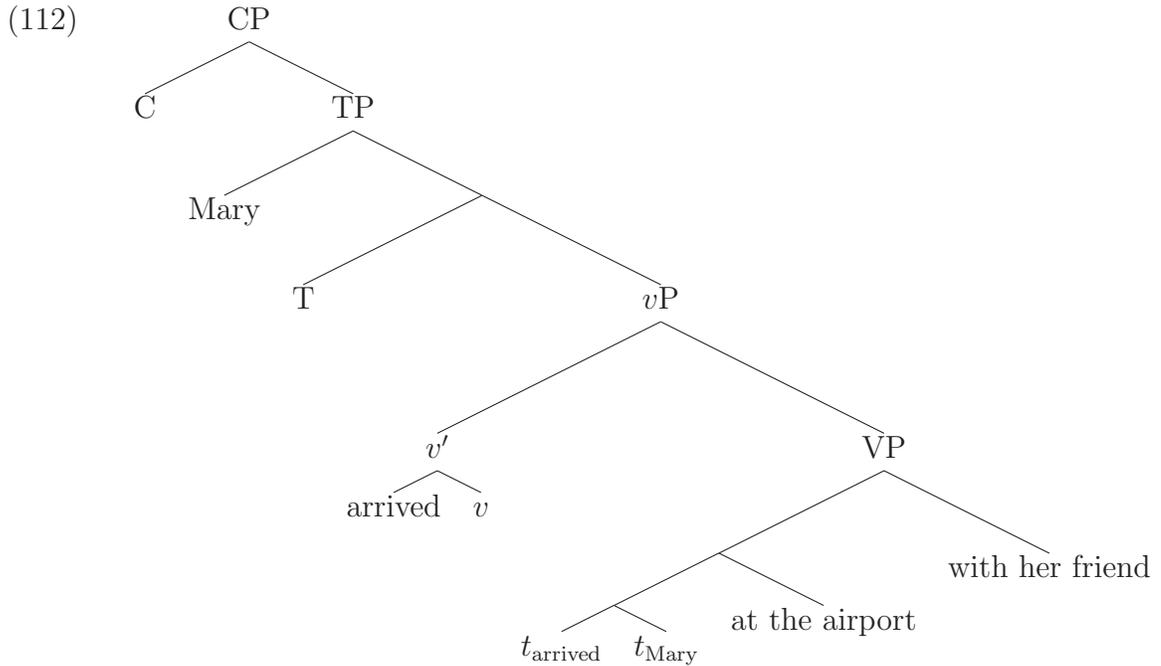
In 4.6.2, we saw that headless VP-movement is impossible in English even when the predicate is an unaccusative verb. The relevant example is repeated here as (111).

- (111) *At the airport with her friend, Mary arrived.

The unacceptability of this sentence is not expected under the present analysis, according to which headless VP-movement is not allowed in English because English does not allow multiple specifiers. In a transitive or an unergative clause, *v* has a subject in its specifier. If *V* undergoes HMS to *v* in such a clause, thus, *v* has two specifiers (the subject and VP), which is prohibited in English. Thus, HMS of *V* to *v* is impossible in English. Headless VP-movement is contingent on HMS of *V* to *v*. This is why headless VP-movement is prohibited in English.

Given this explanation of the impossibility of headless VP-movement in English, it is not expected that headless VP-movement is not allowed in an unaccusative clause. This is so because HMS of *V* to *v* will not result in multiple specifier config-

uration in an unaccusative clause, as illustrated by (112).



Thus, the unacceptability of (111) is not expected in the present analysis.

I argue that the unacceptability of (111) is reduced to a violation of the Condition on Extraction Domains (CED: Huang 1982) or some principle that derives CED (Nunes and Uriagereka 2000). Recall that VP becomes a specifier of v as a result of HMS of V to v . Specifiers are CED islands out of which nothing can be extracted. However, in (111), the subject *Mary* moves out of the headless VP to Spec, TP to satisfy the EPP property of T. Thus, if V head-moves to v via substitution in an unaccusative clause, the subject cannot move to Spec, TP due to the CED. This is why (111) is unacceptable.

In what follows, I will provide independent evidence that headless XP constitutes an island. In particular, I will show that a constraint on PI-fronting in Polish can be reduced to the CED.

4.7.2 Landau's Generalization

Landau (2007) makes the following generalization about PI-fronting on the basis of PI-fronting in Hebrew:

- (113) Landau's Generalization (Landau 2007:134)
- [[V Arg₁] ... Subject ... Arg₂] is grammatical iff [Subject ... [V Arg₁] ...]
is grammatical (i.e. if Arg₂ may be dropped independently).

This generalization amounts to saying that PI-fronting with a stranded argument is possible if and only if the stranded argument is an optional element. To see how this condition works, let us consider the following data:

- (114) a. [Le'hagiš et ha-ma'amar le-ktav-ha-et], hu hagiš lifney
to.submit ACC the-article to-the-journal he submitted before
ha-dedlyne.
the-deadline
'Submit the article to the journal, he did before the deadline.'
- b. [Le'hagiš et ha-ma'amar], hu hagiš le-ktav-ha-et lifney
to.submit ACC the-article he submitted to-the-journal before
ha-dedlyne.
the-deadline
'Submit the article, he did to the journal before the deadline.'
- c. *[Le'hagiš le-ktav-ha-et], hu hagiš et ha-ma'amar lifney
to.submit to-the-journal he submitted ACC the-article before
ha-dedlyne.
the-deadline
'Submit the article to the journal, he did before the deadline.'
(Hebrew: Landau 2007:131)

These sentences involve a ditransitive verb. (114a) shows that the sequence of V-DO-IO can be fronted. In addition to this, the sequence of V-DO can also be fronted as shown in (114b). On the other hand, (114c) shows that V-IO cannot be fronted stranding DO in situ.

In contrast with (114), either DO or IO can be stranded when the fronted VP is headed by a predicate like *lixtov* ‘to.write’, as shown in the following:

- (115) a. [Lixtov mixtavim xosfaniyim le-Gil], hi katva.
to.write letters revealing to-Gil she wrote
‘Write revealing letters to Gil, she did.’
- b. [Lixtov mixtavim xosfaniyim], hi katva le-Gil.
to.write letters revealing she wrote to-Gil
‘Write revealing letters, she did to Gil.’
- c. [Lixtov le-Gil], hi katva mixtavim xosfaniyim.
to.write to-Gil she wrote letters revealing
‘Write to Gil, she did letters.’ (Hebrew: Landau 2007:132)

Landau (2007) argues that this difference between *le’hagiš* ‘to.submit’ and *lixtov* ‘to.write’ in PI-fronting can be reduced to a difference between them in the optionality of arguments. In the case of *le’hagiš* ‘to.submit’, IO can be omitted, as shown in (116a) while DO cannot, as shown in (116b).

- (116) a. Gil raca [le’hagiš et ha’ma’amar].
Gil wanted to.submit ACC the.article
‘Gil wanted to submit the article.’
- b. *Gil wanted [le’hagiš le-ktav-ha-et].
Gil wanted to.submit to-the-journal
‘Gil wanted to submit to the journal.’ (Hebrew: Landau 2007:133)

On the other hand, in the case of *lixtov* ‘to.write’, either DO or IO can be omitted, as shown in the following:

- (117) a. Hi nista [lixtov mixtavim xosfaniyim].
 she tried to.write letters revealing
 ‘She tried to write revealing letters.’
- b. Hi nista [lixtov le-Gil]
 she tried to.write to-Gil
 ‘She tried to write to Gil.’ (Hebrew: Landau 2007:134)

Thus, the difference between *le’hagiš* ‘to.submit’ and *lixtov* ‘to.write’ in PI-fronting can be accommodated under Landau’s generalization (113); PI-fronting with a stranded IO is possible while that with a stranded DO is impossible in the case of *le’hagiš* ‘to.submit’ because IO is optional while DO is not; when the predicate is *lixtov* ‘to.write’, both PI-fronting with a stranded IO and that with a stranded DO are possible since both IO and DO are optional arguments.

Landau (2007) explains his generalization by assuming that optional elements including adjuncts and optional arguments can be introduced into a derivation countercyclically by late adjunction (Lebeaux 1988, Chomsky 1995c, Sauerland 1998, Fox and Nissenbaum 1999 and Fox 2002). Given that Hebrew does not have scrambling nor any overt movement operation by which an VP-internal element evacuates *vP/VP*, a stranded VP-internal element must be introduced into a derivation by late adjunction. Then, when the predicate is *le’hagiš* ‘to.submit’, PI-fronting with a stranded IO can be derived by late adjunction, as illustrated by the following:

- (118) a. [CP C [TP Subj submit-T [_{vP/VP} submit DO]]]

- b. [CP [_{vP/VP} *submit* DO] C [TP Subj submit-T [_{vP/VP} *submit* DO]]]
- c. [CP [_{vP/VP} *submit* DO] C [TP Subj submit-T [_{vP/VP} [_{vP/VP} *submit* DO] IO]]]

Prior to *vP/VP*-fronting, IO is not introduced into the derivation (i.e. *vP/VP* consists of the verb and DO). After *vP/VP* is fronted, IO can be late-adjoined to *vP/VP* since IO is an optional argument of *le'hagiš* 'to.submit'. On the other hand, PI-fronting with a stranded DO cannot be derived in the same way because DO is not an optional argument of *lehagiš* 'to.submit'.

In contrast with the case of *lehagiš* 'to.submit', both IO and DO are optional arguments of *lixtov* 'to.write'. Therefore, both PI-fronting with a stranded IO and that with a stranded DO can be derived by late-adjunction.

To sum up, according to Landau's generalization, PI-fronting with a stranded argument is possible if and only if the stranded argument is an optional element. This generalization follows from the assumption that late-adjunction is available only for an optional element.

4.7.3 Predicate Cleft in Polish

Bondaruk (2009) argues that Landau's generalization holds also in PI-fronting in Polish. She observes that when the fronted *vP/VP* is headed by a predicate like *dać* 'to.give', PI-fronting with a stranded IO is possible while that with a stranded DO

is impossible for some speakers.¹⁷ This is illustrated in the following examples:

- (119) a. [Dać jej kwiaty] (to) dał, ale prezentu nie kupił.
to.give her flowers PRT he.gave but present not bought
'As for giving her flowers, he did (give her flowers), but he didn't buy
a present.'
- b. [Dać kwiaty] (to) jej dał, ale prezentu nie kupił.
to.give flowers PRT her he.gave but present not bought
'As for giving flowers, he gave her (flowers), but he didn't buy
a present.'
- c. *[Dać jej] (to) dał kwiaty, ale prezentu nie kupił.
to.give her PRT he.gave flowers but present not bought
'As for giving her, he gave (her) flowers, but he didn't buy a present.'
(Polish: Bondaruk 2009:67)

In (119a), PI-fronting along with IO and DO takes place. (119b) shows that PI-fronting can strand IO (*jej* 'her'). On the other hand, PI-fronting with a stranded DO (*kwiaty* 'flowers' in (119c)) is impossible.

Note that (119b) and (119c) are not a minimal pair since in (119b), the stranded element precedes the predicate while in (119c), it follows the predicate. Furthermore, in (119b), the stranded element is a pronoun while in (119c), it is a full noun phrase. Thus, one might wonder if these differences might be responsible for the difference in the acceptability. However, even if we eliminate these differences, there is a clear contrast between PI-fronting with a stranded DO and PI-fronting with a stranded IO, as shown by the following minimal pair:

¹⁷Bondaruk (2009:67) mentions that for some speakers, sentences like (119c) are perfectly acceptable. Data that I will provide in what follows are based on judgements by a speaker who finds (119c) unacceptable.

- (120) a. ?[Dać kwiaty] (to) dał Marta, ale prezentu nie kupił.
to.give flowers PRT he.gave Marta but present not bought
‘As for giving flowers, he gave Marta (flowers), but he didn’t buy a present.’
- b. *[Dać Marta] (to) dał kwiaty, ale prezentu nie kupił.
to.give Marta PRT he.gave flowers but present not bought
‘As for giving Marta, he gave (Marta) flowers, but he didn’t buy a present.’ (Polish: Anna Bondaruk, p.c.)

In (120a), the stranded IO is a full noun phrase (*Marta*) and it follows the predicate. Although the acceptability slightly decreases, compared with (119b), (120a) is much better than PI-fronting with a stranded DO; (120b), where DO (*kwiaty* ‘flowers’) is stranded after the predicate, is completely unacceptable.

Bondaruk (2009) argues that the contrast between PI-fronting with a stranded IO and PI-fronting with a stranded DO can be accommodated under Landau’s generalization since IO is an optional argument for *dać* ‘to.give’ while DO is an obligatory argument, as shown in the following examples:

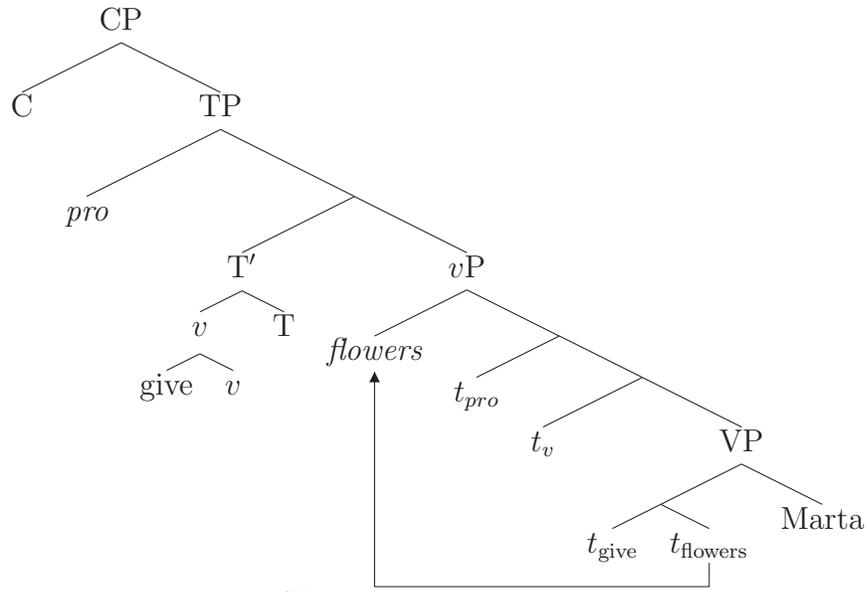
- (121) a. Marek chciał dać kwiaty wczoraj.
Mark wanted to.give flowers yesterday
‘Mark wanted to give flowers yesterday.’
- b. *Marek chciał dać jej wczoraj.
Mark wanted to.give her yesterday
‘Mark wanted to give her yesterday.’ (Polish: Bondaruk 2009:73)

Given this, we can say that (120a) is unacceptable since the fronted VP can occur as an independent VP, as (121a) shows while (120b) is unacceptable because the fronted VP cannot occur as an independent VP, as shown in (121b).

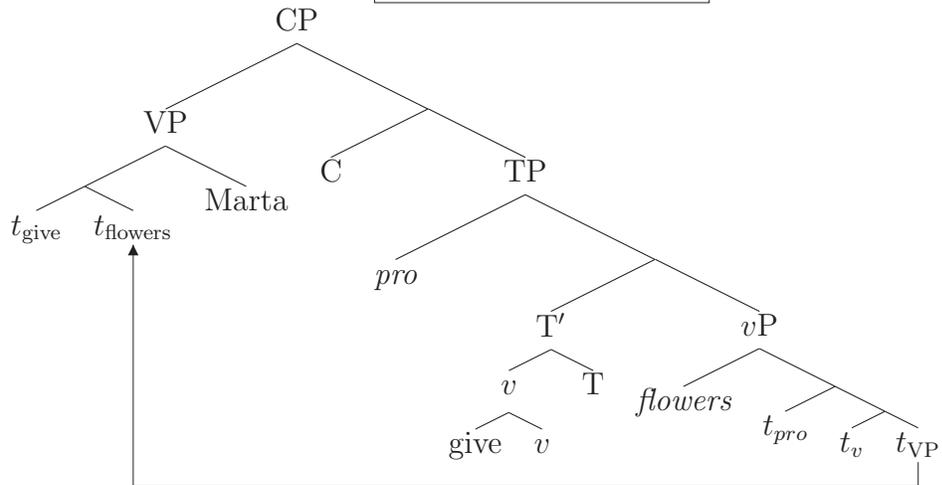
The contrast between (120a) and (120b) can be explained by the assumption about late-adjunction in the same way as in the case of Hebrew PI-fronting; the IO (*Marta*), which is an optional argument, can be stranded since it can be adjoined to VP by late-adjunction while the DO (*kwiaty* ‘flowers’), which is an obligatory argument, cannot be stranded because it cannot be introduced into the derivation by late-adjunction.

However, Polish is different from Hebrew in a crucial respect: it has scrambling, as we saw in 4.4.2. Recall that Landau’s (2007) explanation of Landau’s generalization relies on the assumption that there is no overt movement operation by which a VP-internal element can evacuate *vP/VP*. This assumption is not problematic in the case of Hebrew because Hebrew does not have scrambling. However, as we saw in 4.4.2 and 4.6.3.2, Polish has scrambling that can move a VP-internal element either to Spec, TP or to Spec, *vP*. Now, suppose that V can (optionally) move to T in Polish and that PI-fronting in Polish can be derived by headless XP-movement. Then, the sentence in (120b) could be derived without resorting to late-adjunction of the DO, as illustrated in the following trees:

(122)



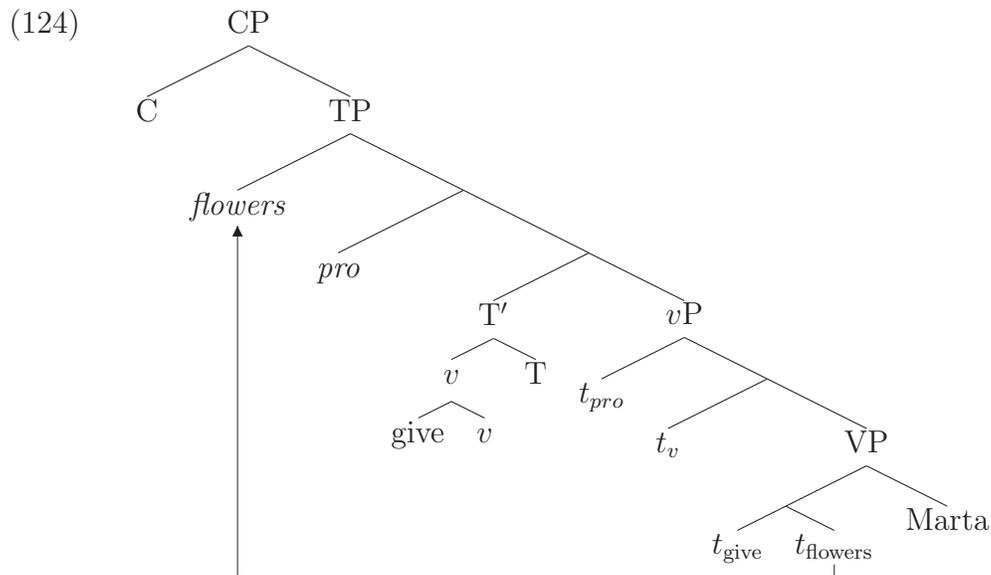
(123)



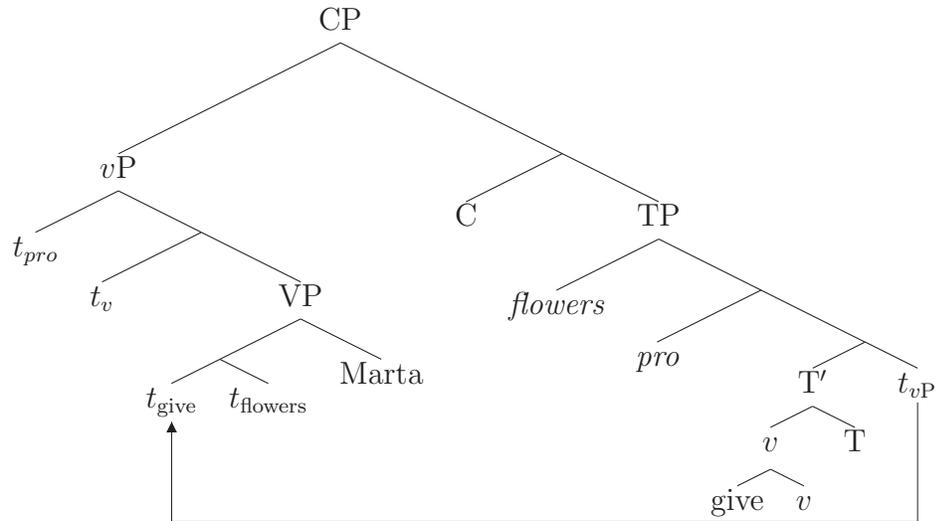
The DO *flowers* is scrambled to Spec, vP. *v* containing *give* undergoes HMS to T. This is possible even though T has an element in its specifier (i.e. *pro*) because Polish allows multiple specifiers. The headless VP can move to Spec, CP since the head of the VP (i.e. *give*) does not intervene for Agree (C, VP) thanks to the presence of T'. If both copies of *give* are pronounced, the sentence (120b) results. In this way, a PI-fronting sentence with a stranded DO could be derived without resorting to late-adjunction if scrambling is available. Therefore, the late-adjunction account is insufficient to explain Landau's generalization in a scrambling language like Polish.

A possible way to rule out the problematic derivation described by (122) and (123) is to resort to the ban on string-vacuous scrambling. In 2.4.3, we saw that scrambling that does not affect word order is prohibited in Japanese. Suppose that this holds also in Polish scrambling. Then, we can rule out scrambling of *flowers* in (122) since it does not affect word order due to subsequent verb movement to T.

However, the ban on string-vacuous scrambling cannot be the whole story. As we saw in 4.6.3.2, Polish allows scrambling to target Spec, TP as well as Spec, *v*P. Then, the following derivation cannot be ruled out by the ban on string-vacuous scrambling:



(125)



In this derivation, *flowers* is scrambled to Spec, TP rather than Spec, vP. This application of scrambling is not string-vacuous since as a result of scrambling, *flowers* ends up preceding *give*. Then, we can derive a PI-fronting sentence with a stranded DO if the headless vP or VP is fronted. Given this, it is expected that PI-fronting with a stranded DO is possible if the stranded DO precedes the in-situ predicate. However, this prediction is not borne out, as shown in (126b).

- (126) a. [Dać kwiaty] (to) Marta dał, ale prezentu nie kupił.
to.give flowers PRT Marta he.gave but present not bought
'As for giving flowers, he gave Marta (flowers), but he didn't buy a present.'
- b. ??[Dać Marta] (to) kwiaty dał, ale prezentu nie kupił.
to.give Marta PRT flowers he.gave but present not bought
'As for giving Marta, he gave (Marta) flowers, but he didn't buy a present.'
(Polish: Anna Bondaruk, p.c.)

In (126b), the V-IO sequence is fronted, stranding the DO *kwiaty* 'flowers'. Crucially, the stranded DO precedes the predicate. This sentence is slightly better than a sentence like (120b), in which the stranded DO follows the predicate. However,

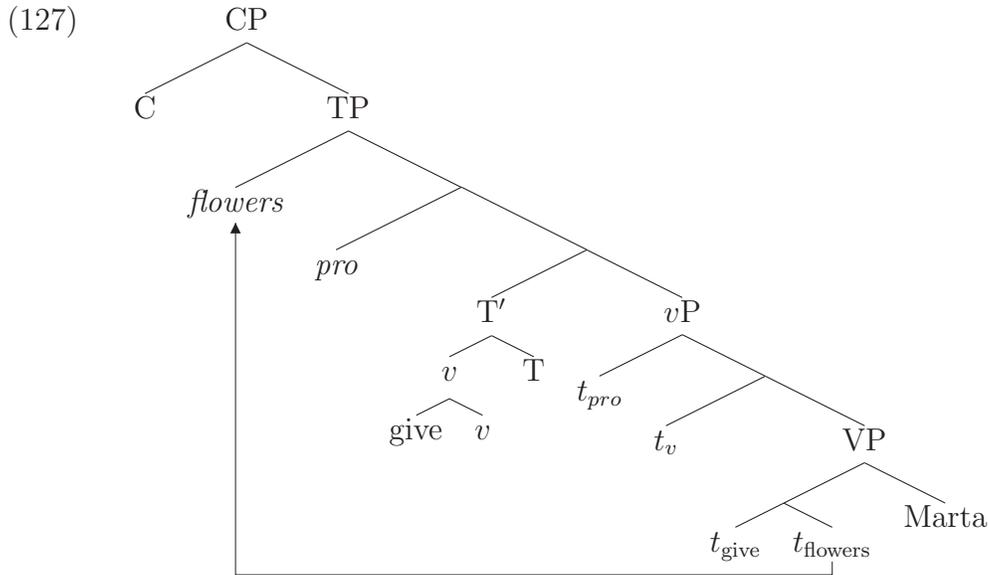
the sentence is still much worse than a PI-fronting sentence with a stranded IO like (126a). The ban on string-vacuous scrambling, combined with Landau's late-adjunction account, cannot explain this contrast. We need something to rule out the derivation described by (124) and (125).

If headless XPs are CED islands, as I argued in the last section, we can rule out the derivations that we have considered in this section. In the first derivation (i.e. (122) and (123)), movement of the VP crosses the headless vP , which is a derived specifier of T due to HMS of v to T. In the second derivation (i.e. (124) and (125)), scrambling of *flowers* violates the CED since it crosses the headless vP , which becomes a specifier of T as a result of HMS of v to T.

To sum up, Landau's generalization holds in Polish PI-fronting as in Hebrew PI-fronting. Landau's late-adjunction account can explain the case of Hebrew because Hebrew does not have scrambling. However, the late-adjunction account is not sufficient to explain the case of Polish since Polish has scrambling. If headless XPs are CED islands, the problematic data in Polish can be ruled out. Given this, I take the Polish data that we saw in this section as evidence that headless XPs are CED islands, which is a consequence of our theory of syntactic head movement.

4.7.4 Feature-Driven Operation vs. Optional Operation

Note that my analysis of Polish PI-fronting presupposes that HMS of v to T takes place before scrambling takes place. To see why, let us consider the structure in (124) again, repeated here as (127).



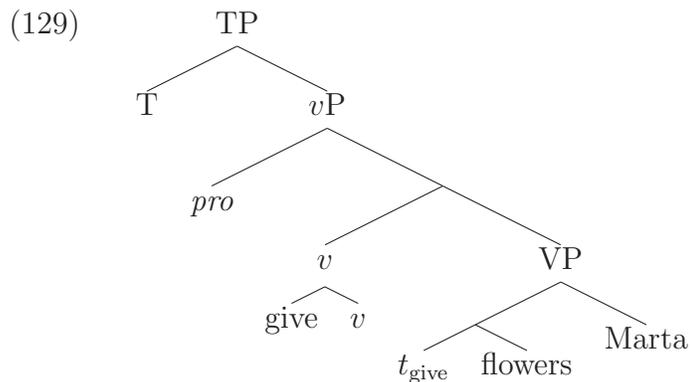
According to my analysis, scrambling of *flowers* to TP is ruled out by the CED since *vP* becomes a specifier of TP as a result of HMS of *v* to T. However, suppose that *flowers* can undergo scrambling before *v* moves to T. Then, extraction out of *vP* should not be a violation of the CED since *vP* is the complement rather than the specifier of TP before *v* undergoes HMS. Thus, in order for my analysis to work, we have to guarantee that scrambling takes place after HMS occurs in (127). For this purpose, I propose the following condition:

- (128) At a given stage of the derivation, optional (non-feature-driven) operations can apply only when there are no feature-driven operations that can apply.

This condition can be derived as a theorem from some version of Pesetsky's (1989) Earliness Principle that amounts to stating that grammatical requirements must be satisfied as early in the derivation as possible. It violates the Earliness Principle if non-feature-driven operations, which are not required to take place by grammar,

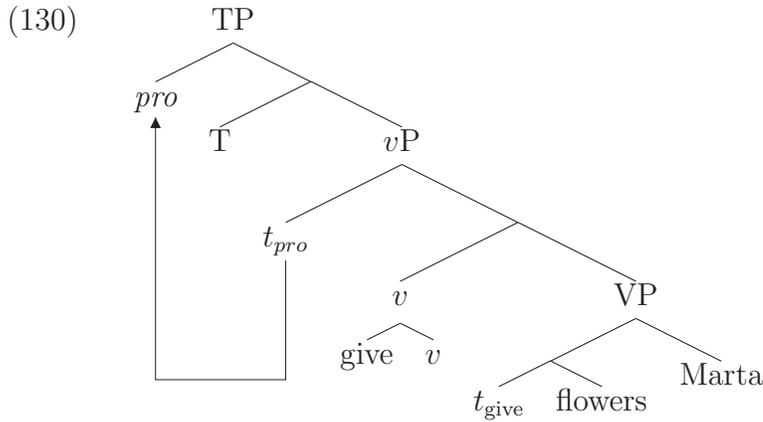
apply when we can apply a feature-driven operation, which is a required operation.

In order to see how this condition works, let us consider the following structure, which is the structure right after T is merged with *v*P in (127):

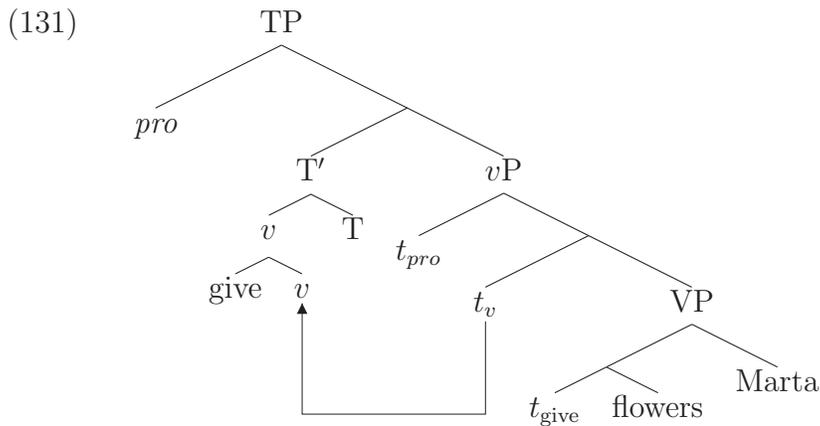


Suppose that movement of subjects to Spec, TP and verb movement are feature-driven operations while scrambling is not feature-driven (optional).¹⁸ Then, at this point of the derivation, we have two feature-driven operations that can apply: movement of *pro* to Spec, TP and HMS of *v* to T. The condition in (128) does not determine which operation applies first since both are feature-driven operations. However, movement of *pro* must apply first, as illustrated in (130), because the *v*P becomes a CED island after HMS of *v* to T applies.

¹⁸See Tada 1993, Takano 1998, Saito and Fukui 1998 for arguments for the optionality of scrambling. See Miyagawa 1997 for the opposite view.



Next, HMS of *v* to T applies, as illustrated in (131). Note that scrambling of *flowers* to TP cannot apply before HMS of *v* to T applies since all feature-driven operations must apply before non-feature-driven operations like scrambling apply according to (128).



Thus, with the condition (128), we can guarantee that when scrambling of *flowers* takes place, *v*P has become a CED island.

Note that movement of the subject to Spec, TP out of the headless *v*P is possible in (130) because it can apply before HMS of *v* to T applies since both operations are feature-driven; the condition (128) does not force one operation to apply before the other. Given this, let us consider how the English sentence in (111),

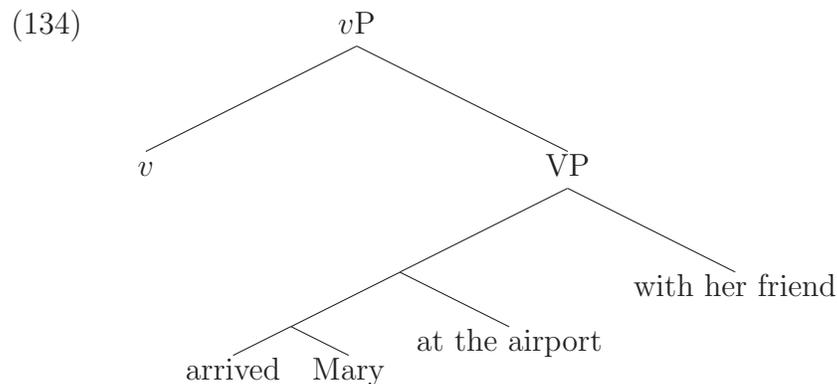
repeated here as (132), is ruled out by the CED.

(132) *At the airport with her friend, Mary arrived.

Given that main verbs move up to v in English, HMS applies to V-to- v movement rather than v -to-T movement according to the condition on HMS in (69) in chapter 3, repeated here as (133).

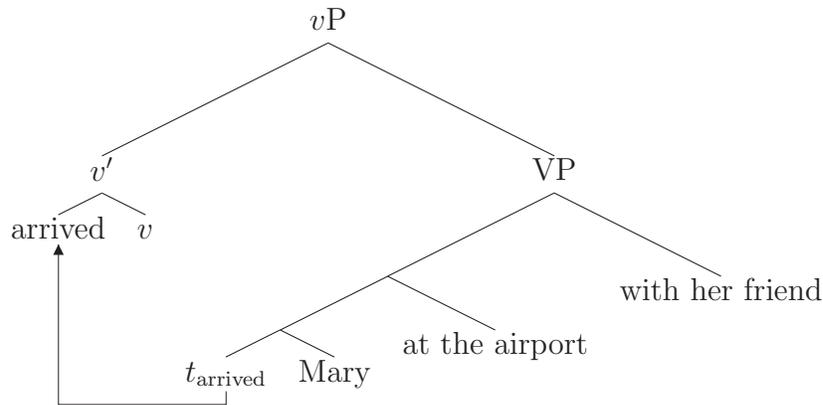
(133) Head movement of X to Y, the next higher head, can be performed via substitution only if Y is the final landing site for X.

Given this, consider the structure at the point of the derivation for (132) where v is merged with VP:



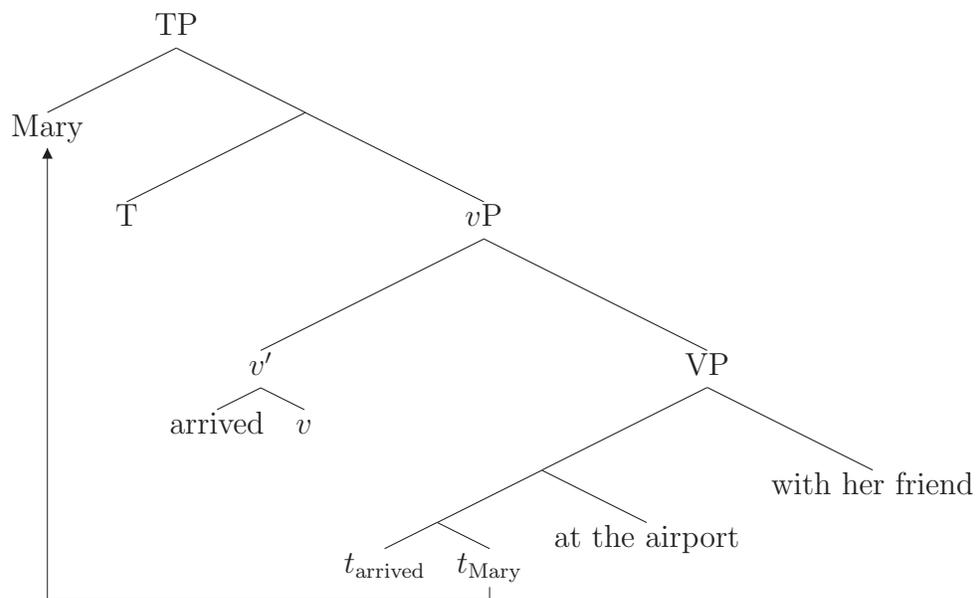
The only feature-driven operation that can apply at this point is HMS of *arrive* to v , as illustrated by (135). Note that movement of the subject *Mary* cannot apply here since the trigger for this operation (T) has not been introduced into the derivation.

(135)



After T is merged with vP , movement of *Mary* is triggered. However, this movement is impossible because the headless VP is a specifier of v at this point, as illustrated by the following.

(136) *



In sum, in order to attribute the impossibility of scrambling out of headless vP/VP in Polish PI-fronting construction to a CED violation, we have to guarantee that HMS of v to T takes place before scrambling applies. For this purpose, I proposed the condition (128) that forces feature-driven operations to apply before non-feature-driven operations, which is derived as a theorem from the Earliness Principle.

4.8 Conclusion

In this chapter, we have seen that headless XP-movement is impossible in Dutch, English, and German while it is possible in Hebrew and Polish. This crosslinguistic variation of the possibility of headless XP-movement can be reduced to another crosslinguistic variation of the availability of multiple specifiers if we assume that the computational system does not discriminate head movement from phrasal movement in terms of locality (heads could intervene for phrasal movement), and head movement, like phrasal movement, can be performed either via adjunction or via substitution (the “two types of head movement” hypothesis).

4.9 Appendix 1: Notes on Multiple-Clefting in Japanese

As we saw in 4.6.3, Japanese is a typical multiple specifier language since it has both multiple subject constructions and A-scrambling. Thus, one might wonder if Japanese allows headless XP-movement. Actually, in Funakoshi (2012), I argue that multiple cleft constructions in Japanese are derived by headless XP-movement, given Koizumi’s (1995) analysis (see Hoji 1987, Koizumi 1995, Kuwabara 1997). In this appendix, however, I reconsider this construction and argue that there is no conclusive evidence for the headless XP-movement analysis.

In Japanese, more than one element can appear in the focus position, which is the position right before the copula verb *da*. This is illustrated by the following example:

- (137) [John-ga ageta no]-wa **Mary-ni hon-o ni-satu** da.
 John-NOM gave COMP-TOP Mary-DAT book-ACC two-CL be.PRES
 (Lit.) 'It is Mary two books that John gave.'
 'John gave Mary two books.'

In this example, the indirect object *Mary-ni* 'Mary-DAT' and the direct object *hon-o ni-satu* 'book-ACC two-CL' occupy the focus position.

Koizumi (1995) argues that sentences like (137) involve headless *vP/VP*-movement. Thus, as illustrated in (138), the verb *age* 'give' moves to *v*, and *v* containing the verb moves to T. This yields the headless *vP/VP* containing the indirect object *Mary-ni* 'Mary-DAT' and the direct object *hon-o ni-satu* 'book-ACC two-CL'. The multiple cleft sentence in (137) obtains if the resulting headless *vP/VP* moves to the focus position.

- (138) [TP John-NOM [_{vP} *t*_{John} [_{VP} Mary-DAT two books-ACC *t*_V] *t*_v] [_T give-*v*-T]
]

If this analysis is correct, it indicates that headless *vP/VP*-movement is possible in Japanese.

However, the headless XP-movement analysis of the multiple-cleft construction presupposes that clefting cannot apply to multiple elements. If this option is available in Japanese, sentences like (137) can be derived by applying clefting to each object without resorting to headless XP-movement. Given that Japanese allows multiple specifiers, theoretically, there is nothing to rule out this alternative analysis. Actually, Hiraiwa and Ishihara (2012) propose an analysis that resorts to

multiple applications of clefting.

Takano (2002) argues that Japanese cleft, like English cleft, should not allow more than one constituent in the focus position. His argument is based on the clause-mate condition, according to which clefted elements in the multiple-cleft construction must have originated in the same clause (Koizumi 1995, 2000). This is illustrated by the following example:

- (139) *[Naoya-ga t_1 [Mari-ga t_2 nonda to] iituketa no]-wa **Yumi-ni**₁
Naoya-NOM Mari-NOM drank C told C-TOP Yumi-DAT
wain-o₂ da.
wine-ACC COP
(Lit.) ‘It was to Yumi, wine that Naoyo told that Mari drank.’
(Japanese: Hiraiwa and Ishihara 2012:173)

In this sentence, the matrix element (i.e. *Yumi-ni* ‘Yumi-DAT’) and the embedded element (i.e. *wain-o* ‘wine-ACC’) are clefted, resulting in the unacceptability. Takano (2002) argues that if clefting allowed multiple constituents to appear in the focus position, any combination of constituents should be able to appear in the focus position. Thus, he concludes from the unacceptability of sentences like (139) that multiple applications of clefting are prohibited in Japanese.

Hiraiwa and Ishihara (2012), however, argue that the unacceptability of sentences like (139) should not be attributed to syntax. They observe that the clause-mate condition effect is obviated when a sentence is a Wh-question or a yes-no question, as shown in the following examples:¹⁹

¹⁹There seems to be a(n) idiolectal/dialectal variation about the obviation effect of the clause-mate condition. Hiraiwa and Ishihara (2012:173, fn.30) report that a *Syntax* reviewer does not find

- (140) a. [Naoya-ga t_1 [Mari-ga t_2 nonda to] iituketa no]-wa **dare-ni**₁
 Naoya-NOM Mari-NOM drank C told C-TOP who-DAT
nani-o₂ na no?
 what-ACC COP Q
 (Lit.) ‘To whom what is it that Naoyo told that Mari drank.’
- b. [Naoya-ga t_1 [Mari-ga t_2 nonda to] iituketa no]-wa **Yumi-ni**₁
 Naoya-NOM Mari-NOM drank C told C-TOP Yumi-DAT
wain-o₂ na no?
 wine-ACC COP Q
 (Lit.) ‘Is it to Yumi, wine that Naoyo told that Mari drank.’
 (Japanese: Hiraiwa and Ishihara 2012:173–174)

Given this, Hiraiwa and Ishihara (2012) argue that syntax should not prohibit a derivation violating the clause-mate condition and that multiple applications of clefting should be allowed in principle.²⁰

If Hiraiwa and Ishihara (2012) are correct, then, we cannot conclude from data like (137) that Japanese allows headless XP-movement. For multiple applications of clefting could derive (137) without resorting to headless XP-movement.

Note in passing that even if it will turn out in future research that the multiple-cleft construction in Japanese cannot be derived by headless XP-movement, that would not constitute evidence against the present system. From the fact that a language allows multiple specifiers, it is not predicted that the language allows headless XP-movement in cleft constructions. This is because there might be some independent factors that rule out headless XP-movement in cleft constructions even if headless XP-movement itself is allowed in principle. For example, it might be the sentences like (140a) and (140b) acceptable. To my ear, (140a) is not totally acceptable although it sounds slightly better than (139). As for (140b), it sounds as bad as (139) to me.

²⁰See Hiraiwa and Ishihara 2012 for an explanation of the obviation effect.

case that *vP/VP*, whether it is headless or headed, cannot be clefted in Japanese.

The following example shows that headed *vP/VP* cannot be clefted in Japanese:

- (141) *[Taro-ga t_1 si-ta no]-wa [**ringo-o tabe-dake**]₁ da.
 Taro-NOM do-PAST C-TOP apple-ACC eat-only COP
 (Lit.) ‘It is only eat an apple that Taro did.’ (Japanese)

In (141), what is clefted is *vP/VP* containing the direct object and the verb to which the focus particle *dake* ‘only’ attaches. (142) indicates that *vP/VP* with the focus particle can be separated from T.

- (142) [**Ringo-o tabe*(-dake)**]₁, Taro-ga t_1 si-ta.
 apple-ACC eat-only Taro-NOM do-PAST
 ‘Only eat an apple, Taro did.’ (Japanese)

Thus, we cannot attribute the unacceptability of (141) to the fact that *vP/VP* is separated from T. Furthermore, the unacceptability of (141) is not due to the presence of the focus particle *dake* ‘only’ in the clefted position because *dake* can appear in the clefted position if it is attached to DP, as (143) shows.

- (143) [Taro-ga t_1 tabe-ta no]-wa **ringo-dake(-o)** da.
 Taro-NOM eat-PAST C-TOP apply-only(-ACC) COP
 ‘It is only an apple that Taro eat.’ (Japanese)

Given these considerations, I assume that (141) is unacceptable since headed *vP/VP* cannot be clefted in Japanese. Note in passing that this holds true also in English, as shown in the following example:

(144) *It is [give a book to Mary] that I might.

This example shows that *vP/VP* cannot undergo clefting in English as in Japanese.

In sum, there is no conclusive evidence that multiple cleft constructions in Japanese are derived through headless *vP/VP*-movement. Even if it will turn out that multiple cleft constructions do not involve headless *vP/VP*-movement, it does not constitute counterevidence for the present analysis. This is so because it might be the case that the category *vP/VP* cannot undergo clefting in general whether it is headless or headed.

4.10 Appendix 2: Substitution and Adjunction in Bare Phrase Structure Theory

My explanation of the crosslinguistic difference in terms of the applicability of Takano's Generalization relies on X-bar theoretic notions like adjunction and substitution. It is not clear how to define the distinction between substitution and adjunction under a current theory of Bare Phrase Structure (BPS). However, this does not mean that my analysis is incompatible with BPS. Here, I suggest one way to reconcile the two.²¹

The crucial assumption adopted in this thesis is that a node that is created as a result of adjunction of X to Y does not dominate X while a node that is created as result of substitution of X for Y does. The first one is May's theorem that "adjuncts are not dominated by the categories to which they are adjoined" (May 1989 : 92).

²¹This appendix is based on Funakoshi 2012.

This is a defining property of adjunction. If there are at least two modes for the structure-building operation, that is, substitution/Set-Merge and adjunction/Pair-Merge, as Chomsky (1995a, 2000, 2004) argues, then any phrase structure theory must be able to capture this property in one way or another.

One promising way of capturing this property of adjunction under BPS theory is to adopt a proposal developed by Chametzky (2000), Hornstein and Nunes (2008), Hornstein (2009), and Uriagereka (2002). A core idea of this proposal is that substitution yields a labeled constituent while adjunction yields a non-labeled constituent. I call the former operation *L(abeled)-Merge* and the latter operation *Concatenate*. Following Hornstein 2009 and Hornstein and Nunes 2008, I assume that *Concatenate* (adjunction) is a simple operation that combines two syntactic objects while *L-Merge*, which is the same operation as Chomsky’s *Set-Merge*, is a composite operation consisting of *Concatenate* and *Label*. *Label* is an operation whereby one of the two inputs to *Concatenate* names the resulting constituent. This is illustrated in the following (the underlined symbol is a label):²²

- (145) a. $\text{Concatenate}(X, Y) = \{X, Y\}$
 b. $\text{L-Merge}(X, Y) = \text{Label}(\text{Concatenate}(X, Y)) = \{\underline{X}, \{X, Y\}\}$

Under this version of BPS theory, the structures created by the two types of head movement can be derived in the following way, using *Concatenate* and *L-Merge* (the subscript numbers are just for expository purposes):

²²I assume that some independent principle or algorithm, such as Chomsky’s (cf. Chomsky 2008), determines what becomes a label.

(146) *Head Movement of X to Y via Concatenate (Adjunction)*

- a. L-Merge(X, ZP): $\{\underline{X}, \{X, ZP\}\}$ (= XP)
- b. L-Merge(Y, XP): $\{\underline{Y}, \{Y, \{\underline{X}, \{X, ZP\}\}\}\}$
- c. Copy(X)
- d. Concatenate(Y, X): $\{\underline{Y}, \{\{Y, X_2\}, \{\underline{X}, \{X_1, ZP\}\}\}\}$ (= YP)
- e. L-Merge(α , YP): $\{\underline{\alpha}, \{\alpha, \{\underline{Y}, \{\{Y, X_2\}, \{\underline{X}, \{X_1, ZP\}\}\}\}\}\}$

(147) *Head Movement of X to Y via L-Merge (Substitution)*

- a. L-Merge(X, ZP): $\{\underline{X}, \{X, ZP\}\}$ (= XP)
- b. L-Merge(Y, XP): $\{\underline{Y}, \{Y, \{\underline{X}, \{X, ZP\}\}\}\}$
- c. Copy(X)
- d. L-Merge(Y, X): $\{\underline{Y}_2, \{\{\underline{Y}_1, \{Y, X_2\}\}, \{\underline{X}, \{X_1, ZP\}\}\}\}$ (= YP)
- e. L-Merge(α , YP): $\{\underline{\alpha}, \{\alpha, \{\underline{Y}_2, \{\{\underline{Y}_1, \{Y, X_2\}\}, \{\underline{X}, \{X_1, ZP\}\}\}\}\}\}$

Under this framework, the difference between HMA and HMS is that in the former, head movement is realized by Concatenate, combining two heads without applying Label to the result while in the latter, this is done by L-Merge, combining two heads followed by Label.

Given this, let us consider how we can define the notion of dominance based on set theoretic notations of phrase structure, which BPS theory assumes. In a tree diagram, dominators are always nodes (or a certain kind of nodes, namely categories) and dominatees are everything under the dominator node. What corresponds to nodes in set theoretic notations like (146) and (147) is a label. Given this

consideration, it seems natural to define the dominance relation as in the following:

(148) *(Irreflexive) Dominance*

α dominates β iff α is a label and

- a. β is a sister of α or
- b. β is a descendant of a sister of α .

The crucial point is that only labels can be dominators in this definition. Sisters and descendants are defined as follows:

(149) *Sister*

β is a sister of α iff β is another member of a set A such that α is a member of A.

(150) *Descendant*

- a. A member of γ is a descendant of γ .
- b. If δ is a descendant of γ , then a member of δ is also a descendant of γ .

Given these definitions, it follows that movement of a headless XP is ruled out by our locality constraint (15) when HMA of X to Y occurs while it is not when HMS of X to Y occurs. In (146), repeated here as (151), X_2 , which underwent HMA, could intervene for an Agree relation of the headless XP (i.e. $\{\underline{X}, \{X_1, ZP\}\}$) with a probe since what dominates X_2 ($\underline{\alpha}$ and \underline{Y}) also dominates the headless XP.

(151) *Head Movement of X to Y via Concatenate (Adjunction)*

- a. L-Merge(X, ZP): $\{\underline{X}, \{X, ZP\}\}$ (= XP)
- b. L-Merge(Y, XP): $\{\underline{Y}, \{Y, \{\underline{X}, \{X, ZP\}\}\}\}$
- c. Copy(X)
- d. Concatenate(Y, X): $\{\underline{Y}, \{\{Y, X_2\}, \{\underline{X}, \{X_1, ZP\}\}\}\}$ (= YP)
- e. L-Merge(α , YP): $\{\underline{\alpha}, \{\alpha, \{\underline{Y}, \{\{Y, X_2\}, \{\underline{X}, \{X_1, ZP\}\}\}\}\}\}$

In the representation in (147), repeated here as (152), the dominators for X_2 are $\underline{\alpha}$, \underline{Y}_2 , and \underline{Y}_1 while those for the headless XP (i.e. $\{\underline{X}, \{X_1, ZP\}\}$) are only $\underline{\alpha}$ and \underline{Y}_2 : $\{\underline{X}, \{X_1, ZP\}\}$ is neither a sister nor a descendant of a sister of \underline{Y}_1 . Therefore, X_2 does not intervene for an Agree relation of the headless XP with a probe.

(152) *Head Movement of X to Y via L-Merge (Substitution)*

- a. L-Merge(X, ZP): $\{\underline{X}, \{X, ZP\}\}$ (= XP)
- b. L-Merge(Y, XP): $\{\underline{Y}, \{Y, \{\underline{X}, \{X, ZP\}\}\}\}$
- c. Copy(X)
- d. L-Merge(Y, X): $\{\underline{Y}_2, \{\{\underline{Y}_1, \{Y, X_2\}\}, \{\underline{X}, \{X_1, ZP\}\}\}\}$ (= YP)
- e. L-Merge(α , YP): $\{\underline{\alpha}, \{\alpha, \{\underline{Y}_2, \{\{\underline{Y}_1, \{Y, X_2\}\}, \{\underline{X}, \{X_1, ZP\}\}\}\}\}\}$

In this way, it is possible to make the present analysis compatible with BPS theory without using X-bar theoretic notions nor notations. Although the specific implementation might turn out to be wrong, the important point that I would like to make

here is that the present analysis is not inherently incompatible with BPS theory.

Finally, I would like to point out that under this model of BPS, we can reduce a multiple specifier parameter to a parameter that has to do with the restriction on the number of applications of L-Merge, without resorting to the notion of specifiers. Suppose that UG has the following parameter:

- (153) a. Languages like English: L-Merge can apply to a single head at most two times.
- b. Languages like Japanese: L-Merge can apply to a single head without limit.

Given this parameter, both English and Japanese allow the following structure, in which X takes a complement, a specifier, and an adjunct:

- (154) $\{\text{WP}, \{\underline{\text{X}}, \{\text{YP}, \{\underline{\text{X}}, \{\text{X}, \text{ZP}\}\}\}\}\}$ (Spec = YP, Compl = ZP, Adjunct = WP)
- a. L-Merge(X, ZP): $\{\underline{\text{X}}, \{\text{X}, \text{ZP}\}\}$ (=A)
- b. L-Merge(A, YP): $\{\underline{\text{X}}, \{\text{YP}, \{\underline{\text{X}}, \{\text{X}, \text{ZP}\}\}\}\}$ (=B)
- c. Concatenate(B, WP): $\{\text{WP}, \{\underline{\text{X}}, \{\text{YP}, \{\underline{\text{X}}, \{\text{X}, \text{ZP}\}\}\}\}\}$

This is because L-Merge applies to a single head X only two times: the third operation is Concatenate rather than L-Merge. On the other hand, only languages like Japanese allow the following structure, where X takes a complement and two specifiers:

- (155) $\{\underline{X}, \{WP, \{\underline{X}, \{YP, \{\underline{X}, \{X, ZP\}\}\}\}\}\}$ (Specs = WP and YP, Compl = ZP)
- a. L-Merge(X, ZP): $\{\underline{X}, \{X, ZP\}\}$ (=A)
- b. L-Merge(A, YP): $\{\underline{X}, \{YP, \{\underline{X}, \{X, ZP\}\}\}\}$ (=B)
- c. L-Merge(B, WP): $\{\underline{X}, \{WP, \{\underline{X}, \{YP, \{\underline{X}, \{X, ZP\}\}\}\}\}\}$

This is because L-Merge applies to X more than two times. The difference between L-Merge and Concatenate in this respect (i.e. the application of the former is restricted while that of the later is free) seems natural since Concatenate is a general cognitive operation not specific to language while L-Merge involves Label, which is a language-specific operation. The application of L-Merge seems more costly than that of Concatenate in a sense.

Under this conception of the multiple specifier parameter, when a head Y has an element in its specifier, HMA of X to Y is allowed in both languages like English and Japanese while HMS of X to Y is allowed only in languages like Japanese, as illustrated below:

- (156) a. $\{\underline{Y}, \{WP, \{\underline{Y}, \{Y, \{\underline{X}, \{X, ZP\}\}\}\}\}\}$
- b. Copy(X) & Concatenate(Y, X) (HMA of X to Y)
- $\{\underline{Y}, \{WP, \{\underline{Y}, \{\{Y, X\}\}, \{\underline{X}, \{X, ZP\}\}\}\}\}$
- c. Copy(X) & L-Merge(Y, X) (HMS of X to Y)
- $\{\underline{Y}, \{WP, \{\underline{Y}, \{\{\underline{Y}, \{Y, X\}\}, \{\underline{X}, \{X, ZP\}\}\}\}\}\}$

Before head movement takes place, as shown in (156a), L-Merge applies to Y two times, leaving Y with a specifier (i.e. WP) and a complement (i.e. $\{\underline{X}, \{X, ZP\}\}$). Therefore, HMA of X to Y can take place in both types of languages while HMS of X to Y can take place only in the Japanese type languages: HMS of X to Y requires the third L-Merge apply to Y.

This view of the multiple specifier parameter fits well in Fukui's (2011) conception of multiple specifier or multiple subjects. Fukui (2011) argues that a number of differences between English and Japanese, including the availability of multiple subjects, can be reduced to a more fundamental difference between them that "unbounded Merge' is in full force in the syntax of Japanese" (Fukui 2011:90) while Merge is bounded somehow in English. If this is correct, we can conclude that the cross-linguistic difference in the applicability of Takano's Generalization is eventually reduced to the availability of unbounded (L-)Merge.

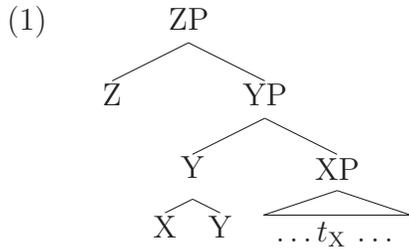
Chapter 5: Headless XP-Ellipsis

5.1 Introduction

In this chapter, I discuss another generalization concerning headless XPs: Lasnik's Generalization, which amounts to stating that headless XP-ellipsis is prohibited (Lasnik 1999).¹

In 5.2, after presenting Lasnik's Generalization by reviewing the relevant discussion in Lasnik 1999, I further argue that this generalization holds at least in English and Danish in order to account for the lack of null objects in these languages in 5.3. In 5.4, in order to explain Lasnik's Generalization, I propose a movement analysis of ellipsis that builds on Johnson's (2001) analysis of VP-ellipsis and Aelbrecht and Haegeman's (2012) idea. Under the movement analysis of ellipsis, ellipsis of XP is derived through movement of XP. Therefore, the ban on headless XP-ellipsis (Lasnik's Generalization) can be explained by the general locality constraint in the same way as the ban on headless XP-movement (Takano's Generalization). To see this, let us consider the following schematic structure:

¹Lasnik (1999), however, immediately rejects the generalization on the basis of the fact that there are languages in which headless VP-ellipsis is allowed. I will account for exceptions to Lasnik's Generalization in 5.7.



X moves to Y, yielding the headless XP. In order to elide the headless XP, the XP must be able to move under the movement analysis of ellipsis. This, however, is impossible since X intervenes for an Agree relation of the headless XP with a probe. Given that Agree is a prerequisite for movement, the headless XP cannot move. If the headless XP cannot move, it cannot be elided either because movement is a prerequisite for ellipsis under the movement analysis of ellipsis.²

As in the case of Takano’s Generalization, there are languages in which Lasnik’s Generalization does not hold. In 5.6, I examine null object constructions and yes/no reply constructions in several languages and conclude that headless XP-ellipsis is allowed in Finnish, Hebrew, Irish, Japanese, European Portuguese, Russian, and Tagalog. In 5.7, I argue that we can explain these exceptions to Lasnik’s Generalization in the same way as in the case of Takano’s Generalization: these languages are either multiple specifier languages or empty-TP-Spec languages. Finally, in 5.8, I examine extraction out of headless XPs in headless XP-ellipsis constructions and

²This explanation of Lasnik’s Generalization is also compatible with an analysis of ellipsis like Aelbrecht’s (2009) in which ellipsis is licensed by Agree. Suppose that XP must have its feature [F] checked by a licensing head with the matching feature [F] in order to be elided. Then, it follows from the locality constraint that the headless XP in (1) cannot be elided since its head X, which also has the [F] feature, intervenes for an Agree relation of the XP with a licensing head. I leave for future research the comparison between the movement analysis and the Agree analysis.

conclude that it does not induce CED island effects due to island-repair by ellipsis, unlike in the cases of headless XP-movement constructions.

5.2 Lasnik's Generalization

Lasnik (1999) considers the following generalization on headless XPs, which is similar to Takano's Generalization:³

(2) *Lasnik's Generalization*

XP-ellipsis is prohibited if the head of XP has moved out of XP.

Lasnik's Generalization amounts to saying that headless XP-ellipsis is prohibited. Some facts concerning English pseudogapping are attributed to the generalization. Lasnik argues that pseudogapping sentences like (3a) involve VP-ellipsis. According to this analysis, the sentence in (3a) has the underlying representation in (3b).⁴

- (3) a. Mary hasn't dated Bill, but she has Harry.
b. Mary hasn't dated Bill, but she has Harry [~~VP dated t~~].
(Lasnik 1999 : 147)

³Roberts (1998) and Potsdam (1997) propose a similar generalization, which amounts to saying that headless VPs cannot antecede VP-ellipsis. Lasnik (1997) rejects their generalization because of the exceptions to it.

⁴Lasnik (1999) adopts the split VP hypothesis of Koizumi (1995) although I ignore the detailed structures for simplicity.

In (3a), the object *Harry* (A-) moves out of the VP while the V *dated* stays in situ. Thus, VP-ellipsis yields the pseudogapping sentence. Lasnik argues that the reason why V can stay in situ in the pseudogapping sentence is that V's strong feature that drives V-movement is eliminated by VP-ellipsis, avoiding a PF crash. This explains why V *can* stay in situ in the pseudogapping sentence.⁵ However, it does not *prohibit* Vs from moving. Thus, this analysis cannot account for the sentence in (4a), where the direct object of a double object construction is elided. This sentence can be derived by VP-ellipsis if the V *give* and *Sam* move out of the VP and *advice* stays in situ, as shown in (4b). Notice that if the V also stays in situ, a legitimate pseudogapping sentence is obtained, as shown in (4c).

- (4) a. *Meg gave Ken advice, and Ken will give Sam ~~advice~~.
 b. *Meg gave Ken advice, and Ken will give Sam [~~VP t_{give} t_{Sam} advice~~].
 c. ?Meg gave Ken advice, and Ken will Sam [~~VP give t_{Sam} advice~~].

If Lasnik's Generalization holds in English, the unacceptability of (4a) is unproblematic for Lasnik's analysis of pseudogapping, since the headless VP is elided in (4a).

Furthermore, Lasnik (1999) points out that Lasnik's Generalization is also consistent with the fact that sluicing is prohibited when T moves out of TP, as shown in (5b).

⁵Lasnik (2001b) proposes an alternative explanation based on the Move F approach (Chomsky 1995c, Ochi 1999).

- (5) a. Mary saw someone.
 b. Who (*did)?
 c. Who did [~~TP Mary t_i see~~]? (Lasnik 1999 : 158)

Given that sluicing involves TP-ellipsis, this fact falls under Lasnik's Generalization. This is because, as illustrated in (5c), the headless TP must be elided in order to derive the sluicing example with the remnant auxiliary.

5.3 Languages That Do Not Allow Null Objects

5.3.1 Null Objects in English

The fact that null objects are not allowed in English can be partially attributed to Lasnik's Generalization. As shown in (6), English does not allow null objects.

- (6) *John solved the problem, and Mary solved, too.

One of the possible representations for (6) is (7).

- (7) *John solved the problem, and Mary solved *pro*, too

The second conjunct in (7) contains *pro*. This representation is ruled out by the standard assumption that English does not have *pro*. However, this assumption is not sufficient to rule out all apparent null objects in English since the null object sentence in (6) can have another possible representation without *pro*. Given that V

moves to v^6 and an object can stay in situ in English, headless VP-ellipsis, which is also known as V-stranding VP-ellipsis (Goldberg 2005), yields a null object sentence, as shown in (8).

(8) *John solved the problem, and Mary [v_P solved [~~VP t solve the problem~~]], too.

In the second conjunct in (8), the verb moves to v and the object stays in the VP, resulting in a headless VP. If the headless VP is elided, the null object sentence obtains. Thus, in order to capture the fact that null objects are not allowed in English, we need to rule out headless VP-ellipsis in English. Notice that vP -ellipsis is possible in English, as shown in (9).

(9) John solved the problem, and Mary did [~~v_P solve the problem~~], too.

It is unclear why vP can be elided but VP cannot. This difference between vP and VP can be attributed to Lasnik's Generalization since VP is headless while vP is "headed."

One might argue that VP-ellipsis in (8) is not allowed since there is no licensor for VP-ellipsis. The licensor for English VP-ellipsis is assumed to be a finite auxiliary or the infinitival maker *to* (see Zagana 1982, 1988a,b, Lobeck 1993, 1995, Martin 1992, Johnson 2001, Aelbrecht 2009). This is illustrated by the following examples:

(10) a. Alice wasn't drinking tea, but I think that Yaron was [~~drinking tea~~].

⁶I will provide evidence for this assumption shortly.

- b. *Alice doesn't drink tea, but I think that Yaron [~~drinks tea~~].
- c. Alice doesn't drink tea, but I think that Yaron does [~~drink tea~~].
(Aelbrecht 2009:93)

In (10a) and (10c), VP-ellipsis is allowed since *was* and *does* license it. On the other hand, VP-ellipsis is not allowed in (10b) due to the lack of the licenser. Given this, we could attribute the impossibility of headless VP-ellipsis in (8) to the lack of the licenser.

However, the contrast between the following examples cannot be accounted for in the same way:

- (11) a. *John solved the problem, and Mary will [_{vP} solve [~~VP t_{solve} the problem~~]],
too.
- b. John solved the problem, and Mary will [~~VP solve~~ [~~VP t_{solve} the problem~~]],
too.

In both sentences, there is a licenser for VP-ellipsis (i.e. *will*). Therefore, the impossibility of headless VP-ellipsis in (11a) cannot be attributed to the lack of the licenser. In the analysis of (11a), I assume that a verb moves to *v* even if an auxiliary verb is present and that the licenser for VP-ellipsis does not have to be adjacent to ellipsis site. In what follows, I present evidence for these assumptions.

Pesetsky (1989) argues that there is short verb movement in English, on the basis of the fact that an adverb can intervene between a verb and its PP complement, as shown in the following examples:

- (12) a. Bill knocked recently on it.
 b. Sue looked carefully at him.
 c. Harry relies frequently on it. (Pesetsky 1989:17)

According to Pesetsky (1989), sentences like these are derived by movement of V to a head of a functional projection between TP and VP (μ P in his terms). This is illustrated by the following schematic structure:

- (13) V [_{VP} Adv [_{VP} t_V PP]]

However, Pollock (1997) argues that V-Adv-PP orders can be derived by extraposition of the PP complement, as illustrated by the following:

- (14) [[[_{VP} V t_{PP}] Adv] PP]

In this structure, the adverb is right-adjoined to VP and the PP complement is extraposed to the right of the adverb. Given this, Pollock (1997) concludes that sentences like (12) do not present evidence for verb movement in English.

However, Costa (1996) argues that V-Adv-PP orders are not always derived by PP-extraposition. He observes that when an adverb like *carefully* intervene between V and its PP complement, as in (15a), extraction out of the PP is possible, as shown in (15b).

- (15) a. Bill looked carefully at pictures of Miró.
 b. Which painter did Bill look carefully at pictures of?

(Costa 1996:26)

Costa (1996) argues that (15b) should be ruled out if V-Adv-PP orders were always derived by PP-extraposition. This is because extraction out of an extraposed element is generally prohibited (freezing effects). This can be confirmed if we use an adverb like *yesterday*. *Yesterday*, unlike *carefully*, can only be sentence-final or sentence-initial, as shown in the following examples:

- (16) a. **Carefully/Yesterday** John read the newspaper.
b. John read the newspaper **carefully/yesterday**.
c. John **carefully/*yesterday** read the newspaper. (Costa 1996:26)

Given this, the V-Adv-PP order in (17a) below can only be derived by PP-extraposition. In this case, extraction out of the PP is ruled out, as shown in (17b).

- (17) a. Bill looked yesterday at pictures of Miró.
b. *Which painter did Bill look yesterday at pictures of?
c. Bill looked at pictures of Miró yesterday.
d. Which painter did Bill look at pictures of yesterday?
(Costa 1996:26)

Given these considerations, Costa (1996) argues that the acceptability of (15b) shows that not all V-Adv-PP orders are derived by PP-extraposition and he concludes that Pesetsky's (1989) examples in (12) constitute evidence for short verb movement in English.

Crucially for our purpose, the same argumentation can hold for sentences with an auxiliary verb. Consider the following examples:

- (18) a. Bill will look carefully at pictures of Miró.
b. Which painter will Bill look carefully at pictures of?

In (18a), *carefully* intervenes between the non-finite verb *look* and its PP complement. The acceptability of (18b) shows that (18a) can be derived by verb movement out of VP, as illustrated by the following structure:

- (19) will look [_{VP} carefully [_{VP} *t*_{look} at pictures of Miró]]

Given this, I assume that verbs (can) move out of VP in English even if auxiliary verbs are present. Thus, one of the assumptions for the analysis in (11a) is justified.

Let us next consider the other assumption that the licenser for VP-ellipsis does not have to be adjacent to ellipsis site. Aelbrecht (2009) argues for this assumption, on the basis of examples like the following:

- (20) I hadn't been thinking about that. Well, you should have been ~~thinking~~
~~about that~~. (Aelbrecht 2009:96)

Aelbrecht (2009) argues that ellipsis of *thinking about that* in this example is licensed by the finite auxiliary *should* rather than the non-finite *been*. That non-finite auxiliary verbs cannot license VP-ellipsis can be confirmed by the unacceptability of (21a)

- (21) a. *I hadn't been thinking about it, but I recall Morgan having been
~~thinking about it~~.
- b. I hadn't been thinking about it, but I recall Morgan having been think-
 ing about it.
 (Aelbrecht 2009:96–97)

The acceptability of the non-ellipsis counterpart of (21a) (i.e. (21b)) shows that the unacceptability of (21a) is due to (unlicensed) ellipsis. Given that non-finite auxiliary verbs cannot license VP-ellipsis, Aelbrecht (2009) concludes that it is *should* rather than *been* that licenses VP-ellipsis in (20). In (20), the licensor *should* is not adjacent to the ellipsis site. Thus, the assumption that the licensor for VP-ellipsis does not have to be adjacent to ellipsis site is justified.

Given these considerations, we cannot attribute the unacceptability of (11a), repeated here as (22), to the lack of the licensor, the lack of verb movement, or the non-adjacency between the licensor and the ellipsis site.

- (22) *John solved the problem, and Mary will [_{vP} solve [~~VP *t*_{solve} the problem~~]],
 too.

Therefore, I conclude that in order to account for the unacceptability of (22), we need to assume that headless VP-ellipsis is prohibited in English.⁷

⁷Thomas Grano points out that a sentence like (ia) might be problematic for this conclusion if we assume that the underlying structure for (ia) is as (ib).

- (i) a. John was not at home yesterday, but Bill was.

5.3.2 Null Objects in Danish

The same holds true in Danish. VP-ellipsis (or *vP*-ellipsis) is allowed in Danish, as shown in the following sentence:

- (23) Vore øjne opfatter det ikke, men biers gør.
our eyes perceive it not but bees.POSS do
'Our eyes don't perceive it, but bees' (eyes) do.'
(Danish: Mikkelsen 2007:13)

However, Danish, like English, does not allow null objects, as shown in the following example:

- (24) *Vore øjne opfatter det ikke, men biers øjne opfatter.
our eyes perceive it not but bees.POSS eyes perceive
-
- b. ...but Bill was [~~VP *t*_{was} at home yesterday~~]

In (ib), the copula verb moves out of the verbal projection to T, resulting in the headless VP. If this headless VP is elided, (ia) is derived. If this analysis of the copula construction is correct, thus, it indicates that headless VP can be elided in English.

However, (ib) is not the only possible analysis of the copula construction. For example, according to the predication phrase (PredP) analysis (Mikkelsen 2005), (ia) has the following structure:

- (ii) ...but Bill was [~~PredP *t*_{Bill} Pred at home yesterday~~]

In (ii), what is elided is not a headless VP but PredP whose head has no phonological exponent in English (according to Eide and Åfarli 1999, the word *som* in Norwegian is an overt exponent of Pred). If this analysis is correct, sentences like (ia) are compatible with our conclusion that headless XP cannot be elided in English.

(intended) ‘Our eyes don’t perceive it, but bees’ eyes do perceive it.’
(Danish: Mikkelsen 2007:13)

Given that Danish is a V-2 language (i.e. a verb moves up to C), we need to assume that headless XP-ellipsis is prohibited in Danish in order to account for (24). Thus, I conclude from (24) that headless XP-ellipsis is prohibited in Danish like in English.⁸

5.4 Explanation of Lasnik’s Generalization: Movement Analysis of Ellipsis

Note that Takano’s Generalization and Lasnik’s Generalization look similar. Thus, a natural question that arises is whether they are rooted in the same principle (i.e. whether they can be uniformly explained). In this section, I answer this question in the affirmative, at least in the domain of VP-ellipsis. In particular, I argue, in the spirit of Johnson’s (2001) movement approach to VP-ellipsis and an idea in Aelbrecht and Haegeman 2012, that VP-ellipsis involves VP-movement to either Spec, TopP in the CP periphery or Spec, TopP in the *v*P periphery.⁹ If the idea that ellipsis reduces to movement somehow is correct, Lasnik’s Generalization can be explained by the locality constraint in the same manner as Takano’s Generalization.

⁸Headless VP-ellipsis seems to be prohibited also in languages like Dutch, French, and German. However, these languages, unlike English and Danish, do not allow headed VP-ellipsis either.

⁹Donati (2003) also explores the hypothesis that ellipsis can be reduced to movement. See also Fitzpatrick (2006), Hornstein (2009), Kayne (2005), Rizzi (2005), and Szczegielniak (2005) for relevant discussion.

5.4.1 Johnson 2001

Johnson (2001) argues, in the spirit of Lobeck 1995, that sentences involving VP-ellipsis like the second conjunct in (25a) are derived by topicalizing VP and eliding the moved VP, as illustrated in (25b). Thus, according to this analysis, in order for a VP to elide, it must first topicalize.

- (25) a. John ate a cake, and Bill did, too.
b. [~~VP eat a cake~~]₁ Bill did t_1 , too.

This analysis is conceptually appealing since under this analysis, we do not need to assume an additional operation specific to ellipsis: the same operation that is used for Copy Deletion can be utilized for ellipsis.¹⁰ This analysis also has an empirical motivation because it can straightforwardly capture similarities between VP-ellipsis and VP-topicalization in the licensing conditions. VP-ellipsis is licensed by finite auxiliary verbs or infinitival *to*, as illustrated in the following sentences, which are drawn from Johnson 2001:

- (26) a. Josè Ybarra-Jaegger likes rutabagas, and Holly does Δ too.
b. Josè Ybarra-Jaegger ate rutabagas, and Holly has Δ too.
c. Josè Ybarra-Jaegger is eating rutabagas, and Holly is Δ too.
d. Mag Wildwood wants to read Fred's story, and I also want to Δ .

¹⁰I will discuss this point in more detail in 5.4.5.

In the absence of such auxiliary verbs, VP-ellipsis is prohibited, as the following examples indicate (drawn from Johnson 2001):

- (27) a. I can't believe Holly Golightly won't eat rutabagas. I can't believe Fred
*(won't), either.
- b. Sally Tomato started running down the street, but only after Josè
started *(to).

Johnson (2001) shows that the same licensing condition is relevant to VP-topicalization, as illustrated by the following examples (drawn from Johnson 2001):

- (28) Madame Spanella claimed that ...
- a. *eat rutabagas*, Holly wouldn't *t*.
- b. *eaten rutabagas*, Holly hasn't *t*.
- c. *eating rutabagas*, Holly should be *t*.
- d. *eating rutabagas*, Holly's wants to *t*.
- (29) Madame Spanella claimed that ...
- a. **would eat rutabagas*, Holly *t*.
- b. **hasn't eaten rutabagas*, Holly *t*.
- c. ?**eating rutabagas*, Holly started *t*.

This distributional similarity between VP-ellipsis and VP-topicalization can be straightforwardly captured by Johnson's movement approach to VP-ellipsis since

the former is derived through the latter under this approach. Whatever rules out (29) also rules out (27).

Authier (2012) provides further empirical arguments for the movement approach to ellipsis. He observes that modals like *must* cannot receive epistemic readings when VPs are either elided or topicalized, as shown in the following:

- (30) a. John must wash his car every day, and Peter must too. (*epistemic/ $\sqrt{\text{deontic}}$)
 b. Peter said that Max must work for the KGB and work for the KGB,
 Max must. (??epistemic/ $\sqrt{\text{deontic}}$) (Authier 2012:2–3)

This similarity between VP-ellipsis and VP-topicalization in terms of the semantic restriction can be accounted for if VP-ellipsis is derived through VP-topicalization.

Authier (2012) further argues that under the movement approach to ellipsis, the fact that VP-ellipsis is impossible in French, as shown in (31b), can be accounted for because VP-topicalization is also disallowed in French, as shown in (31a).

- (31) a. *Anne voulait manger des moules et [mangé des moules] elle
 Anne want.PAST to.eat some mussels and eaten some mussels she
 a.
 has
 ‘Anne wanted to eat mussels, and eat mussels, she did.’
 b. *Anne voulait manger des moules et elle a.
 Anne want.PAST to.eat some mussels and she has
 ‘Anne wanted to eat mussels, and she has. (Authier 2012:8)

To sum up, Johnson’s analysis of VP-ellipsis can account for a number of similarities between VP-ellipsis and VP-topicalization. Despite its advantages, however,

we cannot adopt Johnson's analysis in its original form because there are a number of counterexamples to it, as Aelbrecht and Haegeman (2012) point out, which are reviewed in the next section.

5.4.2 Aelbrecht and Haegeman 2012

Aelbrecht and Haegeman (2012) argue against Johnson's analysis, showing that the distribution of VP-topicalization is much more restrictive than that of VP-ellipsis (that is, there are a number of cases where VP-ellipsis is allowed even if VP-topicalization is not). Some counterexamples are listed below:

- (32) a. *I knew that one student presented this article in my class but I can't recall now [which of the students [present this article] did]
b. I knew that some students presented this article in my class but I couldn't recall [which of the students didn't]

(Wh-complements: Aelbrecht and Haegeman 2012:599)

- (33) a. *Mary wanted to move to London, and after [move to London] she did, her life changed entirely.
b. Mary wanted to move to London, and after she did, her life changed entirely. (Adverbial clauses: Aelbrecht and Haegeman 2012:600–601)

- (34) a. *John intends to make a table, and we're afraid that [make one] he will.
b. John intends to make a table, and we're afraid that he will.

(Factive complements: Aelbrecht and Haegeman 2012:602)

As illustrated in the above examples, VP-ellipsis is allowed in environments where VP-topicalization is not, such as Wh-complements, adverbial clauses, and factive complements (see Aelbrecht and Haegeman 2012 for other counterexamples to Johnson's analysis). This discrepancy between VP-ellipsis and VP-topicalization is unexpected under Johnson's analysis, in which VP-ellipsis is derived through VP-topicalization: again whatever rules out VP-topicalization should also rule out VP-ellipsis in his analysis.

5.4.3 TopP in a *v*P Periphery

5.4.3.1 Proposal

Aelbrecht and Haegeman (2012) suggest that we can overcome the problem with Johnson's approach while maintaining its core idea if we take a low *v*P periphery into consideration.¹¹ Assuming that there is a TopP in the *v*P periphery, along the line of Jayaseelan (2001) and Belletti (2001, 2004, 2009), they argue that VP-ellipsis involves VP-movement to Spec, TopP in the *v*P periphery rather than in the CP periphery. Then the counterexamples to Johnson's original analysis lose their force under this alternative analysis if we assume that what causes the ungrammaticality in the counterexamples above is not VP-movement itself but VP-movement to the CP periphery.

Given this discussion, I propose the following hypothesis:

¹¹Actually, they also suggest two other alternatives in addition to the *v*P periphery analysis. See Aelbrecht and Haegeman 2012 for details.

- (35) a. VP-topicalization is derived through verbal phrase-movement to Spec, TopP in the CP periphery (the higher TopP).
- b. VP-ellipsis is derived through verbal phrase-movement either to the higher TopP or to Spec, TopP in the *v*P periphery (the lower TopP).

This hypothesis accounts for the fact that the distribution of VP-topicalization is more limited than that of VP-ellipsis since VP-ellipsis can be derived in two ways while VP-topicalization can only be derived in one.¹² For example, the second

¹²This analysis is also compatible with the following examples that an *LI* reviewer provides as potential counterexamples to Johnson's analysis:

- (i) a. Did someone call 911? Yes, John did [~~call 911~~] and [(then) waited patiently].
- b. John's having been arrested surprised me but [Mary's having been ~~arrested~~] was completely expected.

In (ia), the elided VP is contained in the VP coordination structure. If VP-ellipsis is derived through VP-movement to the higher TopP, as Johnson argues, it is unclear why this sentence is not ruled out by the Coordinate Structure Constraint. On the other hand, under the *v*P periphery analysis, this sentence can be derived without extracting VP out of the coordinate structure. Suppose that the coordinated categories are lower TopPs in (ia). Then, as illustrated in the following structure, VP-movement to the lower TopP does not violate the Coordinate Structure Constraint:

- (ii) [_{&P} [_{TopP} [_{VP} call 911] [_{Top} [_{vP} v *t*_{VP}]]] and [_{TopP} Top [_{vP} waited patiently]]]

Likewise, the sentence in (ib) would violate the Subject Island Constraint under Johnson's analysis but not under the *v*P periphery analysis.

conjunct clause in (36a) can be derived in two ways, as illustrated in (36b) and (36c).

- (36) a. John solved the problem, and Mary did too.
 b. [_{TopP} ~~[solve the problem]~~ [_{TP} Mary did *t*]]
 c. [_{TP} Mary did [_{TopP} ~~[solve the problem]~~ [*t*]]]

In (36b), the elided verbal phrase is moved to the higher TopP while in (36c), it is moved to the lower TopP. On the other hand, the embedded clause of the second conjunct in (37a) can only be derived in one way as (37b).

- (37) a. John solved the problem, and I think that [solve the problem] Mary will too.
 b. [_{TopP} [solve the problem] [_{TP} Mary will *t*]]

A question that immediately arises is, why are VP-ellipsis and VP-topicalization different in the possible landing site? In what follows, I show that this difference between VP-ellipsis and VP-topicalization can be deduced from anti-locality and Lasnik's (1999) assumptions about V-movement, which are (i) that V has a strong feature that must be eliminated before the derivation reaches PF and (ii) that the strong feature of V can be eliminated either by moving to *v* or being elided by deletion.

5.4.3.2 VPT as *v*P-Movement to the Higher TopP

First, VP-topicalization (VPT) cannot be derived through VP-movement to the lower TopP. This is because in the derivation illustrated in (38), V does not move to *v*.

$$(38) \quad *_{[\text{TP} \text{ Mary will } [\text{TopP} [\text{VP} \text{ solve(F) the problem}] [\text{Top}' \text{ Top } [v_P \text{ v } t_{\text{VP}}]]]] }$$

This representation is an illicit PF representation since the strong feature of V (F) is not eliminated.

On the other hand, in the derivation in which VPT is derived through *v*P-movement to the lower TopP, the strong feature of V can be eliminated since V can move to *v*. This is illustrated in the following:

$$(39) \quad *_{[\text{TP} \text{ Mary will } [\text{TopP} [v_P \text{ solve(F)}-v [\text{VP} t_{\text{solve}} \text{ the problem}]] [\text{Top}' \text{ Top } t_{v_P}]]] }$$

However, notice that *v*P-movement to the lower TopP is a typical movement that violates anti-locality (complement-to-Spec movement). Therefore, there is no licit derivation in which VPT is derived through *v*P/VP movement to the lower TopP.

Note that this holds only for topicalization of headed VPs. There is a licit derivation in which VPT is derived through VP movement to the lower TopP if it is a headless VP that is topicalized. V's strong feature can be eliminated even if VP moves to the lower TopP when the VP is headless, as illustrated by the following structure:

$$(40) \quad [_{\text{TP}} \text{Subj} [_{\text{TopP}} [_{\text{VP}} t_V \text{Obj}] [_{vP} V(\mathbf{E})-v t_{\text{VP}}]]]$$

In this structure, V moves to v , eliminating its strong feature. Thus, even if VP moves, this representation is a licit PF representation. Then, it is expected that headless VPs, unlike headed VPs, can be topicalized to the lower TopP . We already know that this prediction is borne out since we saw in 4.4.2 that remnant VP-fronting in Polish is derived through headless VP-movement to the lower TopP .

Let us next consider topicalization that is derived through vP/VP -movement to the higher TopP . The derivation in which vP -movement to the higher TopP is unproblematic with respect to both V 's strong feature and anti-locality, as illustrated in the following:

$$(41) \quad [_{\text{TopP}} [_{vP} \text{solve}(\mathbf{E})-v [_{\text{VP}} t_{\text{solve}} \text{the problem}]] [_{\text{Top}'} \text{Top} [_{\text{TP}} \text{Mary will } t_{vP}]]]$$

In this derivation, V 's strong feature is eliminated since V moves to v . Furthermore, movement of vP does not violate anti-locality. Thus, this derivation is ruled in.

The derivation in which VP moves to the higher TopP is ruled out for the same reason as the case of VP -movement to the lower TopP (i.e. V 's strong feature remains uneliminated). Therefore, the only possible derivation for VPT is the one in which vP moves to the higher TopP . This is why VPT can be derived only through verbal phrase-movement to the higher TopP .

Note that VPT is always topicalization of vP rather than VP since if VP is topicalized, V 's strong feature remains uneliminated. There is evidence for this. Huang (1993) observes that a fronted verbal projection in a VPT sentence should

contain a trace of a subject. The following sentences illustrate this:

- (42) a. Which pictures of himself₁ did John₁ think Mary saw t?
 b. *Criticize himself₁, John₁ thinks Mary would not t. (Huang 1993 : 107)

The sentence in (42a) is acceptable because there is a copy of the Wh-phrase containing the anaphor *himself* in Spec, CP in the embedded clause, where the anaphor can be locally bound by the matrix subject *John*. Given this, it is unclear why (42b) is unacceptable. If there is a copy of the fronted verbal phrase containing the anaphor *himself* in the embedded Spec, CP, the intermediate copy should be able to be used for the binding. Huang argues that the unacceptability of (42b) can be accounted for if we assume that the fronted verbal phrase contains a trace (copy) of the embedded subject *Mary*. Even if there is an intermediate copy of the fronted verbal phrase in the embedded Spec, CP, *John* cannot locally bind *himself* due to the presence of the subject copy in the verbal phrase. Given the *vP* structure, in which subjects are base-generated in Spec, *vP*, this suggests that the fronted verbal projection is *vP* rather than VP because if VP were fronted, the subject copy would not be contained in the fronted verbal phrase, as illustrated in the following:

- (43) a. * $[_{vP} t_{\text{Mary}} \textit{criticize himself}_1] [_{\text{TP}} \textit{John}_1 \textit{thinks} [_{\text{CP}} [_{vP} t_{\text{Mary}} \textit{criticize himself}_1] \textit{Mary would not } [_{vP} t_{\text{Mary}} \textit{criticize himself}_1]]]]$
 b. $[_{\text{VP}} \textit{criticize himself}_1] [_{\text{TP}} \textit{John}_1 \textit{thinks} [_{\text{CP}} [_{\text{VP}} \textit{criticize himself}_1] \textit{Mary would not } [_{\text{VP}} \textit{criticize himself}_1]]]]$

In the representation in (43a), there is no copy of *himself* that is locally bound by *John* while in (43b), the copy in the intermediate position can be locally bound by *John*. Therefore, if Huang's argument is correct, it must be the case that VPT is always derived through *v*P-movement.

5.4.3.3 VPE as *v*P/VP-Movement to the Higher/Lower TopP

In contrast with VPT, VP-ellipsis (VPE) can be derived through verbal phrase-movement to either the lower TopP or the higher TopP. This is because V's strong feature can be eliminated along with the deletion of VP even if V does not move to *v*.

VPE cannot be derived through *v*P-movement to the lower TopP as in the case of VPT. This is due to anti-locality, as illustrated in the following:

$$(44) \quad *[_{TP} \text{ Mary will } [_{TopP} [_{vP} \text{ solve(F) } \text{the problem}]]]]$$

In contrast with VPT, VPE can be derived through VP-movement to the lower TopP even if V does not move to *v* to eliminate its strong feature F. This is because the strong feature can be eliminated along with the deletion of VP, as can be seen in the following:

$$(45) \quad [_{TP} \text{ Mary will } [_{TopP} [_{VP} \text{ solve(F) } \text{the problem}]]]]$$

Therefore, VPE, unlike VPT, can be derived through verbal phrase-movement to the lower TopP. As for movement to the higher TopP, both VP and *v*P can be

moved. Both derivations are unproblematic in terms of anti-locality and V's strong feature, as illustrated in the following:

- (46) a. $[_{\text{TopP}} [_{\text{VP}} \text{solve}(\text{F}) \text{the problem}] [_{\text{Top}'} \text{Top} [_{\text{TP}} \text{Mary will } [_{v\text{P}} v t_{\text{VP}}]]]]]$
 b. $[_{\text{TopP}} [_{v\text{P}} \text{solve}(\text{F}) v \text{the problem}] [_{\text{Top}'} \text{Top} [_{\text{TP}} \text{Mary will } t_{v\text{P}}]]]$

Thus, VPE can be derived through *vP*- or *VP*-movement to either the lower *TopP* or the higher *TopP*.

In this way, the hypothesis in (35) can be deduced from anti-locality and Lasnik's assumptions about V-movement.

5.4.4 VPE and Pseudogapping

Further evidence for the proposed analysis of ellipsis comes from Merchant's (2008) observation about a difference between VPE and pseudogapping. Merchant (2008) argues that the former is (can be) derived by ellipsis of *VP* while the latter involves ellipsis of *vP*, based on the observation that VPE allows mismatches in voice between the elided *VP* and its antecedent while pseudogapping does not, as illustrated in the following sentences:

- (47) *VPE* (Merchant 2008 : 169)
- a. This problem was to have been looked into, but obviously nobody did
 ⟨look into this problem⟩.
- b. Actually, I have implemented it [= a computer system] with a manager,

but it doesn't have to be. ⟨implemented with a manager⟩

(48) *Pseudogapping* (Merchant 2008 : 170)

- a. *Roses were brought by some, and others did lilies ⟨bring⟩.
- b. *Some brought roses, and lilies were by others. ⟨brought⟩

Given that (i) ellipsis is subject to a syntactic parallelism condition requiring that an elided XP has a syntactically identical antecedent XP', modulo contrastive elements and that (ii) the head that determines voice alternations is *v*, Merchant argues that the contrast between (47) and (48) can be accounted for by the syntactic parallelism condition if we assume that VPE can be derived through deletion of VP while pseudogapping must be derived through deletion of *v*P. This is because VP in an active clause is syntactically identical to VP in a passive clause while *v*Ps in a active clause and in a passive clause are different.

The difference between VPE and pseudogapping in the size of an elided constituent can be explained by the locality condition (Relativized Minimality effects) if we assume that ellipsis is derived through movement either to the lower TopP or to the higher TopP.

Let us first consider VPE. VPE can be derived through deletion of VP. Actually, I already showed how this follows from anti-locality and Lasnik's (1999a) assumptions about V-movement in the last section. A VPE sentence like the second conjunct in (49a) cannot be derived through *v*P-movement to the lower TopP, which is illustrated in the (49b), due to anti-locality: *v*P-movement to the lower TopP is

too local.

- (49) a. John solved the problem, and Mary did too.
 b. * $[_{TP} \text{ Mary } [_{T} [_{TopP} \text{ ~~} t_{\text{Mary}} \text{ solve(F) } v \text{ the problem} \text{ }]}] \text{ } [_{Top} t_{vP}]]]~~$

However, in contrast with VPT, a VPE sentence can be derived through VP-movement to the lower TopP. This is because the strong feature of V can be eliminated along with deletion of VP even if V does not move to *v*, as illustrated in the following:

- (50) $[_{TP} \text{ Mary } [_{T} [_{TopP} \text{ ~~} \text{ solve(F) the problem} \text{ }]}] \text{ } [_{Top} [_{vP} t_{\text{Mary}} [v t_{VP}]]]]]]~~$

VP-movement to the lower TopP is unproblematic in terms of anti-locality since VP is not a complement of the lower TopP. This representation is unproblematic also in terms of V's strong feature because it is eliminated along with deletion of VP. Thus, VPE can be derived through deletion of VP.

Let us next turn to pseudogapping. Why must a pseudogapping sentence be derived through deletion of *vP* rather than deletion of VP? Suppose, following Jayaseelan 2001, that (i) there is FocP between TopP and *vP* in the *vP* periphery and that (ii) a remnant of pseudogapping is (at least can be) in Spec, FocP in the *vP* periphery. Then a pseudogapping sentence with a direct object as a remnant is derived as the following under the present analysis of VPE:

- (51) a. $[_{FocP} \text{ Obj } [\text{ Foc } [_{vP} \text{ Subj } [v [_{VP} \text{ V } t]]]]]]]$
- 

- b. $[\text{TopP } \underline{[\text{VP } \text{V } \text{t}_{\text{Obj}}]} \text{ [Top [FocP Obj [Foc [}_{v\text{P}} \text{ Subj [} v \text{ t }]]]]]]$
- c. $*[\text{TP } \uparrow \text{ [T [TopP [}_{v\text{P}} \text{ VP } \text{t}_{\text{Obj}}] \text{ [Top [FocP } \mathbf{Obj} \text{ [Foc [}_{v\text{P}} \text{ Subj [} v \text{ t}_{\text{VP}}]]]]]]]]$

First, Obj moves to Spec, FocP. Given that this movement is triggered by a feature that the focalized element bears (say [Foc]), Subj in Spec, $v\text{P}$ does not block this movement since it does not have the relevant feature. Then VP moves to the lower TopP. Notice that V can stay in situ because the strong feature that induces V-movement to v will be eliminated by deletion afterwards. However, the next movement of Subj to Spec, TP is illicit because Obj in Spec, FocP intervenes for this movement (Relativized Minimality effects), leading the derivation to crash because the EPP feature of T, the ϕ feature of T, and/or the Case feature of Subj are never checked. The situation does not change even if VPE is derived through VP-movement to the higher TopP rather than the lower TopP, as illustrated in the following:

- (52) a. $[\text{FocP Obj [Foc [}_{v\text{P}} \text{ Subj [} v \text{ [VP V t}_{\text{Obj}}]]]]]]$
- b. $*[\text{TP Subj [T [FocP } \mathbf{Obj} \text{ [Foc [}_{v\text{P}} \text{ t}_{\text{Subj}} [} v \text{ [VP V t}_{\text{Obj}}]]]]]]$
- c. $[\text{TopP } \underline{[\text{VP } \text{V } \text{t}_{\text{Obj}}]} \text{ [TP Subj [T [FocP } \mathbf{Obj} \text{ [Foc [}_{v\text{P}} \text{ t}_{\text{Subj}} [} v \text{ t}_{\text{VP}}]]]]]]$

Thus, a remnant in Spec, FocP always blocks movement of subjects to Spec, TP.

In a $v\text{P}$ -ellipsis derivation, on the other hand, the intervention effect by a remnant in Spec, FocP can be lifted. Suppose that $v\text{P}$ rather than VP moves to the lower TopP after Obj moves to Spec, FocP. Then, Subj, which is contained in the moved $v\text{P}$, can move to Spec, TP without being blocked by Obj in Spec, FocP since

Subj escaped from the c-command domain of Obj due to the prior movement of *vP* to the lower TopP.¹³ This is illustrated in the following:

- (53) a. $[\text{TopP } [\text{vP } \text{Subj } [v \text{ } [\text{VP } V \text{ } t_{\text{Obj}}]]] [\text{Top } [\text{FocP } \text{Obj } [\text{Foc } t_{\text{vP}}]]]]$
 ↑
 b. $[\text{TP } [\text{T } [\text{TopP } [\text{vP } \text{Subj } [v \text{ } [\text{VP } V \text{ } t_{\text{Obj}}]]] [\text{Top } [\text{FocP } \text{Obj } [\text{Foc } t_{\text{vP}}]]]]]]$

Notice that unlike VPE, *vP* can move to the lower TopP without violating anti-locality since there is FocP between the lower TopP and *vP* (i.e. *vP* is not a complement of Top in this case). Therefore, there is a *vP*-ellipsis derivation for pseudogapping: “smuggling” movement of *vP* to the lower TopP makes it possible for subject to move to Spec, TP without being blocked by Obj in Spec, FocP. Now the second half of Merchant’s generalization follows: deletion of VP cannot derive pseudogapping since a remnant in Spec, FocP intervenes for subject movement to Spec, TP while in a *vP*-ellipsis derivation, in which *vP* moves to the lower TopP, the intervention effect induced by a remnant in Spec, FocP is lifted.

Note that if we adopt Johnson’s analysis of VPE, in which VPE involves VP-movement to the CP periphery, or if we do not adopt movement approaches to VPE at all, it is impossible to attribute the difference between VPE and pseudogapping in the size of an elided constituent to the general locality constraint. Given this, I take this as an empirical argument in favor of the present analysis over the other analyses.

¹³This is reminiscent of the smuggling derivation that Collins (2005a,b) proposes for the passive and raising in English.

5.4.5 Copy Theory of Movement

In this section, I discuss a theoretical consequence of the movement approach to ellipsis and argue that it is a natural consequence of copy theory of movement, pointing out that the movement approach makes it possible to fill in a gap in a typology of movement that is expected under copy theory of movement.

Under copy theory of movement, movement is a composite operation consisting of Copy, Merge, and Copy Deletion (and Agree). “Ordinary” movement is derived in the following way:

- (54) a. $[\beta \dots \alpha \dots]$ (Copy of α)
b. $[\alpha [\beta \dots \alpha \dots]]$ (Merge of α with β)
c. $[\alpha [\beta \dots \cancel{\alpha} \dots]]$ (Copy Deletion of the lower α)

Copy applies to α . Merge applies to the copied α and β . Finally, Copy Deletion applies to the lower (original) copy of α . This type of movement, which I call forward movement, is exemplified by subject raising, (overt) Wh-movement and so on. Under this conception of movement, movement can be classified into four types in terms of which copy in a chain Copy Deletion applies to. The three of them are illustrated in the following:

- (55) a. $[\alpha [\beta \dots \cancel{\alpha} \dots]]$ (Forward Movement)
b. $[\cancel{\alpha} [\beta \dots \alpha \dots]]$ (Backward Movement)
c. $[\alpha [\beta \dots \alpha \dots]]$ (Resumptive Movement)

As we saw, forward movement results if Copy Deletion applies to the lower copy. On the other hand, if it applies to the higher copy and the lower one is pronounced, it results in what I call backward movement. This type of movement is exemplified by backward raising constructions that are attested in Adyghe by Potsdam and Polinsky (2012). Furthermore, backward movement can be considered a widespread phenomenon in natural language if we adopt the movement theory of control (Hornstein 1999, 2003, among many others; see also Polinsky and Potsdam 2006). If Copy Deletion does not apply at all and both copies are pronounced, resumptive movement results. This type of movement is exemplified by predicate cleft constructions, as we saw in 4.4.1.

Note that there is another logical possibility: what if Copy Deletion applies to all the copies in a chain? It results in ellipsis, as shown in the following:

(56) $[\epsilon [\beta \dots \epsilon \dots]]$ (Ellipsis)

Thus, ellipsis can be derived through movement without positing any other theoretical devices than those that are required under copy theory of movement. Ellipsis is a kind of movement that is different from other types of movement only in how Copy Deletion applies to a chain.¹⁴

Or course, Copy Deletion cannot always apply to all the copies in a chain. For example, the following is impossible:

¹⁴Chomsky (1995c : 252–253) suggests a similar idea that attempts to unify ellipsis and deletion of copies (or traces in Chomsky’s (1995c) terms). See Nunes 2004:19–22 for relevant discussion.

(57) *Mary hit [John], and ~~[John]~~ was hit ~~[John]~~ by Sue, too.

In this sentence, passivization applies to the second sentence, moving the object DP *John*. Even though there is an antecedent for *John* in the first clause, we cannot apply Copy Deletion to all the copies of *John*. Note that this sentence is not problematic in terms of *recoverability* since we can recover from the antecedent *John* information that the elided element is supposed to convey. This is concerned with one of major questions about ellipsis: what licenses ellipsis? Under the movement approach to ellipsis, this question can be restated as: what licenses the delete-all-copies-in-a-chain strategy? I will leave this important issue for future research.

To sum up, one of the advantages of the movement approach to ellipsis is that it does not require us to assume an additional operation specific to ellipsis: the same operation that is used for Copy Deletion can be used for ellipsis. Under this conception of ellipsis, ellipsis can be reduced to a kind of movement that results when Copy Deletion applies to all the copies in a chain.

5.5 Interim Summary

Headless XP-ellipsis is impossible at least in Danish and English. This fact can be explained by the locality constraint in the same way as the ban on headless XP-movement if ellipsis is derived through movement. Building on Johnson's (2001) and Aelbrecht and Haegeman's (2012) ideas, I proposed a movement analysis of ellipsis according to which VP-ellipsis is derived through verbal phrase-movement either to the lower TopP or to the higher TopP. I provided both theoretical and

empirical arguments for the movement analysis of ellipsis. Theoretically, I argued that the movement approach to ellipsis is a natural consequence of copy theory of movement: ellipsis is the fourth type of movement that is expected to exist under copy theory of movement. Empirically, I showed that the present version of the movement analysis of ellipsis makes it possible to reduce the difference between VP-ellipsis and pseudogapping in the size of elidable domain to the general locality constraint.

5.6 Exceptions to Lasnik's Generalization

As in the case of Takano's Generalization, there are exceptions to Lasnik's Generalization, as Lasnik (1999) points out: there are languages in which headless XPs can be elided. In this section, I examine null object constructions in several languages and argue that at least some instances of null objects are derived by headless *vP*/*VP*-ellipsis (V-stranding *VP*-ellipsis in Goldberg's (2005) terms) in European Portuguese, Hebrew, Japanese, Russian, and Tagalog. On the other hand, although null object constructions in some Bantu languages (Goldberg 2005, Ngonyani and Githinji 2006), Persian (Sailor 2012), and Serbo-Croatian (Lasnik 1997) have been claimed to involve headless *XP*-ellipsis in the literature, I argue that there is no conclusive evidence for the headless *XP*-ellipsis analysis of null objects in these languages. Furthermore, I examine yes/no reply constructions in Irish and Finnish and conclude that they are derived by headless *XP*-ellipsis.

Richards (2003) argues that this sentence unambiguously has a headless *vP*/*VP*-ellipsis structure since Tagalog does not allow other strategies to derive null objects. His argument is based on the comparison of Tagalog with Korean, in which *pro* and/or argument ellipsis are assumed to be possible. Kim (1999) observes that a Korean null object sentence can have an interpretation that a *VP*-ellipsis sentence cannot. Consider the following English *VP*-ellipsis sentence:

- (63) Mike hit his child, and then Jeanne did Δ .
 = Jeanne hit Jeanne's child (Sloppy Identity)
 = Jeanne hit Mike's child (Strict Identity)
 = *Jeanne hit Mike
 (English: Richards 2003:232)

The second conjunct sentence can mean that Jeanne hit her child (the sloppy identity reading) and that Jeanne hit Mike's child (the strict identity reading). However, it cannot mean that Jeanne hit Mike. Kim (1999) observes that in contrast with the English *VP*-ellipsis sentence, a Korean null object sentence can have this meaning, as shown in the following examples:

- (64) a. Mike-ka [caki-uy ai]-lul ttayli-ess-ta.
 Mike-NOM self-GEN child-ACC hit-PAST-DECL
 'Mike hit his/her child.'
- b. Kuleca Jeanne-to ttohan Δ ttayli-ess-ta.
 then Jeanne-also too hit-PAST-DECL
 (Lit.) 'And then, Jeanne hit.'
 = Jeanne hit Jeanne's child (Sloppy Identity)
 = Jeanne hit Mike's child (Strict Identity)
 = Jeanne hit Mike
 (Korean: Kim 1999b:265)

The elided sentence can have the sloppy identity reading and the strict identity reading, as the English VP-ellipsis sentence. However, this sentence, unlike the English one, can also mean that Jeanne hit Mike. If a Korean null object sentence could only be derived by VP-ellipsis, this fact is a mystery. On the other hand, if either *pro* or argument ellipsis are available in Korean, (64b) can have a structure like the following:

- (65) a. Jeanne-also too [~~Mike~~] hit
 b. Jeanne-also too *pro* hit

Under the argument ellipsis analysis (65a), the meaning in question obtains if argument ellipsis applies to the object *Mike*. Under the *pro* analysis (65b), the null pronoun can refer to Mike, yielding the relevant reading. Given this consideration, we can conclude, with Kim (1999), that *pro* and/or argument ellipsis are available to derive null objects in Korean.

In contrast with Korean, Tagalog does not allow the relevant reading in a null object sentence as Richards (2003) observes. Consider the following example:

- (66) Sinuntok ni Mike ang anak niya at sinuntok din ni Jeanne Δ.
 TV.hit Unm Mike T child his and TV.hit also Unm Jeanne
 ‘Mike hit his child and then Jeanne also hit.’
 = Jeanne hit Jeanne’s child (Sloppy Reading)
 = Jeanne hit Mike’s child (Strict Reading)
 = *Jeanne hit Mike
 (Tagalog: Richards 2003:232–233)

The second conjunct can have the sloppy identity reading and the strict identity reading. However, it cannot mean that Jeanne hit Mike. Other things being equal, this reading should be available if Tagalog has *pro* or argument ellipsis to derive null objects.

Likewise, as Richards (2003) argues, the following difference between Korean and Tagalog in the possible interpretations of null objects leads to the same conclusion:

- (67) Mike-ka Δ ttayli-ca, John-to Δ ttayli-ess-ta.
 Mike-NOM hit-when John-also hit-PAST-DECL
 (intended) ‘When Mike hit John, John also hit Mike.’
 (Korean: Kim 1999:265)

- (68) *Noong sinuntok ni Mike Δ , sinuntok din ni John Δ .
 when.PAST TV.hit Unm Mike TV.hit also Unm John
 (intended) ‘When Mike hit John, John also hit Mike.’
 (Tagalog: Richards 2003:233)

In the Korean sentence, the null object in the subordinate clause can refer to John and that in the matrix clause can refer to Mike. In contrast, the Tagalog counterpart cannot have the same interpretation. This interpretation can obtain if either *pro* or argument ellipsis is available, as illustrated by the following:

- (69) a. when Mike hit ~~John~~, John also hit ~~Mike~~
 b. when Mike hit *pro*, John also hit *pro*

Thus, if both strategies are unavailable in Tagalog, we can account for the lack of the relevant interpretation in Tagalog.

Given these considerations, Richards (2003) concludes that neither *pro* nor argument ellipsis are available for null objects in Tagalog. If this is correct, (62) can be derived only by headless *vP/VP*-ellipsis. Thus, we can conclude that Tagalog allows headless *XP*-ellipsis.

5.6.1.3 Russian

Russian also has null object constructions, as exemplified by the following:

- (70) a. Ty poznakomil Mašu s Petej?
 you.NOM introduce.SG.M Maša.ACC with Peter.INSTR
 ‘Did you introduce Masha to Peter?’
- b. Konečno poznakomil Δ!
 of.course introduce.SG.M
 (intended) ‘Of course I introduced Masha to Peter!’
 (Russian: Griбанова 2013:102)

Although Russian allows other strategies than headless *vP/VP*-ellipsis to derive null objects, Griбанова (2013) provides an intriguing argument that headless *vP/VP*-ellipsis is available in Russian.

Given that ellipsis as surface anaphora requires an overt linguistic antecedent while *pro* as deep anaphora can be licensed by context alone (Hankamer and Sag 1976), Griбанова (2013) observes that an object *pro* in Russian cannot appear within a syntactic island. The following example shows that *pro* can appear in the object position when it is not contained in an island:

[Something falls; someone wants to get it.]

- (71) Ne vstavaj, ja podnimu Δ
NEG rise.2.SG I.NOM under.hold.1.SG.FUT
'Don't get up, I'll pick (it) up.'
(Russian: Gribanova 2013:107)

In this sentence, there is no overt linguistic antecedent. Thus, the null object is unambiguously represented by *pro* referring to something that fell.

In contrast, an object *pro* cannot appear when it is contained in an island, as shown in the following:

[Something falls; no one wants to get it.]

- (72) #[Tot fakt, čto nikto ne podnjaj Δ], menja očen'
the fact that no.one.NOM NEG under.hold.SG.M me.ACC very
ogorččet.
upsets.3.SG
(intended) 'The fact that no one picked (it) up upsets me.'
(Russian: Gribanova 2013:108)

In this sentence, there is no overt linguistic antecedent for the null object and the null object is contained in a complex NP island. Thus, the unacceptability of this sentence indicates that an object *pro* cannot appear within an island.

Given this, Gribanova (2013) argues that the acceptability of (73b) indicates that a null object sentence can be derived by *vP/VP*-ellipsis in Russian.

- (73) a. Kažetsja, čto nikto ne podnjaj tu
seem.3.SG.REFL that no.one.NOM NEG under.hold.SG.M that.ACC
vazu.
vase.ACC
'It seems that no one picked up that vase.'

- b. [Tot fakt, čto nikto ne podnjaj Δ], menja očen'
 the fact that no.one.NOM NEG under.hold.SG.M me.ACC very
 ogorčæet.
 upsets.3.SG
 (intended) ‘The fact that no one picked (it) up upsets me.’
 (Russian: Griбанова 2013:110)

The sentence (73a) serves an antecedent for the ellipsis sentence (73b). Therefore, the null object in (73b), unlike that in (72), can be derived by ellipsis. If *pro* were the only option to derive null objects in Russian, (73b) should be unacceptable as (72). Given this, Griбанова (2013) from the contrast between (72) and (73b) concludes that (73b) is derived by headless *vP/VP*-ellipsis.

One might argue that (73b) is insufficient to conclude that headless *vP/VP*-ellipsis is available in Russian since argument ellipsis can also derive (73b) given that argument ellipsis, like *VP*-ellipsis, is surface anaphora. To put it differently, the possibility of argument ellipsis is not controlled for in (73b).

However, there is evidence that argument ellipsis is not available to derive null objects in Russian. The argument can be constructed on the basis of the so-called verbal identity requirement. Goldberg (2005) argues that in headless *VP*-ellipsis constructions, the root of the stranded verb of the elided *VP* must be identical to the root of the verb of the antecedent sentence (See also Doron 1999 and Potsdam 1997).¹⁶ The following Hebrew examples illustrate this:

- (74) a. (Ha'im) Miryam **hevi'a** et Dvora la-xanut?
 Q Miryam bring.PAST.3.FEM.SG ACC Dvora to.the-store
 ‘(Did) Miryam bring Dvora to the store?’

¹⁶I will discuss the verbal identity requirement in more detail in 6.3.

- b. Ken, hi **hevi'a** Δ .
 yes she bring.PAST.3.FEM.SG
 'Yes, she brought Dvora to the store.'
- c. *Ken, hi **lakxa** Δ .
 yes she take.PAST.3.FEM.SG
 'Yes, she took Dvora to the store.'
- d. *Lo, hi **šalxa** Δ !
 no she send.PAST.3.FEM.SG
 'No, she sent Dvora to the store!' (Hebrew: Goldberg 2005:160)

The sentence in (74b) is derived by applying headless XP-ellipsis to *vP/VP* that contains the direct object and the goal argument, hence acceptable. On the other hand, (74c) and (74d) cannot be derived by headless *vP/VP*-ellipsis because the stranded verbs (*lakxa* 'take.PAST.3.F.SG' in (74c) and *šalxa* 'send.PAST.3.F.SG' in (74d)) are not identical to the antecedent verb *hevifa* 'bring.PAST.3.SG'.

Gribanova (2013) observes that null object sentences in Russian are also subject to the verbal identity requirement when the null object is contained in an island, as shown in (75) and (76).

- (75) a. Kto-to **uronil** ètu vazu.
 someone dropped.SG.M this.ACC vase.ACC
 'Someone dropped this vase.'
- b. #[Tot fakt, što nikto ne **podnjaj** Δ], menja očen'
 the fact that no.one NEG under.hold.SG.M me.ACC very
 ogorčæet.
 upsets.3SG
 'The fact that no one picked #(it) up upsets me.'
 (Russian: Gribanova 2013:118)

- (76) a. Menja volnuet tot fakt, čto kto-to **razorval**
 me.ACC worries.3SG that fact that someone apart.ripped.SG.M
 èti džinsy.
 these.ACC jeans.ACC
 ‘The fact that some tore up these jeans worries me.’
- b. #Ne volnujsja, sejčas pridët [čelovek, kotoryj Δ
 NEG worry.2SG now come.SG.FUT person who.NOM
zaš''ët].
 behind.sew.3SG.FUT
 ‘Don’t worry, soon someone who will sew #(them) up will come.’
 (Russian: Gribanova 2013:118)

In (75b) and (76b), the null objects are contained in the islands. Thus, they cannot be derived by *pro*. Headless *vP*/*VP*-ellipsis is also unavailable here since the verbal identity requirement is not satisfied. However, if argument ellipsis were available in Russian, these sentences should be acceptable since there is nothing that rules out argument ellipsis in this context: there is an overt linguistic antecedent and the verbal identity requirement is irrelevant to argument ellipsis. Therefore, in order to account for the unacceptability of (75b) and (76b), we have to assume that argument ellipsis is prohibited in Russian for whatever reason.

Given that argument ellipsis is not available to derive null objects in Russian, then, we can conclude from (73b) that headless *XP*-ellipsis is allowed in Russian.

5.6.1.4 European Portuguese

European Portuguese (EP) has null object constructions, as shown in the following example:

- (77) O João comparou esta sonata com uma sinfonia e a Maria
 the João compare.PAST this sonata with a symphony and the Maria
 também comparou Δ .
 also compare.PAST
 (Lit.) ‘João compared this sonata with a symphony and Maria also
 compared.’ (EP: Rouveret 2012:926)

The ellipsis clause can mean that Maria compared this sonata with a symphony. Thus, the direct object and the PP argument are missing in this clause. Rouveret (2012) argues that ellipsis clauses like this are derived by headless *vP/VP*-ellipsis, on the basis of the observation that the PP *com uma sinfonia* ‘with a symphony’ cannot be null by itself, as shown in the following:

- (78) *O João comparou esta sonata com uma sinfonia e a Maria
 the João compare.PAST this sonata with a symphony and the Maria
 comparou esta opera.
 compare.PAST this opera Δ
 (Lit.) ‘João compared this sonata with a symphony and Maria compared
 this opera.’ (EP: Rouveret 2012:927)

The unacceptability of this sentence indicates that (77) does not involve argument ellipsis applying to the direct object and the PP argument since argument ellipsis cannot apply to the PP argument. Rouveret (2012) conclude from this that EP allows headless *vP/VP*-ellipsis.¹⁷

According to my Brazilian Portuguese (BP) informant, both (77) and (78) are acceptable in BP. Therefore, (77) cannot constitute evidence for the presence of headless *vP/VP*-ellipsis in BP.

¹⁷Rouveret (2012) also argues that null object constructions in Welsh are derived by headless VP-ellipsis. However, she does not control for the possibility of *pro* or argument ellipsis.

Cyrino and Matos (2002) observe that the verbal identity requirement holds in EP as in Hebrew, Irish (Goldberg 2005), and Russian (Gribanova 2013), as shown in the following:

- (79) a. Quando a Ana **pôs** os óculos na mesa, a Maria também
 When the Ana put the glasses on.the table, the Maria too
pôs Δ .
 put
 (Lit.) ‘When Ana put the glasses on the table, Maria put the glasses on the table too.’
- b. *Quando a Ana **colocou** os óculos na mesa, a Maria
 When the Ana placed the glasses on.the table, the Maria
 também **pôs** Δ .
 too put.
 (Lit.) ‘When Ana placed the glasses on the table, Maria put the glasses on the table too.’ (EP: Cyrino and Matos 2002:180)

Given that the verbal identity requirement holds in headless *vP*/*VP*-ellipsis constructions in general, this constitutes evidence for the presence of headless *vP*/*VP*-ellipsis in EP.

5.6.1.5 Japanese

Japanese also has null object constructions, as illustrated by the following examples:

- (80) a. John-wa [zibun-no tegami]-o suteta.
 John-TOP self-GEN letter-ACC discarded
 ‘John threw out letters of himself.’
- b. Mary-mo Δ suteta.
 Mary-also discarded
 (intended) ‘Mary also threw out letters of herself.’

(Japanese: Otani and Whitman 1991:346–347)

The analysis of null object construction in Japanese is controversial because a number of researchers such as Oku (1998), Saito (2004, 2007), Goldberg (2005) and Takahashi (2008a,c) argue that null object constructions in Japanese should be analyzed as argument ellipsis. In chapter 6, I will provide novel evidence that headless *v*P/VP-ellipsis is available to derive null objects in Japanese. At this point, let us just assume this conclusion.

5.6.1.6 Unclear Case 1: Chingoni, Kikuyu, Ndendeule, and Swahili

Bantu languages like Chingoni, Kikuyu, Ndendeule, and Swahili have null object constructions, as illustrated by the following examples:

- (81) Juma i-gul-a nyumba na Amina i-gul-a mewa Δ .
Juma PRG-buy-FV 9.house and Amina PRG-buy-FV also
'Juma is buying a house and Amina is too.'
(Chingoni: Ngonyani and Githinji 2006:39)

- (82) Juma \tilde{n} i-a-ra-g \tilde{u} r-a nyumba ona Amina \tilde{n} i-a-ra-g \tilde{u} r-a
Juma FOC-1SM-PRG-buy-FV 9.house and Amina FOC-1SM-PRG-buy-FV
 Δ .
'Juma is buying a house and Amina is too.'
(Kikuyu: Ngonyani and Githinji 2006:39)

- (83) Joni a-ki-hemé nyumba na Malia a-ki-hemé helahe Δ .
Joni 1SM-PAST-buy 9.house and Malia 1SM-PAST-buy also
(intended) 'Joni bought a house, and Maria bought a house too.'
(Ndendeule: Ngonyani 1996:112)

- (84) Juma a-li-beb-a m-toto, na Kumau a-li-beb-a Δ pia.
 Juma 1SM-PAST-carry-FV 1-child and Kamau 1SM-PAST-carry-FV too
 (intended) ‘Juma carried a child, and Kamau carried a child too.’
 (Swahili: Ngonyani 1996:116)

Ngonyani (1996) and Ngonyani and Githinji (2006) argue that these null object sentences are derived by headless *vP*/*VP*-ellipsis (see also Goldberg 2005). Their arguments are on the basis of object agreement. When there is no overt linguistic antecedent, a null object induces obligatory object agreement on the predicate in these languages, as illustrated in the following set of examples:

- (85) a. Va-geni va-u-gul-i m-gunda.
 2-guest 2SM-3OM-buy-PERF 3-farm
 ‘The guests bought the farm.’
- b. Va-geni va-u-guli.
 2-guest 2SM-3OM-buy-PERF
 (intended) ‘The guests have bought it.’
- c. *Va-geni va-gul-i.
 2-guest 2SM-buy-PERF
 (intended) ‘The guests have bought a/the farm.’
 (Chingoni: Ngonyani and Githinji 2006:36–37)
- (86) a. Kamau ne-a-ku-ire mw-ana.
 Kamau FOC-1SM-carry-PERF 1-child
 ‘Kamau carried a child.’
- b. Kamau ne-a-mo-ku:-ire.
 Kamau FOC-1SM-1OM-carry-PERF
 (intended) ‘Kamau carried her/him.’
- c. *Kamau ne-a-ku-ire.
 Kamau FOC-1SM-carry-PERF
 (intended) ‘Kamau carried her/him.’
 (Kukuyu: Ngonyani and Githinji 2006:36)

- (87) a. β -ki-n-amukí nE.
2SM-PAST-OM-greet me
'They greeted me.'
- b. β -ki-n-amukí.
2SM-PAST-OM-greet
(intended) 'They greeted me.'
- c. * β -ki-amukí.
2SM-PAST-greet
(intended) 'They greeted me.' (Ndendeule: Ngonyani 1996:114)
- (88) a. Kamau a-li-m-beb-a m-toto.
Kamau 1SM-PAST-1OM-carry-FV 1-child
'Kamau carried the child.'
- b. Kamau a-li-m-beb-a.
Kamau 1SM-PAST-1OM-carry-FV
(intended) 'Kamau carried the child.'
- c. *Kamau a-li-beb-a.
Kamau 1SM-PAST-carry-FV
(intended) 'Kamau carried the child.' (Swahili: Ngonyani 1996:115)

As shown in the a-examples, an overt object can induce object agreement except in Kikuyu, where only null objects can induce object agreement. What is crucial is that null objects cannot appear without object agreement, as shown by the contrast between the b-examples and the c-examples. Given that the null objects in these examples can only be derived by *pro* because there is no overt linguistic antecedent, this fact indicates that an object *pro* requires object agreement in these languages.

With this in mind, let us reconsider the null object sentences in (81)–(84). In all the sentences, no object agreement appears. Therefore, these sentences cannot be derived by *pro*. Ngonyani (1996) and Ngonyani and Githinji (2006) conclude from this that the null object sentences in (81)–(84) are derived by headless *vP/VP*-

ellipsis.

This argument, however, is not conclusive since the possibility of argument ellipsis is not controlled for in the sentences in (81)–(84). The null objects in these sentences could be derived by argument ellipsis. All other arguments that are provided by Ngonyani (1996) and Ngonyani and Githinji (2006) do not control for the possibility of argument ellipsis either except an argument that is based on adverbial ellipsis. Ngonyani and Githinji (2006) claim that the elided material in the second clause in the following example contains the adverb *kanyata-kanyata* ‘quickly-quickly’:

- (89) V-ana va-kali-tungu yembe kanyata-kanyata and dadi w-avi
2-child 2SM-PAST-pick 10.mango quickly-quickly and 1.father 1-their
a-kali-tungu Δ mewa.
1SM-PAST-pick also.
‘Children were picking mangoes quickly and their father did so too.’
(Chingoni: Ngonyani and Githinji 2006:43)

They argue that this indicates that this ellipsis sentence is derived by headless *vP/VP*-ellipsis. It is true that a sentence containing a null adverb can be derived neither by *pro* nor argument ellipsis. Thus, if the ellipsis sentence in (89), as Ngonyani and Githinji (2006) claim, really contains the adverb, we can conclude that this sentence is derived by headless *vP/VP*-ellipsis. However, it is not clear if the adverb is really missing in this sentence. In order to know if this sentence contains a null adverb, we have to know if this sentence can mean that their father was picking mangos quickly. The problem is that this meaning can obtain by inference even from the sentence that does not contain the adjunct. To see this, suppose that

only the direct object is null in the second sentence in (89). Then, the ellipsis clause has the meaning of (90).

(90) Their father was picking mangos.

Note that the meaning of this sentence is compatible with the situation where their father was picking mangos quickly. Thus, the relevant reading can easily obtain by inference from the sentence that contains the null object but not the null adjunct. This means that from the fact that the ellipsis sentence in (89) can mean that their father was picking mangos quickly, we cannot conclude that this sentence contains a null adjunct. It might be the case that this sentence is derived by argument ellipsis (or *pro*) and the null adverb reading obtains by inference. Therefore, we cannot conclude from (89) that Chingoni has headless *vP/VP*-ellipsis.

In sum, there is no conclusive evidence that Bantu languages have headless *vP/VP*-ellipsis. In order to make a conclusive argument for this, we need to properly control for the possibility of argument ellipsis as well as that of *pro*.

5.6.1.7 Unclear Case 2: Persian and Serbo-Croatian

Sailor (2012) argues that Persian allows headless *vP/VP*-ellipsis. His argument is based on the following data:

(91) Naysan ketaab-ro ba degħat khoond, Nasim ham khoond Δ.
Naysan book-*OBJ* with caution read Nasim also read
(Lit.) ‘Naysan read the book carefully, and Nasim also read’

= Nasim read the book carefully
= *Nasim read the book (not necessarily carefully)
(Persian: Sailor 2012:22)

He observes that this ellipsis clause in this sentence can only mean that Nasim read the book carefully: it does not have the meaning that results when it does not contain a null adjunct meaning carefully. From this observation, Sailor (2012) concludes that this sentence is derived by headless *vP*/*VP*-ellipsis.

This argument, however, is not conclusive since his observation can be accounted for even if the ellipsis clause in (91) contains only a null object (hence, it can be derived by either *pro* or argument ellipsis). Suppose that in the ellipsis clause, only the object is null. Then, it has the meaning of (92).

(92) Nasim read the book.

As in the case of Bantu languages that we saw in the last section, the meaning of this sentence is compatible with the situation where Nasim read the book carefully. Therefore, the elided adjunct reading can obtain by inference from the sentence that contains the null object but not the null adjunct. A question is, why is this the only possible reading? This can be attributed to the property of the adverb *ham* ‘also’. This adverb, like *also* in English, appears to impose the full reconstruction of the source phrase, in order to achieve the maximal parallelism between the antecedent clause and the ellipsis clause. Given this, it might be the case that although the ellipsis clause in (91) can mean in principle either that Nasim read the book carefully or that Nasim read the book, the former reading is strongly preferred due to the

parallelism requirement imposed by *ham* ‘also’. If this is correct, we cannot conclude from (91) that Persian allows headless *vP/VP*-ellipsis since (91) can be derived either by *pro* or by argument ellipsis. We need to control for the possibility of *pro* and argument ellipsis in order to decide if Persian allows headless *vP/VP*-ellipsis.

Although Lasnik (1997) argues that Serbo-Croatian has headless *VP*-ellipsis, his data does not control for the possibility of *pro* and argument ellipsis either. He observes that the ellipsis clause in (93) can mean that his assistant is reading the paper carefully.

- (93) Ivan piše rad pažljivo, a njegov asistent čita Δ.
 Ivan writes paper carefully and his assistant reads
 (Lit.) ‘Ivan writes the paper carefully and his assistant is reading it
 carefully.’ (Serbo-Croatian: Lasnik 1997:180)

As in the case of Persian, from the fact that the ellipsis clause in this sentence can mean that his assistant is reading the paper carefully, we cannot conclude that it involves a null adjunct. This is so because this reading can be obtained by inference from the sentence with a null object but not a null adjunct. The ellipsis clause with the relevant reading, thus, can be derived by either *pro* or argument ellipsis. In order to see if Serbo-Croatian has headless *vP/VP*-ellipsis, we need to properly control for the possibility of *pro* and that of argument ellipsis.

5.6.2 Yes/No Replies as Headless *XP*-Ellipsis: Irish and Finnish

Irish has similar constructions, in which a subject as well as an object is null, as illustrated by the following examples:

- (94) a. Q: Ar cheannaigh siad teach?
 INTERR.COMP buy.PAST they house
 ‘Did they buy a house?’
- b. A: Creidim gur cheannaigh Δ.
 believe.PRES.1sg C.PAST buy.PAST
 (intended) ‘I believe that they bought a house.’
 (Irish: McCloskey 1991:274)

These examples are a question-answer pair. The answer in (94b) is an ellipsis sentence in which the subject and the object in the embedded clause are missing. McCloskey (1991a) and Goldberg (2005) argue that sentences like this are derived by headless *vP*-ellipsis. Irish has a VSO basic order in finite clauses. McCloskey (1991a) argues that VSO order in Irish is derived by V-movement to T and leaving the subject in situ.¹⁸ Given this, the embedded clause in (94b) can be analyzed as headless *vP*-ellipsis as in the following:

- (95) ... [TP bought [~~TP~~ they ~~t_v~~ [~~VP~~ ~~t_v~~ a house]]]

The argument for this analysis is much more straightforward than the cases of other languages that we have seen so far. Goldberg (2005) argues that this sentence is not derived by *pro* or argument ellipsis. First, Irish does not allow null objects in general (see Goldberg 2005:70). Thus, this sentence cannot involve an object *pro* or argument ellipsis applying to the object. Let us next consider a null subject.

¹⁸More recently McCloskey (1996b) argues that subjects do not stay in situ in Irish but move to a position somewhere between TP and *vP*. See Roberts 2005 for relevant discussion. I put aside the issue of the exact position of subjects in Irish since it does not affect arguments that I will provide in 5.7.

Irish has two types of conjugations for a verb: *synthetic* form and *analytic* form. Null subjects are not allowed with analytic verb forms (see Goldberg 2005:65–68). Note that the verb in (94b) is *cheannaigh*, which is the analytic verb form. Thus, this sentence should not involve a subject *pro* or argument ellipsis applying to the subject. Given these considerations, we can conclude, with Goldberg 2005, that (94b) is derived by headless *vP*-ellipsis and that Irish allows headless *XP*-ellipsis.

Holmberg (2001, 2013) argues that Finnish has a similar construction.¹⁹ This construction is exemplified by the following question-answer pair:

- (96) a. Tuleeko Liisa pian?
 comes-Q Liisa soon
 ‘Is Liisa coming soon?’
- b. Kyllä tulee Δ.
 yes comes
 (intended) ‘Yes, she is coming soon.’ (Finnish: Holmberg 2013:ex.14)

In the ellipsis clause, the subject is null. Irrelevant details being omitted, according to Holmberg’s (2001, 2013) analysis of sentences like this, it involves headless *vP*-ellipsis, as illustrated by the following:

- (97) yes comes [~~*vP* she *t*_{comes}~~]

¹⁹Holmberg (2013) argues that Brazilian and European Portuguese, Thai, and Welsh also has this construction. However, I put aside discussions about these languages since his arguments are based on a specific assumption about subject pro-drop (see Holmberg 2005, 2010b,a). Examining properties of subject pro-drop is beyond the scope of this thesis.

The verb moves out of *vP* and the subject stays in situ. If the headless *vP* is elided, (96b) results.

Alternatively, (96b) can be derived by *pro* or argument ellipsis applying to the subject. However, Holmberg (2001, 2013) provides clear evidence that this alternative analysis does not work. He notes that Finnish allows null subjects only in the first person and the second person. A third person null subject is impossible in a declarative clause, as shown in the following:

- (98) a. Liisa ei ole kotona.
Liisa NEG is home
'Liisa isn't at home.'
- b. *(Hän) tulee pian.
she comes soon
'She will get here soon.' (Finnish: Holmberg 2013:ex. 8)

The second sentence is unacceptable unless the subject is an overt element. Other things being equal, this sentence without an overt subject should be acceptable if either *pro* or argument ellipsis were available here.

Given this, let us go back to (96b). This sentence involves a third person subject. This means that neither *pro* nor argument ellipsis are available to derive this sentence. On the other hand, headless *vP*-ellipsis can derive this sentence. From this, I conclude that headless *vP*-ellipsis is available in yes/no reply constructions in Finnish.

5.6.3 Interim Summary

We have seen that headless XP-ellipsis is available in null object constructions in European Portuguese, Hebrew, Japanese, Russian, and Tagalog and in yes/no reply constructions in Irish and Finnish. Therefore, we can conclude that Lasnik's Generalization does not hold in these languages. In the next section, I will show that these exceptions to Lasnik's Generalization can be explained in the same way as in the case of exceptions to Takano's Generalization.

5.7 Explanation of Exceptions to Lasnik's Generalization

In this section, I demonstrate that the exceptions to Lasnik's Generalization that we saw in the last section can be explained by the condition (71) in chapter 4, repeated here as (99).

- (99) Headless XP-movement is possible only if
- a. Y allows multiple specifiers or
 - b. Y does not have an element in its specifier,
- where Y is the next higher head of X or contains the next higher head of X.

I show that Hebrew, Japanese, and Russian allow multiple specifiers and that Irish, Tagalog, and European Portuguese allow empty Spec, TP. Although Finnish cannot be considered a multiple specifier language or an empty TP-Spec language, I argue

that headless XP-ellipsis is allowed in the yes/no reply construction in this language because VS orders are allowed without an overt expletive in this construction.

5.7.1 Multiple Specifier Languages

In this section, I show that Hebrew, Japanese, and Russian allow multiple specifiers. Thus, the fact that headless XP-ellipsis is allowed in these languages is expected under the condition (99).

5.7.1.1 Multiple Subjects: Hebrew and Japanese

As we saw in 4.6.3.1, Hebrew and Japanese have multiple subject constructions, in which two nominals occupy specifier positions of TP. Therefore, these languages can be considered multiple specifier languages. See 4.6.3.1 for detailed discussion.

5.7.1.2 A-Scrambling: Japanese and Russian

As I argued in 4.6.3.2, A-scrambling across a subject is also an indication of multiple specifier languages; an A-scrambled element occupies the outer specifier of TP. Japanese has such scrambling, as we saw in 4.6.3.2.

Russian also has A-scrambling across a subject. An element that is scrambled to a position above a subject can bind a variable pronoun and an anaphor, as shown in the following examples:

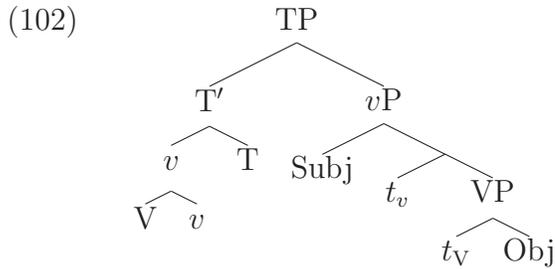
- (100) a. ??*ee*₁ *sobaka nraivitsja kazhdoj devochke*₁.
her dog.NOM appeals every girl.DAT
'Her dog appeals to every girl.' (Russian: Witkoś 2008:300)

- b. Kazhdoj devochke₁ ee₁ sobaka nravitsja.
 every girl.DAT her dog.NOM appeals
 ‘Her dog appeals to every girl.’ (Russian: Witkoś 2008:302)
- (101) a. *Učitelja drug druga₁ kritikovali ix₁.
 teachers.NOM each other.GEN criticized they.ACC
 ‘Each other’s teachers criticized them.’
- b. Ix₁ učitelja drug druga₁ kritikovali t₁.
 they.ACC teachers.NOM each other.GEN criticized
 (Lit.) ‘Them, each other’s teachers criticized.’
 (Russian: Karpacheva 1999:113)

In (100b), *kazhdoj devochke* ‘every girl’ undergoes scrambling across the subject *ee sobaka* ‘her dog’, yielding a bound variable reading. In (101b), the scrambled object *ix* ‘they.ACC’ can bind the anaphor *drug druga* ‘each other’ contained in the subject. Variable-binding and anaphor-binding require that a binder be in an A-position. Thus, these facts indicate that the scrambled elements in these sentences are in A-positions. Then, we can conclude that (100b) and (101b) involve multiple specifiers of TP, given that a notional subject occupies Spec, TP in Russian and that the specifier position of CP and the TP-adjoined position are A’-positions. Given this consideration, I conclude that Russian allows multiple specifiers.

5.7.2 Empty-TP-Spec Languages

This section concerns (99b). Even if a language does not allow multiple specifiers, HMS of *v* to T does not result in the multiple specifier configuration if Spec, TP can be empty, as illustrated by the following structure:



In this structure, v/V does not intervene for an Agree relation of headless vP/VP with a probe thanks to the presence of T' . As a result, headless vP/VP can be moved and elided. In this section, I argue that this is why languages like Irish, Tagalog, and European Portuguese allow headless vP/VP -ellipsis.

5.7.2.1 VSO Languages: Irish and Tagalog

Irish and Tagalog seem not to be multiple specifier languages since they have neither multiple subject constructions nor A-scrambling across a subject.²⁰ I argue that Irish and Tagalog allow headless vP/VP -ellipsis even if they are not multiple specifier languages because Spec, TP is empty in these languages as in (102).

Irish and Tagalog are verb-initial languages that have dominant VSO word order. One of major analyses of verb-initial word orders is a V-raising approach where verb-initial word orders are derived from a SVO structure through verb-movement out of verbal projection (Carnie et al. 1994, Guilfoyle 1990, McCloskey 1991a, 1996a, 2001, 2005 and Noonan 1994 for Irish; Aldridge 2004, Guilfoyle et al. 1992, Rackowski 2002a, Richards 2000, and Rackowski and Richards 2005 for Taga-

²⁰See Richards 1993 and Clemens and Polinsky to appear:section 4.2 for evidence that scrambling in Tagalog is A'-movement.

log).²¹ Furthermore, some versions of the V-raising analysis assume that V moves up to T rather than C and that subjects do not move to Spec, TP (e.g. Aldridge 2004, Rackowski 2002b, Richards 2000, and McCloskey 1991b, 1996a; see also Roberts 2005). If this analysis is correct, Irish and Tagalog have a structure like (102), in which Spec, TP is empty.²² This is why these languages allow headless *vP*/*VP*-ellipsis.

5.7.2.2 Null Subject Language: European Portuguese

European Portuguese (EP) seems not to have multiple subject constructions, A-scrambling, or dominant VSO word order. Then, why is headless *vP*/*VP*-ellipsis allowed in EP? I argue that this is because Spec, TP is empty in EP as in Irish and Tagalog. In particular, I follow previous proposals that in Romance consistent null subject languages like EP, Spec, TP is empty and pre-verbal subjects occupy A'-positions (e.g., Alexiadou and Anagnostopoulou 1998, Barbosa 1995, 2000, 2009, Barbosa et al. 2005, Contreras 1991, Kato 1999, Solá 1992, Vallduví 1990, 1992).²³ I call such an analysis the Empty-TP-Spec analysis.

In Romance consistent null subject languages, VS orders as well as SV orders are permitted, as illustrated by the following examples:

²¹See Clemens and Polinsky to appear for an overview of different analyses of verb-initial languages.

²²Although McCloskey (1996a) argues that subjects do not stay in situ in Irish but move to a position somewhere between TP and *vP*, the exact position for subjects does not matter for my analysis. As long as Spec, TP is empty, my prediction is not obviated.

²³I would like to thank Norbert Hornstein for bringing my attention to this analysis.

- (103) a. O João telefonou.
 DET João called
 ‘John called.’
 b. Telefonou o João.
 called DET João
 ‘John called.’ (EP: Barbosa 2009:4)
- (104) a. Telefona Gianni.
 calls Gianni
 ‘Gianni called.’
 b. Gianni telefona.
 Gianni called
 ‘Gianni called.’ (Italian: Barbosa 1995:12)
- (105) a. Juan leyo el libro.
 Juan read the book
 ‘Juan read the book.’
 b. Leyo Juan el libro.
 read Juan the book
 ‘Juan read the book.’
 (Spanish: Alexiadou and Anagnostopoulou 1998:492)

As opposed to an analysis in which it is assumed that SV orders are derived by movement of subjects to Spec, TP while VS orders involve the expletive *pro* in Spec, TP (e.g. Rizzi 1982), the Empty-TP-Spec analysis assumes that in both SV orders and VS orders, Spec, TP is empty, as illustrated by the following:

- (106) a. [TP V-*v*-T [_vP Subj ... (Obj)]] (VS(O))
 b. [Subj [TP V-*v*-T [_vP *pro* ... (Obj)]]] (SV(O))

In VS orders, a verb moves up to T and a subject stays within *v*P. In SV orders,

the in-situ subject position is occupied by *pro* and the overt pre-verbal subject is in a sentence-initial A'-position. Alexiadou and Anagnostopoulou (1998) and Barbosa (1995, 2000, 2009) argue that the pre-verbal subjects involve clitic left dislocation (CLLD).²⁴

As Barbosa (2009) argues, the A'-status of pre-verbal subjects in EP can be confirmed by the fact that pre-verbal subjects tend to be construed as topics as opposed to post-verbal subjects, which tend to be foci. This can be illustrated by the following question-answer pairs:

- (107) a. Quem comeu a sopa?
 who ate DET soup
 ‘Who ate the soup?’
- b. Comeu o João.
 ate DET John
 ‘John did.’
- c. #O João comeu.
 DET John ate
 ‘John did.’
- (EP: Barbosa 2009:5)

The question (107a) is about the subject. Thus, in the answer to (107a), the subject should be a focus. The post-verbal subject sentence (107b) is an appropriate answer to this question, indicating that the post-verbal subject can be a focus. On the other hand, (107c), with a pre-verbal subject, is not an appropriate answer to (107a). This indicates that the pre-verbal subject cannot be a focus. This fact can be accounted for if we assume that pre-verbal subjects are construed as topics.

²⁴Barbosa (1995, 2000, 2009) argues that when a pre-verbal subject is a non-referential QP, it involves A'-movement called QP-fronting (cf. Cinque 1990).

The same effect can be found in the CLLD construction, as shown in the following examples:

- (108) a. O que comeu o João?
DET what ate DET John
‘What did John eat?’
- b. #A sopa comeu-a.
DET soup ate-it
‘The soup, he ate it.’ (EP: Barbosa 2009:8)

The sentence (108a) is a question about the object. (108b), where the object is CLLDed, is deviant as an answer to this question. This can be accounted for if CLLDed elements cannot be foci since they are interpreted as topics. The parallelism between pre-verbal subjects and CLLDed objects receives an explanation if the former also involves CLLD. On the other hand, if the pre-verbal subject can be in Spec, TP, it is not clear why it obligatorily receives a topic interpretation because pre-verbal subjects in non null subject languages like English can be foci, as shown by the following examples:

- (109) a. Who ate the soup?
- b. John did. (English)

Given this, Barbosa (2009) takes the parallelism between pre-verbal subjects and CLLDed objects as an indication that pre-verbal subjects in EP are not in Spec, TP.²⁵

²⁵See Barbosa 1995, 2000, 2009 for other arguments.

Alexiadou and Anagnostopoulou (1998) argue that VS constructions in null subject languages do not involve an expletive *pro* on the basis of definiteness restriction (DR) effects. Post-verbal subjects with an overt expletive induce DR effects in languages like English; the post-verbal subject must be an indefinite, as shown by the following example (see Milsark 1974, Safir 1982, 1985, Belletti 1988, Lasnik 1995a) .

- (110) There arrived a man/*the man/*every man.
 (English: Alexiadou and Anagnostopoulou 1998:512)

On the other hand, post-verbal subjects in null subject languages do not induce DR effects;²⁶ a definite noun phrase can appear in the post-verbal position, as we saw in (103)–(105).

Alexiadou and Anagnostopoulou (1998) argue that the lack of DR effects in null subject languages can be accounted for if VS constructions do not involve

²⁶The lack of DR effects in post-verbal subject constructions in null-subject languages is observed and discussed by Burzio (1986), Rizzi (1982), and Chomsky (1981). In contrast, Belletti (1988) argues that the DR effects show up also in Italian, which is a null-subject language, in certain circumstances, as illustrated by the following examples:

- (i) a. All'improvviso è entrato un uomo dalla finestra.
 suddenly entered a man from the.window
 'A man suddenly entered from the window.'
- b. *All'improvviso è entrato l' uomo dalla finestra.
 suddenly entered the man from the.window
 'The man suddenly entered from the window.'
- (Italian: Belletti 1988:9)

a null expletive given Chomsky's (1995) analysis of DR effects. Chomsky (1995) argues that the expletive is simply the categorial feature [D], which requires an NP complement-associate (cannot take a DP complement). Assuming that D is responsible for definiteness, DR effects follow. Given this analysis of DR effects, Alexiadou and Anagnostopoulou (1998) take the lack of DR effects in null subject languages as an indication that VS constructions do not involve a null expletive *pro*.

Given these considerations, I assume that the basic idea of the Empty-TP-Spec analysis (106) is correct. Then, in EP as a null subject language, Spec, TP is empty. Therefore, headless *v*P/VP-movement, hence headless *v*P/VP-ellipsis, is allowed in EP.

5.7.2.3 Yes/No Replies in Finnish

Finnish does not have multiple subject constructions or A-scrambling across a subject. Thus, it is not a multiple specifier language. Furthermore, it is not a consistent null subject language either; as we saw in 5.6.2, Finnish does not allow 3rd person null subjects. Unlike Irish and consistent null subject languages like EP, Finnish does not allow VS orders in declarative clauses, as shown by the following examples:

- (111) a. Lapsia leikkii kadulla.
 children play in.street.
 'Children are playing in the street.'
- b. *Leikkii lapsia kadulla.
 play children in.street
 'Children are playing in the street.'

- c. Sitä leikkii lapsia kadulla.
 EXPL play children in.street
 ‘There are children playing in the street.’
 (Finnish: Holmberg and Nikanne 2002:71–72)

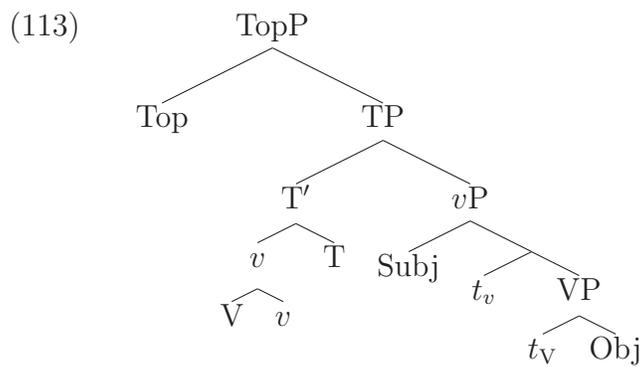
VS orders are possible in declarative clauses only if an overt expletive occupies the pre-verbal position. Thus, Finnish cannot be considered a general empty-TP-Spec language like Irish and EP.

Then, why is headless XP-ellipsis allowed in yes/no replies in Finnish? I argue that this is because VS orders are allowed without the overt expletive in yes/no replies, as shown by the following:

- (112) Osti se maitoa. (Question: Did she buy milk?)
 bought she milk
 ‘Yes, she did.’ (Finnish: Holmberg 2001:142)

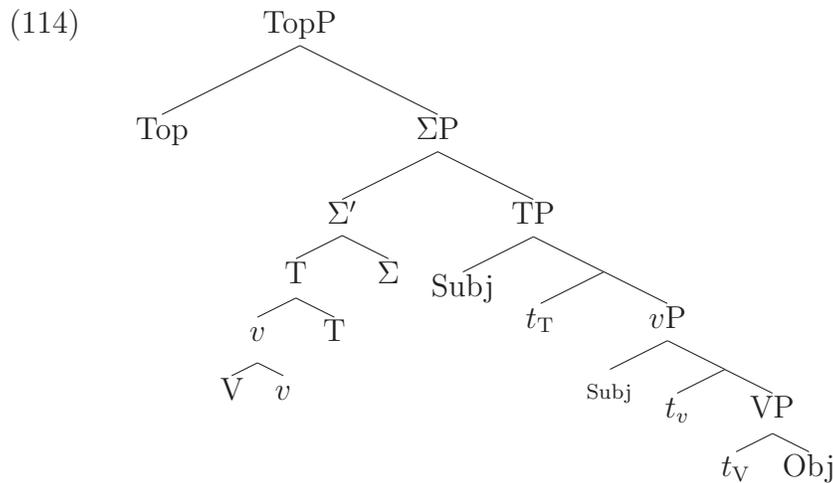
In this sentence, the subject occupies the post-verbal position and there is no overt expletive. This fact can be captured if we assume either that verbs move higher than TP in yes/no replies or that subjects can stay in situ within *v*P in yes/no replies.

In the latter analysis, a yes/no reply can have a structure like the following:



In this structure, HMS of v to T is possible because the subject stays in situ; even if vP becomes Spec, TP, it does not result in a multiple specifier configuration. Top can Agree with the headless vP since v does not intervene for it thanks to the presence of T'. Thus, the headless vP -movement is possible. Under the movement analysis of ellipsis, this means that the headless vP can be elided.

Let us next consider the other analysis, that verbs move higher than TP and the subject occupies Spec, TP in yes/no replies. Suppose that in yes/no replies unlike in declarative clauses, verbs move to what Laka (1990) calls Σ , which encodes polarity and focus. Then, a yes/no reply can have a structure like the following:



In this structure, T containing v and V undergoes HMS to Σ . This instance of HMS is unproblematic since Σ does not have another Spec. Therefore, the headless TP-ellipsis (vP and VP too) is allowed.

In sum, whatever the correct analysis of VS orders in yes/no replies is, the possibility of headless XP-ellipsis in yes/no replies in Finnish is expected under the present analysis.

5.8 Extraction out of a Headless XP in Headless XP-Ellipsis Constructions

In 4.7, I argued that a headless XP constitutes a CED island in headless XP-movement constructions since movable headless XPs become derived specifiers as a result of HMS. The question arises, what about headless XP-ellipsis? Is extraction out of a headless XP prohibited also in headless XP-ellipsis constructions? In this section, I argue that in contrast with the cases of headless XP-movement constructions, extraction out of headless XPs in headless XP-ellipsis constructions does not exhibit CED island effects as a result of island-repair by ellipsis.

5.8.1 Wh-Movement and QP-Movement out of a Headless XP in EP

The following examples from headless VP-ellipsis constructions in EP indicate that an elided headless XP does not constitute an island unlike a moving headless XP:

[Everyone compares sonatas with symphonies.]

(115) a. O João comparou esta sonata com uma sinfonia.
the João compared this sonata with a symphony
'João compared this sonata with a symphony.'

b. **Qual sonata** é que a Maria comparou
which sonata is that the Maria compared
~~[*t_V t_{Obj} com uma sinfonia*]~~?

(intended) 'Which sonata did he compare with a symphony?'

(EP: Ana Lúcia Santos, p.c.)

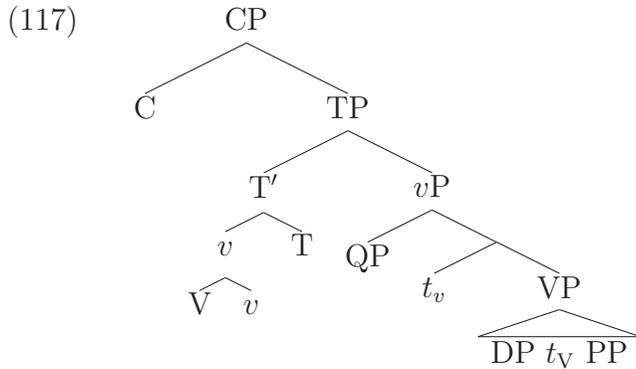
As we saw in (78), the PP *com uma sinfonia* 'with a symphony' cannot be null by

itself. This means that (115b) unambiguously involves a headless *vP*/*VP*-ellipsis. *Qual sonata* ‘which sonata’ undergoes Wh-movement out of this elided headless *vP*/*VP*. Therefore, the acceptability of (115b) indicates that extraction out of headless XPs is allowed in headless XP-ellipsis constructions.

The following examples also indicate that extraction out of headless XPs is allowed in ellipsis contexts:

- (116) a. O João compara esta sonata com uma sinfonia.
 the João compares this sonata with a symphony
 ‘João compares this sonata with a symphony.’
- b. Eu achei que **ninguém** comparava
 I thought that no.one compared
 [~~*t_v* esta sonata com uma sinfonia~~].
- (intended) ‘I thought that no one compared this sonata with a symphony.’ (EP: Ana Lúcia Santos, p.c.)

In (116b), the headless *vP*/*VP* is elided in the embedded clause. Note that the subject in the embedded clause is a non-referential QP (i.e. *ninguém* ‘no one’). Barbosa (1995, 2000, 2009) argues that preverbal non-referential QP subjects involve A'-movement to Spec, CP in EP. If this analysis is correct, *ninguém* ‘no one’ in (116b) must involve extraction out of headless *vP*. This is illustrated by the following structure:



In order to elide the headless vP/VP , v -to- T movement must be performed via HMS. Then, at the point of the derivation where movement of the QP subject to Spec, CP is triggered, the vP is a specifier of T . Thus, if extraction out of headless XPs were prohibited in headless XP-ellipsis constructions, (116b) should be unacceptable.

I conclude from these data that extraction out of headless XPs is allowed in headless XP-ellipsis constructions unlike in headless XP-movement constructions.

5.8.2 Island Repair by Ellipsis

Why does headless XPs in ellipsis contexts not induce island effects even if they are specifiers? I argue that this is an instance of island-repair by ellipsis. Since Ross 1969, it is well-known that Wh-movement becomes insensitive to islands in ellipsis contexts (see Baker and Brame 1972, Chomsky 1972, Lakoff 1972, Chung et al. 1995, Lasnik 2001a, Merchant 2001, Fox and Lasnik 2003). For example, Wh-movement is sensitive to Complex NP islands in non-ellipsis contexts, as shown in (118a) while it is not in sluicing, as shown in (118b).

- (118) a. *I believe the claim that he bit someone, but they don't know who₁ I

believe [the claim that he bit t_1].

- b. I believe the claim that he bit someone, but they don't know who₁ I

~~believe [the claim that he bit t_1].~~

(English: Fox and Lasnik 2003:144)

Crucially, subject island violation, which is a subcase of CED violation, can also be repaired by ellipsis, as shown in the following:

- (119) a. *That he'll hire someone is possible, but I won't divulge who₁ [that he'll hire t_1] is possible.

- b. That he'll hire someone is possible, but I won't divulge who₁ [~~that he'll hire t_1~~] is possible.

(English: Fox and Lasnik 2003:144)

Given this as a generalization, setting aside a principled explanation for it (see Merchant 2001), I assume that extraction out of headless XPs in ellipsis contexts does not induce island effects because of island-repair by ellipsis.

5.8.3 Scrambling out of an Elided CP Complement in Japanese

In Funakoshi 2012, I argue that the impossibility of extraction out of an elided CP complement in Japanese can be attributed to the ban on extraction out of headless XPs (the CED). If a CED violation is repaired by ellipsis, however, why does extraction out of an elided CP complement lead to unacceptability? In this section, I argue that Kuno's (1998) functional constraint on null elements (Ban

Against Partial Discourse Deletion) provides an account for the relevant data.

First, I give an overview of scrambling out of an elided CP complement in Japanese, which is originally observed by Shinohara (2006) and later discussed by Saito (2007), Tanaka (2008), and Takita (2010). In Japanese, a complement CP can be elided, as shown in the following example:

- (120) Mary-wa [zibun-ga ringo-o tabeta to] syutyoositeiru, kedo
 Mary-TOP self-NOM apple-ACC ate C claim but
 John-mo [~~zibun-ga ringo-o tabeta to~~] syutyoositeiru.
 John-also self-NOM apple-ACC ate C claim
 (intended) ‘Mary claims that she ate an apple, but John also claims that
 he ate an apple.’ (Japanese)

In the second conjunct of the sentence in (120), the complement clause is null. The null CP complement can be derived by applying headless XP-ellipsis to the matrix *v*P/VP that contains the CP complement.²⁷ As shown in (121), the matrix verb moves out of the matrix *v*P.

- (121) John-also [_{*v*P} [_{CP} self-NOM apple-ACC ate C] *t*_{claim}] claim

If the resulting headless *v*P/VP is elided, sentence (120) is derived.

Moreover, Japanese has long distance scrambling, as shown in (122).

- (122) Ringo₁-o Mary-wa [zibun-ga *t*₁ tabeta to] syutyoositeiru.
 apple-ACC Mary-NOM self-NOM ate COMP claim
 (Lit.) ‘An apple, Mary claims that she ate.’ (Japanese)

²⁷One might wonder if argument ellipsis could also derive the null CP complement. However, as I will argue in 6.3, argument ellipsis cannot apply to a CP complement in general.

In (122), the object in the embedded clause, *ringo-o* ‘apple-ACC’, is scrambled out of the embedded clause.

Shinohara (2006) observes that scrambling out of a null complement CP is prohibited, as shown in (123).

- (123) *Ringo-o₁ Mary-wa [_{vP} [zibun-ga t₁ tabeta to] t_v] syutyoositeiru
 apple-ACC Mary-TOP self-NOM ate COMP claim
 kedo, **orenzi-o**₂ John-wa [~~_{vP} [zibun-ga t₂ tabeta to] t_v] syutyoositeiru.
 but orange-ACC John-TOP self-NOM ate COMP claim
 (intended) ‘An apple, Mary claims that she ate, but an orange, John claims
 that he ate.’ (Japanese)~~

In the second conjunct in (123), the object in the embedded clause, *orenzi-o* ‘orange-ACC’, is scrambled out of the headless *vP*, which is elided, yielding an unacceptable sentence.²⁸ Funakoshi (2012) attributes this unacceptability to the ban on extraction out of elided headless XPs (the CED).

Because we know that the ban on extraction out of headless XPs is nullified by ellipsis, we need another explanation for the unacceptability of sentences like (123). I argue that Kuno’s (1998) constraint on null elements, which is given in (124), can

²⁸As Tanaka (2008) points out, extraction out of elided material is not prohibited in general since in English, extraction out of an elided *vP* is possible, as illustrated in (i).

- (i) I know which book John read, but I don’t know which one₁ Bill did [~~_{vP} read t₁]].~~

A structurally more similar sentence to the Japanese one is also acceptable, as shown in (ii).

- (ii) Bob’s book, I argued John read, but Bill’s book₁, I didn’t [~~_{vP} argue [John read t₁]].~~

account for it.²⁹

(124) *Ban Against Partial Discourse Deletion* (Kuno 1998:84)

If discourse deletion of recoverable constituents is to apply, apply it across the board to nonfocus constituents. Nonfocus constituents which are left behind by partial discourse deletion will be reinterpreted, if possible, as representing contrastive foci.

By *discourse deletion*, Kuno (1998) means any null elements whether they are derived by *pro* or ellipsis. Kuno (1998) accounts for the following data by this constraint:

- (125) a. Kimi-wa kono hon-o yomimasita ka?
you-TOP this book-ACC read Q
'Have you read this book?'
- b. Hai, yomimasita.
yes read
(intended) 'Yes, I have read the book.'
- c. ??Hai, **sono hon-o** yomimasita.
yes, that book-ACC read
(intended) 'Yes, I have read that book.'
- d. Hai, **sono hon-wa** yomimasita.
yes, that book-TOP read
(intended) 'Yes, I have read that book.'
(Japanese: Kuno 1998:83–84)

Kuno (1998) observes that (125b) serves as a natural answer to the question (125a)

²⁹I thank a reviewer of *Journal of East Asian Linguistics* for bringing my attention to Kuno 1998.

while (125c) is extremely unnatural as an answer to (125a). In (125b), both non-focus elements (the subject and the object) are null. Thus, it observes the constraint (124). On the other hand, in (125c), only one of the non-focus elements is null, the object being left overt. This non-null element cannot be interpreted as a contrastive focus since it is not marked with the contrastive topic marker *wa*. This violates (124), yielding the unacceptability. However, if the contrastive topic marker *wa* is used, the answer becomes acceptable even though the object is not null, as shown in (125d).³⁰

The unacceptable sentence (123) also violates (124). A non-focus element *zibun-ga tabeta to* ‘self-NOM ate C’ is null but the other non-focus element *orenzi-o* ‘orange-ACC’ left overt and is not attached by *wa*. If this explanation for the unacceptability of (123) is correct, it is predicted that the sentence becomes acceptable if the accusative marker of the scrambled object is replaced by *wa*. This prediction is borne out, as shown in the following:

- (126) **Ringo-wa**₁ Mary-ga [_{vP} [zibun-ga *t*₁ tabeta to] *t*_v] syutyoositeiru
 apple-TOP Mary-NOM self-NOM ate COMP claim
 kedo, **orenzi-wa**₂ John-ga [_{vP} [~~zibun-ga *t*₂ tabeta to~~] ~~*t*_v~~]
 but orange-TOP John-NOM self-NOM ate COMP

³⁰In (125d), the predicate *yomimasita* ‘read’ is not focused or contrastive. Thus, one might wonder why the retention of this element does not induce unacceptability. Kuno (1998) argues that a violation of his constraint is tolerated when it is forced by a syntactic constraint in the language. According to Kuno (1998:85), the retention of a predicate as in (125d) is necessitated by the constraint that sentences must end with predicates in Japanese. See Oku 2009 for how to implement this idea under reference set computation in the sense of Reinhart 2006.

syutyoositeiru.
claim
(intended) ‘An apple, Mary claims that she ate, but an orange, John claims
that he ate.’ (Japanese)

This sentence does not violate Kuno’s constraint (124) because the overt element marked with *wa* can be interpreted as a contrastive focus.

In sum, unacceptable sentences like (123) that involve scrambling out of an elided headless XP can be accounted for by Kuno’s (1998) functional constraint on null elements without resorting to the ban on extraction out of headless XPs in headless XP-ellipsis constructions.

5.9 Conclusion

In this chapter, we have seen that headless XP-ellipsis is not allowed in English and Danish while it is allowed in Hebrew, Japanese, European Portuguese, Irish, Russian, Tagalog, and Finnish. If we adopt a movement analysis of ellipsis, the crosslinguistic difference in the availability of headless XP-ellipsis can be reduced to parameters that are responsible for the possible number of specifiers under the proposed theory of syntactic head movement.

Chapter 6: Null Objects in Japanese

6.1 Introduction

In chapter 5, I assumed, without any justifications, that null objects in Japanese can be derived by headless *vP*/*VP*-ellipsis. However, this is not a trivial assumption at all because a number of researchers such as Oku (1998), Saito (2004, 2007), Goldberg (2005) and Takahashi (2008a,c) argue that null object constructions in Japanese should be analyzed as argument ellipsis. In this chapter, I present arguments that *vP*/*VP*-ellipsis is available in Japanese to derive null object constructions.

In Japanese, arguments can be dropped relatively freely, as illustrated in (1).

- (1) a. Hanako-wa Taro-o nagut-ta kedo, Ziro-wa Δ nagur-anak-atta.
Hanako-TOP Taro-ACC hit-PAST but Ziro-TOP hit-NEG-PAST
(intended) ‘Hanako hit Taro, but Ziro didn’t hit Taro.’
- b. Hanako-wa gakkoo-ni it-ta kedo, Taro-wa Δ ik-anak-atta.
Hanako-TOP school-to go-PAST but Taro-TOP go-NEG-PAST
(intended) ‘Hanako went to the school, but Taro didn’t go to the school.’

In the second conjunct in (1a), the object is null and the null object can refer to Taro. In (1b), PP *gakkoo-ni* ‘school-to’ is null. Sentences like (1a) can potentially be derived at least in three ways, i.e. by employing *pro*, argument ellipsis, and headless

XP-ellipsis. This is illustrated in (2).

- (2) a. Ziro-TOP *pro* hit-NEG-PAST
 b. Ziro-TOP ~~Taro~~-ACC hit-NEG-PAST
 c. Ziro-TOP [~~_{vP/VP} Taro-ACC *t_{hit}*]~~ hit-NEG-PAST

The *pro* analysis is illustrated in (2a), where the object position is occupied by the null pronoun referring to Taro (see Kuroda 1965, Ohso 1976, Hoji 1985, among many others). In (2b), the full noun phrase Taro is in the object position and the object NP is elided (see Oku 1998, Kim 1999a, Saito 2007, Takahashi 2006, 2008c, Takita 2011, among many others). Null object sentences like (1a) could also be derived by headless *vP/VP*-ellipsis (aka verb-stranding VP-ellipsis: Goldberg 2005), as illustrated in (2c), where the verb *hit* moves out of *vP/VP* and the headless *vP/VP* containing only the object *Taro* is elided (see Otani and Whitman 1991, Funakoshi 2012).

Among a number of different analyses of null arguments in Japanese, there seems to be some consensus that Japanese has *pro*. An argument for the existence of a null pronoun can be constructed on the basis of Condition B, as discussed in Takahashi 2008a. Without any linguistic antecedent, sentences like (3) are unacceptable under the reading where the null object takes the subject *Taro* as its antecedent.

- (3) *Taro₁-ga Δ₁ seme-ta.
 Taro-NOM criticize-PAST
 (intended) ‘Taro criticized himself’

If the null object in (3) is a null pronoun, *pro*, (3) can be reduced to a Condition B violation on a par with (4), where the overt pronoun *him* occupies the object position.

(4) *Taro₁ criticized him₁.

Given this, it is reasonable to conclude that Japanese has *pro*.

Then, an important question in Japanese syntax is whether Japanese has other strategies to derive null arguments than *pro*. Otani and Whitman (1991) argue that it does, based on examples like (5).

- (5) a. Taro-wa [zibun-no booru]-o ket-ta.
Taro-TOP self-GEN ball-ACC kick-PAST
'Taro kicked his ball.'
- b. Hanako-mo Δ ket-ta.
Hanako-also kick-PAST
(intended) 'Hanako kicked her ball too.'

Given sentence (5a) as the antecedent clause, (5b) has at least two interpretations. It can mean either that Hanako kicked Taro's ball (the strict identity reading) or that Hanako kicked her ball (the sloppy identity reading). Otani and Whitman (1991) argue that if the null object in (5b) is *pro*, it is a mystery why the sentence has the sloppy identity reading because an overt pronoun cannot induce the sloppy identity reading in the same context, as (6) shows.

- (6) a. Taro-wa [zibun-no booru]-o ket-ta.
Taro-TOP self-GEN ball-ACC kick-PAST

‘Taro kicked his ball.’

- b. *Hanako-mo sore-o ket-ta.
Hanako-also it-ACC kick-PAST
(intended) ‘Hanako kicked her ball too.’

On the other hand, if either headless XP-ellipsis or argument ellipsis can be used to derive (5b), the sentence can have structures like (7).

- (7) a. Hanako-also [~~_{NP/VP} [self's ball] _{t_{kick}}]~~ kicked (Headless XP-Ellipsis)
b. Hanako-also [~~self's ball~~] kicked (Argument Ellipsis)

Crucially, both structures include the elided anaphor that is bound by *Hanako*, yielding the sloppy identity reading. Thus, in order to account for the fact that null object sentences like (5b) have the sloppy identity reading, some ellipsis strategy must be available in Japanese.

However, the validity of this argument is challenged by Hoji (1998). He argues that the sloppy identity reading in sentences like (5) can obtain without positing ellipsis strategies if we assume that Japanese has an indefinite *pro* as well as the definite *pro*. According to Hoji's (1998) analysis, the sloppy identity reading in (5b) is available since the relevant reading can be easily inferred from the meaning of (8), where the object position is occupied by the indefinite NP *booru-o* ‘ball-ACC’.

- (8) Hanako-mo booru-o ket-ta.
Hanako-also ball-ACC kick-PAST
‘Hanako kicked a ball too.’

The reading that Hanako kicked her own ball is compatible with the situation that (8) describes. As a result, the sloppy identity reading is available in (5b) because it can be inferred from (8) without postulating ellipsis strategies to derive null arguments.

However, as Saito (2007) points out, the indefinite *pro* analysis cannot cover all data involving null arguments. Saito (2007) observes that sentences like (9) can be true if Hanako did not kick her own ball but kicked other balls.

- (9) Taro-wa [zibun-no booru]-o ket-ta kedo, Hanako-wa Δ
 Taro-TOP self-GEN ball-ACC kick-PAST but Hanako-TOP
 ker-anak-atta.
 kick-NEG-PAST
 (intended) ‘Taro kicked his ball, but Hanako didn’t kick her ball.’

This interpretation cannot be inferred from sentences like (10), where the object is an indefinite NP.

- (10) Hanako-wa booru-o ker-anak-atta.
 Hanako-TOP ball-ACC kick-NEG-PAST
 ‘Hanako didn’t kick a ball.’

This sentence can only mean that Hanako did not kick any ball. Thus, indefinite *pro* cannot capture the range of interpretations available for (9). On the other hand, if either headless XP-ellipsis or argument ellipsis is available, the relevant reading can obtain from the following structures:

- (11) a. Hanako-TOP ~~_{[*VP/VP*] [*self's ball*] *t*_{kick}]}~~ kick-NEG-PAST

- b. Hanako-TOP ~~[self's ball]~~ kick-NEG-PAST

Given this discussion, it is reasonable to conclude that Japanese has some ellipsis strategy to derive null arguments. The question arises, which strategy is it, headless XP-ellipsis, argument ellipsis, or both? In this chapter, I present arguments that Japanese allows at least headless XP-ellipsis, being agnostic about the possibility of argument ellipsis.

6.2 Null Adjuncts

Most of the alleged arguments against the headless *vP/VP*-ellipsis analysis of null arguments in Japanese are actually arguments against the claim that headless *vP/VP*-ellipsis is the only way to derive null arguments in Japanese. These arguments lose their force if other ways such as indefinite *pro* and/or argument ellipsis are available in addition to headless *vP/VP*-ellipsis. Because the main aim of this chapter is to argue that Japanese allows headless *vP/VP*-ellipsis rather than that it is the only way to derive null arguments, I do not consider these arguments.¹ As far as I know, the sole direct argument against the very existence of headless *vP/VP*-ellipsis in Japanese concerns null adjuncts. I will consider this argument and show that the observation on which the argument is based is not accurate. I then provide a more accurate generalization about null adjuncts. I will show that the new generalization is hard to account for if headless *vP/VP*-ellipsis is unavailable, and that it can be

¹These arguments have to do with null subjects (Oku 1998), *otagai*-binding in the ditransitive construction (Oku 1998), and whole-part constructions (Kim 1999, Takahashi 2008a).

accounted for if it is available.

6.2.1 Observation

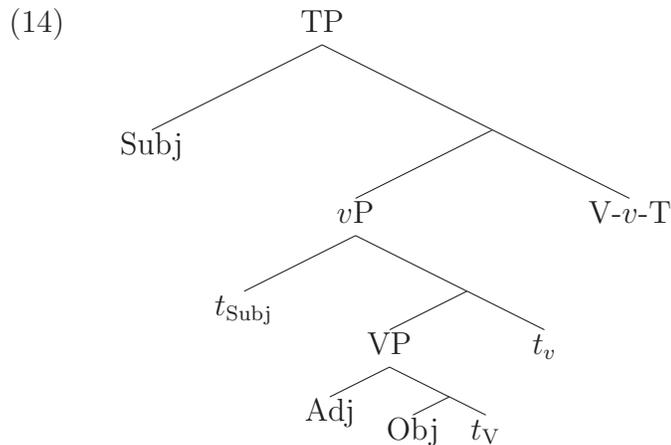
Oku's (1998) argument against the existence of headless *vP*/*VP*-ellipsis in Japanese is based on the following examples

- (12) a. Bill-wa kuruma-o teineini arat-ta.
Bill-TOP car-ACC carefully wash-PAST
'Bill washed the car carefully.'
- b.(*)John-wa Δ araw-ana-katta.
John-TOP wash-NEG-PAST
(Lit.) 'John didn't wash.'
(Oku 1998:171)

The antecedent clause (12a) contains the object *kuruma-o* 'car-ACC' and the manner adverb *teineini* 'carefully'. (12b) is an ellipsis clause. Oku (1998) claims that (12b) has the reading (the non elided adjunct reading) that John didn't wash the car at all, which is obtained if (12b) involves the null object referring to *kuruma* 'car' while it does not have the reading (the elided adjunct reading) that John did not wash the car carefully, which is yielded if the sentence contains the null adverb *teineini* 'carefully' as well as the null object. (13) makes the same point.

- (13) a. Bill-wa gohan-o sizukani tabe-ta.
Bill-TOP meal-ACC quietly ate
'Bill ate the meal quietly.'
- b.(*)John-wa Δ tabe-na-katta.
John-TOP eat-NEG-PAST
(Lit.) 'John didn't eat.'
(Oku 1998:171)

Oku (1998) argues that this is problematic if Japanese has headless *vP*/*VP*-ellipsis. This is so because headless *vP*/*VP*-ellipsis should be able to elide *VP* adjuncts like *teineini* ‘carefully’ and *sizukani* ‘quietly’ as well as objects when it applies to structures like (14).²



Thus, if the data in (12) and (13) are real, it poses a potential problem for the analysis in which headless *vP*/*VP*-ellipsis is posited.

However, the facts are not so straightforward. In fact, not a few Japanese speakers, including the author, accept the elided adjunct reading in (12) and (13) although it is true that the non elided adjunct reading is the preferred reading. Actually, Oku (1998:171) himself mentions that “[i]n [(12)] and [(13)], it is *hard* (or impossible, for some speakers) to get the interpretation in which the adverb is understood in the elliptic site” (emphasis by the author). Put it differently, it is not impossible, at least for some speakers, to get the elided adjunct reading in

²As Goldberg (2005) points out, this is not so strong an argument against the existence of headless *vP*/*VP*-ellipsis since it might be the case that *VP* adjuncts are base-generated outside the elided verbal projection.

(12) and (13). Furthermore, Takahashi (2008b) mentions that “I have occasionally encountered speakers of Japanese who accept the readings that would be possible if adjuncts were somehow included in ellipsis sites.”³ These facts at least indicate that the observed facts are not so robust.

Furthermore, if we slightly modify (12) and (13), the elided adjunct reading becomes much easier to obtain. Note that the antecedent sentences and the elliptical sentences in (12) and (13) are independent sentences. However, once they are combined by a connective like *kedo* ‘but’, the elided adjunct reading becomes much easier to get. This is shown in (15) and (16).⁴

- (15) ?Bill-wa teineini kuruma-o arat-ta **kedo**, John-wa Δ
 Bill-TOP carefully car-ACC wash-PAST but John-TOP
 araw-anak-atta.
 wash-NEG-PAST
 (intended) ‘Bill washed the car carefully, but John didn’t wash the car

³Takahashi (2008b) also mentions that if the antecedent sentences are negated, the elided adjunct reading in (12) and (13) becomes easier to obtain. This is illustrated in (i).

- (i) a. Bill-wa kuruma-o teineini awaw-anak-atta.
 Bill-TOP car-ACC carefully wash-NEG-PAST
 ‘Bill didn’t wash the car carefully.’
 b. John-mo Δ araw-anak-atta.
 John-also wash-NEG-PAST
 (intended) ‘John didn’t wash the car carefully either.’

⁴It seems that relative word order between an adjunct and an object affects the availability of the elided adjunct reading at least for some speakers. For some speakers, it becomes easier to get the elided adjunct reading in the adjunct-object order than in the object-adjunct order. For this reason, I use sentences with the adjunct-object order in what follows. I thank Andrew Simpson for bringing my attention to this interfering factor.

carefully.’

- (16) ?Bill-wa sizukani gohan-o tabe-ta **kedo**, John-wa Δ tabe-nak-atta.
Bill-TOP quietly meal-ACC eat-PAST but John-TOP eat-NEG-PAST
(intended) ‘Bill ate the meal quietly, but John didn’t eat the meal quietly.’

It does not sound contradictory when (15) and (16) are followed by a sentence like “he washed the car sloppily” and a sentence like “he ate the meal noisily,” respectively.

Furthermore, the more important fact that has been overlooked is that there is a significant contrast between (15)/(16) and (17)/(18) in the availability of the elided adjunct reading. In (17) and (18), only the adjuncts are (supposed to be) elided (i.e. the objects are not elided). In these sentences, the elided adjunct reading is simply impossible.

- (17) *Bill-wa teineini kuruma-o arat-ta kedo, *pro*/kare-wa Δ **zitsensya-o**
Bill-TOP carefully car-ACC wash-PAST but *pro*/he-TOP bicycle-ACC
araw-anak-atta.
wash-NEG-PAST
(intended) ‘Bill washed the car carefully, but he didn’t wash the bicycle carefully.’

- (18) *Bill-wa sizukani gohan-o tabe-ta kedo, *pro*/kare-wa Δ **dezaato-o**
Bill-TOP quietly meal-ACC eat-PAST but *pro*/he-TOP desert-ACC
tabe-nak-atta.
eat-NEG-PAST
(intended) ‘Bill ate the meal quietly, but he didn’t eat the desert quietly.’

No Japanese speakers that I have consulted denied the sharp contrast between (15)/(16) and (17)/(18). Even speakers who judged the elided adjunct reading in (15)/(16) as being unacceptable admitted that there is a significant contrast between

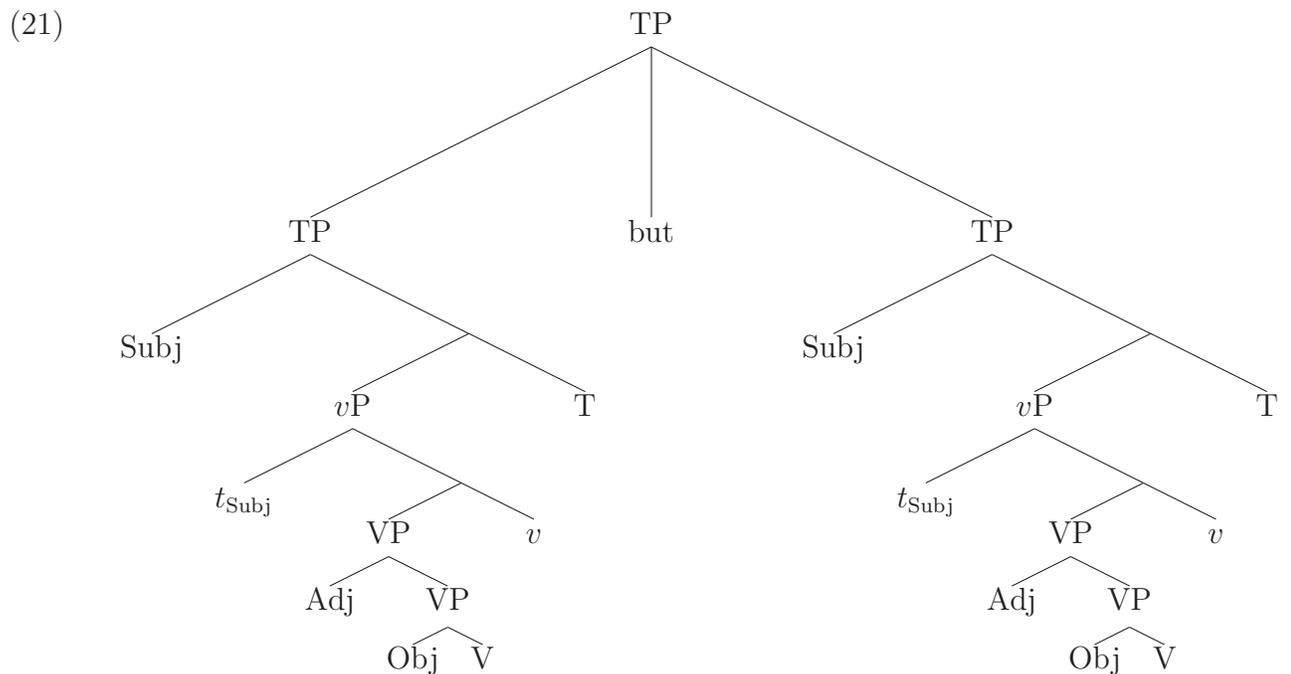
(15)/(16) and (17)/(18).

The examples in (19) and (20) make the same point more clearly. In the a-examples, the elided adjunct reading is perfectly acceptable while it is impossible in the b-examples, where only the adjuncts are null.

- (19) a. John-wa waado-de ronbun-o kak-u kedo, Mary-wa Δ
John-TOP Word-with paper-ACC write-PRES but Mary-TOP
kak-ana-i.
write-NEG-PRES
(intended) ‘John writes a paper with Word but, Mary doesn’t write a
paper with Word.’
- b. *John-wa waado-de ronbun-o kak-u kedo, *pro*/kare-wa Δ
John-TOP Word-with paper-ACC write-PRES but *pro*/he-TOP
nikki-o Δ kak-ana-i.
diary-ACC write-NEG-PRES
(intended) ‘John writes a paper with Word but, he doesn’t write a diary
with Word.’
- (20) a. John-wa hutari-dake-de Mary-to ason-da kedo, Bill-wa Δ
John-TOP two-only-with Mary-with play-PAST but Bill-TOP
asob-ana-katta.
play-NEG-PAST
(intended) ‘John played with Mary alone, but Bill didn’t play with
Mary alone’
- b. *John-wa hutari-dake-de Mary-to ason-da kedo, *pro*/kare-wa Δ
John-TOP two-only-with Mary-with play-PAST but *pro*/he-TOP
Bill-to asob-ana-katta.
Bill-with play-NEG-PAST
(intended) ‘John played with Mary alone, but he didn’t play with Bill
alone’

These facts indicate that adjuncts can be null at least in some cases, contrary to the widely held assumption.

Given that (15)–(20) all involve a coordinate structure, however, one might wonder if these sentences can be derived through the across-the-board (ATB) extraction of the objects and the adjuncts rather than ellipsis.⁵ In what follows, I show that this is impossible. These sentences involve TP conjunction since each conjunct has tense. Thus, the underlying structure for these sentences is as the following, assuming that the adjuncts are adjoined to VP:



In order to derive the sentences in question via ATB movement of the objects and the adjuncts, we have to assume either (i) that ATB movement can go into the first conjunct, (ii) that the subject in the first conjunct is moved out of the first conjunct, or (iii) that the subject in the first conjunct is base-generated outside of the first conjunct. In what follows, I show that all of these assumptions are dubious.

⁵I thank a *Journal of East Asian Linguistics* reviewer for pointing out the possibility of an ATB movement derivation.

First, let us consider the assumption (i). If the subject in the first conjunct is within the first TP conjunct, we have to assume that ATB movement of the adjunct and the object goes into the first conjunct, as shown in (22) since the objects and the adjuncts follow the subjects of the first conjuncts in these sentences.

$$(22) \quad [_{\text{TP}} \text{Subj} \mathbf{Adj} \mathbf{Obj} t_{\text{Adj}} t_{\text{Obj}} \text{V T}] \text{ but } [_{\text{TP}} \text{Subj} t_{\text{Adj}} t_{\text{Obj}} \text{V T}]$$

This is not what we usually call ATB movement. Ordinary ATB movement is to extract an element out of both the first conjunct and the second conjunct, as illustrated by the following:

$$(23) \quad \text{XP} \dots [\dots t_{\text{XP}} \dots] \text{ conj } [\dots t_{\text{XP}} \dots]$$

Given this, it is reasonable to assume that ATB movement like (22) is not allowed unless empirical evidence for it is provided.

Next, let us consider the assumptions (ii) and (iii). If the subject in the first conjunct is somehow outside of the first conjunct, it is possible to derive these sentences by ordinary ATB movement like (23). Suppose that the subject in their first conjunct can move out of the first conjunct or it can be base-generated outside of the first conjunct and a *pro*, which is coreferential to it, appears in the first conjunct. Then, the relevant sentences could be derived by ATB extraction of the adjunct and the object, as shown in the following:

$$(24) \quad \text{Subj} \mathbf{Adj} \mathbf{Obj} \dots [_{\text{TP}} t_{\text{Subj}} t_{\text{Adj}} t_{\text{Obj}} \text{V T}] \text{ conj } [_{\text{TP}} \text{Subj} t_{\text{Adj}} t_{\text{Obj}} \text{V T}]$$

(25) Subj₁ **Adj Obj** ... [TP *pro*₁*t*_{Adj}*t*_{Obj} V T] conj [TP Subj *t*_{Adj}*t*_{Obj} V T]

In (24), the adjunct and the objects move out of each conjunct in an ATB fashion. The extracted adjunct and object can follow the subject of the first conjunct because the subject also moves out of the first conjunct. (25) also involves ATB movement of the adjuncts and the objects and they can follow the subject of the first conjunct. This is possible because the subject is base-generated outside of the first conjunct.

The derivation in (24) is illicit because it involves movement of the subject out of only one of the conjuncts (i.e. a coordinate structure constraint violation). Coordinate structure constraint violations are lifted only when the relevant movement is performed in an ATB fashion. This is illustrated by the following examples:

- (26) a. **Tosyokan-de-wa**₁ boku-wa [Taro-ga *t*₁ benkyoositei-ru] si [library-in-TOP I-TOP Taro-NOM study-PRES and Hanako-mo *t*₁ benkyoositei-ru] to omottei-ta.
Hanako-also study-PRES C think-PAST
(Lit.) ‘In the library, I thought that [Taro studies] and [Hanako studies too].’
- b. ***Tosyokan-de-wa**₁ boku-wa [Taro-ga *t*₁ benkyoositei-ru] si [library-in-TOP I-TOP Taro-NOM study-PRES and Hanako-mo **kissaten-de** benkyoositei-ru] to omottei-ta.
Hanako-also cafe-in study-PRES C think-PAST
(Lit.) ‘In the library, I thought that [Taro studies] and [Hanako studies in the cafe too].’

These sentences involve topicalization of the PP *tosyokan-de* ‘library-in’. Topicalization of PPs, in contrast with that of NPs, necessarily involves movement since it exhibits subjacency effects (see Saito 1985:329–339). (26a) is acceptable since

PP-topicalization is performed in an ATB fashion. On the other hand, in (26b), PP-topicalization takes place only in the first conjunct. Given that PP-topicalization always involves movement, the unacceptability of (26b) indicates that movement out of only one of the conjuncts are prohibited in Japanese. Therefore, we can conclude that the relevant sentences in (15)–(20) cannot be derived as (24), which involves such illicit movement.

Furthermore, a derivation like (25) is also illicit. (25) involves a base-generated topic phrase that is interpreted as the subject only in the first conjunct; the second conjunct has a different subject. As shown in the following examples, topicalization out of a conjunct is possible only when it applies both to the first conjunct and to the second conjunct in an ATB fashion:

- (27) a. **Ringo-wa**₁ boku-wa [Taro-ga *pro*₁ tabe-ta] si [Hanako-mo
apple-TOP I-TOP Taro-NOM eat-PAST and Hanako-also
*pro*₁ tabe-ta] to omottei-ta.
eat-PAST C think-PAST
(Lit.) ‘An apple, I thought that [Taro eat] and [Hanako ate].’
- b. ***Ringo-wa**₁ boku-wa [Taro-ga *pro*₁ tabe-ta] si [Hanako-mo
apple-TOP I-TOP Taro-NOM eat-PAST and Hanako-also
mikan-o tabe-ta] to omottei-ta.
orange-ACC eat-PAST C think-PAST
(Lit.) ‘An apple, I thought that [Taro eat] and [Hanako ate an orange
too].’

These sentences involve topicalization of the NP (*ringo* ‘apple’). NP-topicalization, unlike PP-topicalization, can be implemented by base-generating the topicalized NP in the sentence-initial position in Japanese (see Saito 1985:281-314). Given this, the unacceptability of (27b) indicates that topicalization out of only one of the conjunct

is not allowed even if it can be implemented by base-generation. Therefore, it leads us to conclude that the relevant sentences in (15)–(20) cannot be derived as (25).

Given these considerations, I conclude that the relevant sentences in (15)–(20) cannot be derived via ATB movement of the adjuncts and the objects. Therefore, there is no problem in using sentences involving a conjunction structure in order to examine the possibility of null adjunct if the overt adjunct in the antecedent clause is placed after the subject of the first conjunct.

Furthermore, the same contrast that we find in (15)–(20) can also be found in other environments than conjunction contexts, as shown in the following examples:

(28) *Independent Negative Antecedent Clause*

- a. Taro-wa teineini kuruma-o araw-anak-atta.
Taro-TOP carefully car-ACC wash-NEG-PAST
'Taro didn't wash the car carefully.'
- b. ?John-mo Δ araw-anak-atta.
John-also wash-NEG-PAST
(intended) 'John didn't wash the car carefully either.'
- c. *John-wa Δ **zitynsya-o** araw-anak-atta.
John-TOP bicycle-ACC wash-NEG-PAST
(intended) 'John didn't wash the bicycle.'

(29) *Question-Answer Pair*

- a. Q: Kimi-wa teineini kuruma-o arat-ta no?
you-TOP carefully car-ACC wash-PAST Q
'Did you wash the car carefully?'
- b. ?A: Iya, *pro*/boku-wa Δ araw-anak-atta-yo.
no *pro*/I-TOP wash-NEG-PAST-PRT
(intended) 'No, I didn't wash the car carefully.'

- c. *A: Un, demo *pro*/boku-wa Δ **zitchensya-o** araw-anak-atta yo.
 yes, but *pro*/I-TOP bicycle-ACC wash-NEG-PAST PRT
 (intended) ‘Yes, but I didn’t wash the bicycle carefully.’

(30) *Subordinate Clause*

- a. Taro-ga teineini kuruma-o araw-anak-atta node,
 Taro-NOM carefully car-ACC wash-NEG-PAST because
 ‘Because Taro didn’t wash the car carefully,’
- b. ?Boku-mo Δ araw-anak-atta.
 I-also wash-NEG-PAST
 (intended) ‘I didn’t wash the car carefully either.’
- c. *Boku-wa Δ **zitchensya-o** araw-anak-atta.
 I-TOP bicycle-ACC wash-NEG-PAST
 (intended) ‘I didn’t wash the car carefully either.’

In these examples, the a-sentences serve as antecedent sentences. In the b-sentences, in which both adjuncts and objects are null, the elided adjunct reading is much easier to obtain than in the c-sentences, in which only adjuncts are null. Because these sentences do not involve conjunction structures, they cannot be derived by ATB movement.

Given these facts, it is reasonable to conclude that an adjunct can sometimes be null in Japanese. The accurate generalization about adjunct ellipsis in Japanese seems to be the following:⁶

(31) *Generalization (preliminary version 1)*

In Japanese, adjuncts can be null only if the clause-mate object (or other

⁶Simpson et al. (2013) observe that the same generalization holds in Bangla, Hindi, and Malayalam.

internal argument) is also null.

In the next section, I consider if this generalization can be captured under the assumption that headless *vP/VP*-ellipsis is not available in Japanese.

6.2.2 Oblique Movement Analysis

If headless *vP/VP*-ellipsis is not available in Japanese, the question is how adjuncts can be null at all. Takahashi (2008b) suggests a possible explanation of the generalization (31) under an analysis in which headless *vP/VP*-ellipsis is not posited. His analysis is based on so-called oblique movement (Saito 1994).

In Japanese, argument Wh-phrases can be contained in an island such as the complex NP island while adverbial Wh-phrases cannot, as shown in (32) (Lasnik and Saito 1984, see also Huang 1982).

- (32) a. John-wa [[nani-o kat-ta] hito]-o sagasitei-ru no?
John-TOP what-ACC buy-PAST person-ACC be.looking.for-PRES Q
(Lit.) ‘John is looking for a person who bought what?’
- b. *John-wa [[sono hon-o naze kat-ta] hito]-o
John-TOP that book-ACC why buy-PAST person-ACC
sagasitei-ru no?
be.looking.for-PRES Q
(Lit.) ‘John is looking for a person who bought that book why?’

In (32a), the object Wh-phrase *nani-o* ‘what-ACC’ is contained in a complex NP island. The sentence is acceptable. On the other hand, in (32b), the relevant Wh-phrase is an adverb, *naze* ‘why’, yielding an unacceptable sentence. Interestingly,

Saito (1994) observes that sentences like (32b) improve if another argument Wh-phrase is added inside the island, as shown in (33).

- (33) ??John-wa [[nani-o naze kat-ta] hito]-o sagasitei-ru
 John-TOP what-ACC why buy-PAST person-ACC be.looking.for-PRES
 no?
 Q
 (Lit.) ‘John is looking for a person who bought what why?’

In (33), the object as well as the adverb is a Wh-phrase and the sentence becomes better than (32b). Saito (1994) proposes that (33) is acceptable since the adverbial Wh-phrase can adjoin to the additional argument Wh-phrase in LF (oblique movement). This oblique movement makes it possible for the adverbial Wh-phrase *naze* ‘why’ to covertly move out of the complex NP island since argument Wh-phrases are allowed to move out of a complex NP island at LF, as shown in (32a).

Extending Saito’s (1994) idea to overt syntax, Sohn (1994) accounts for the contrast between (34a) and (34b).

- (34) a. *Taro-wa [[Hanako-ga sono hito-o naze uttae-ta toyuu]
 Taro-TOP Hanako-NOM that person-ACC why sue-PAST that
 uwasa]-o kii-ta no?
 rumor-ACC hear-PAST Q
 (Lit.) ‘Taro heard the rumor that Hanako sued that person why?’
- b. ??Naze₁ sono hito-o₂ Taro-wa [[Mary-ga t₁ t₂ uttae-ta toyuu]
 why that person-ACC Taro-TOP Mary-NOM sue-PAST that
 uwasa]-o kii-ta no?
 rumor-ACC hear-PAST Q
 (Lit.) ‘Why that person, Taro heard the rumor that Mary sued?’

Sentence (34a) is unacceptable since the adverbial Wh-phrase *naze* ‘why’ cannot

move out of the complex NP to take scope over the matrix clause at LF. However, as (34b) shows, if *naze* ‘why’ overtly moves (via scrambling) out of the complex NP together with the object *sono hito-o* ‘that person-ACC’, the sentence is improved. Sohn (1994) proposes that oblique movement is not limited to LF and that in (34b), *naze* ‘why’ overtly adjoins to the object *sono hito-o* ‘that person-ACC’ and then the newly created constituent undergoes scrambling. As shown in (35), objects can be scrambled out of a complex NP island while *naze* ‘why’ cannot.

- (35) a. Sono hito-o₁ Taro-wa [[Hanako-ga t₁ uttae-ta toyuu]
 that person-ACC Taro-TOP Hanako-NOM sue-PAST that
 uwasa]-o kii-ta.
 rumor-ACC hear-PAST
 (Lit.) ‘That person, Taro heard the rumor that Hanako sued.’
- b. *Naze₁ Taro-wa [[Mary-ga t₁ sono hito-o uttae-ta toyuu]
 why Taro-TOP Mary-NOM that person-ACC sue-PAST that
 uwasa]-o kii-ta no?
 rumor-ACC hear-PAST Q
 (Lit.) ‘Why, Taro heard the rumor that Mary sue that person?’

Takahashi (2008b) applies the oblique movement analysis to data involving adjunct ellipsis. This analysis is illustrated in (36).

- (36) a. [VP Obj Adj V]
 b. [VP [DP Adj [DP Obj]] t_{Adj} V] (Oblique Movement)
 c. [VP ~~[DP Adj [DP Obj]]~~ t_{Adj} V] (Argument Ellipsis)

In (36a), the verbal projection contains an object and an adjunct. In (36b), the adjunct undergoes oblique movement, adjoining to the object. In (36c), argument

ellipsis applies to the newly created constituent, which is an argument, deriving an adjunct ellipsis sentence. Under this analysis, we can explain why an adjunct can be elided only when the clause-mate object (or other internal argument) is also elided without positing headless *vP/VP*-ellipsis.

Although this analysis is intriguing, it cannot cover all data involving null adjuncts. As shown in (37), the elided adjunct reading is available even if the sentence is intransitive.^{7, 8}

⁷The same holds true also in other environments:

- (i) a. Kono mati-de-wa itumo densya-ga zikandoorini ko-na-i.
 this town-in-TOP always train-NOM on.time come-NEG-PRES
 ‘In this town, trains always do not come on time.’
- b. Basu-mo Δ ko-na-i.
 bus-also come-NEG-PRES
 (intended) ‘Buses do not come on time either.’
 (Negative Independent Sentence as Antecedent)
- (ii) Densya-ga itumo zikandoorini ko-na-i node, boku-wa basu-mo Δ
 train-NOM always on.time come-NEG-PRES because I-TOP bus-also
 ko-na-i to omottei-ta.
 come-NEG-PRES C think-PAST
 (intended) ‘I thought that buses do not come on time because trains always
 do not come on time.’ (Subordinate Clause)

⁸Takahashi (2008b) judges a similar example with a different adverb like (i) as being unacceptable under the elided adjunct reading.

- (i) a. Sinkansen-wa okurete ko-nak-atta.
 super.express-TOP late come-NEG-PAST
 ‘The super-express did not come late.’
- b. Basu-mo Δ ko-nak-atta.
 bus-also come-NEG-PAST
 (Lit.) ‘The bus didn’t come either.’

- (37) Densya-wa zikandoorini ki-ta kedo, Basu-wa Δ ko-nak-atta.
 train-TOP on.time come-PAST but bus-TOP come-NEG-PAST
 (intended) ‘The train came on time, but the bus didn’t come on time.’

I agree with his judgment on (i). Even if we modify (i) to make the sequence of the sentences more natural, as in (ii), the elided adjunct reading is still hard to obtain although (ii) is slightly better than (i) under the elided adjunct reading.

- (ii) ??Sinkansen-wa okurete ki-ta kedo, basu-wa Δ ko-nak-atta.
 super.express-TOP late come-PAST but bus-TOP come-NEG-PAST
 (intended.) ‘The super-express came late, but the bus didn’t come late.’

A *Journal of East Asian Linguistics* reviewer suggests that the difference between *zikandoorini* ‘on.time’ and *okurete* ‘late’ in this respect could be accounted for under the argument ellipsis analysis if we assume that *zikandoorini* ‘on.time’ is a quasi-argument of tense while *okurete* ‘late’ is a pure adjunct; argument ellipsis can elide the former because it is a kind of arguments. If this analysis is correct, we cannot conclude from (37) that an adjunct can be null in an intransitive sentence.

However, I doubt that the two phrases are different in their argumental status on the basis of the following data:

- (iii) a. ??**Zikandoorini**₁ Taro-ga [basu-ga t_1 ki-ta to] it-ta.
 on.time Taro-NOM bus-NOM come-PAST C say-PAST
 (Lit.) ‘On time₁, Taro said [that the bus came t_1].’
- b. ??**Okurete**₁ Taro-ga [basu-ga t_1 ki-ta to] it-ta.
 late Taro-NOM bus-NOM come-PAST C say-PAST
 (Lit.) ‘Late₁, Taro said [that the bus came t_1].’

These examples involve long-distance scrambling. The possibility of long-distance scrambling is one standard diagnostic to distinguish arguments from adjuncts in Japanese; Arguments are relatively easier to undergo long-distance scrambling than adjuncts. (iii) indicates that there is no difference between *zikandoorini* ‘on.time’ and *okurete* ‘late’ in the degree of the acceptability of long-distance

In the second conjunct in (37), there is no argument DP that the adjunct *zikandoorini* ‘on time’ can adjoin to. Therefore, argument ellipsis, combined with oblique movement, cannot derive (37) under the elided adjunct reading.

Given the observed facts about intransitive sentences, I modify the generalization (31) as in the following:

(38) *Generalization (preliminary version 2)*

An adjunct can be null only if either

a. clause-mate VP-internal elements are also null or

b. the VP that the adjunct modifies does not contain other elements than scrambling. Given the low acceptability of (iii), I assume that these two phrases are both adjuncts.

Thus, we can take (37) as evidence that an adjunct can be null in an intransitive sentence.

The question is, why are these two adjuncts different in the possibility of ellipsis? Although I do not have a satisfactory answer to this question, I would like to point out that one of factors that makes (ib) and (ii) more degraded than a sentence like (37) might be related to the fact that the adjunct *okurete* ‘late’, unlike *zikandoorini* ‘on.time’, makes a sentence degraded even in non-ellipsis contexts when it is used in a negative sentence. This is illustrated by the following:

- (iv) a. Basu-ga **zikandoorini** ko-nak-atta.
 bus-NOM on.time come-NEG-PAST
 ‘The bus didn’t come on time.’
- b. ?Basu-ga **okurete** ko-nak-atta.
 bus-NOM late come-NEG-PAST
 ‘The bus didn’t come late.’

Although (ivb) is not completely unacceptable, it seems that the sentence requires a rich context to be felicitously uttered. In contrast, (iva) sounds fine without any contexts. Whatever makes (ivb) degraded must also make ellipsis sentences like (ib) and (ii) degraded.

the adjunct.

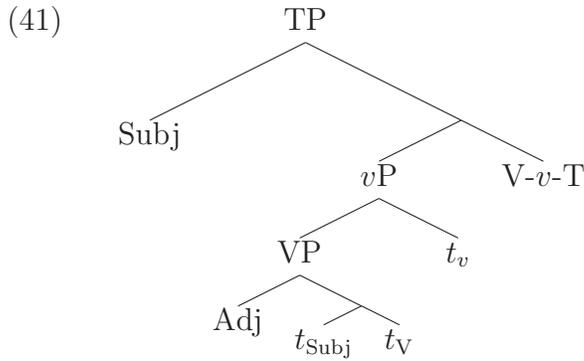
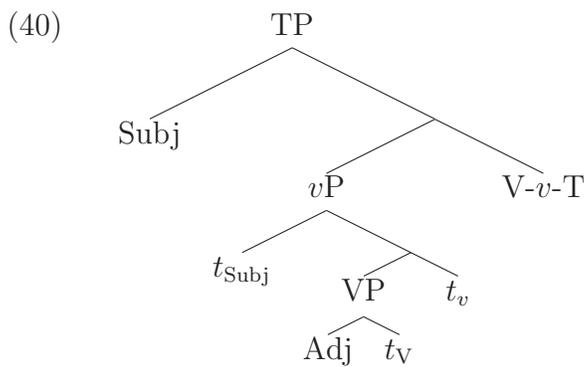
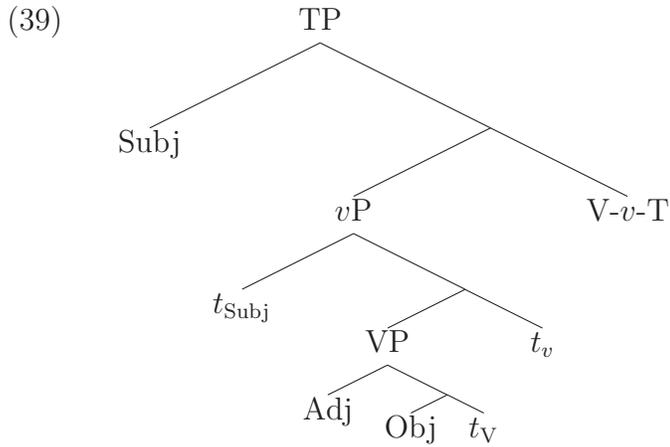
As we saw above, the argument ellipsis analysis could account for (38a) if oblique movement is available. However, (38b) is hard to account for under the argument ellipsis analysis even if we assume that oblique movement is available.

6.2.3 Explanation under the Headless XP-Ellipsis Analysis

In this section, I show that the generalization (38) can be accounted for if we assume that headless XP-ellipsis is available in Japanese.

6.2.3.1 Null Adjuncts as Headless XP-Ellipsis

The fact that an adjunct can be null when clause-mate VP-internal elements are also null and the fact that an adjunct can be null in an intransitive sentence can be easily accounted for under the headless XP-ellipsis analysis. Suppose that VP adjuncts are adjoined to VP. Then, structures for transitive sentences, unergative sentences, and unaccusative sentences are as (39), (40), and (41), respectively, after V moves to T.



In these structures, *v*P_s /VP_s contain the adjuncts. Thus, if headless XP-ellipsis applies to the *v*P_s/VP_s, null adjuncts can be derived.

Given this analysis of null adjuncts, it is predicted that adjuncts that are outside of *v*P cannot be null. Although it is not easy to see which adjuncts are outside of *v*P in head-final languages like Japanese, I argue that reason adjuncts are higher than *v*P and cannot be null.

A reason adverbial clause cannot take scope under clause-mate negation, as shown in the following:

- (42) Taro-wa [*pro* baka-da kara] kaisya-o yame-nak-atta.
 Taro-TOP *pro* fool-COP because company-ACC quit-NEG-PAST
 = ‘Taro didn’t quit the company because he was a fool.’
 = *‘Taro quit the company not because he was a fool.’

This sentence can be true only under the situation where Taro didn’t quit the company. If the adverbial clause were able to be within the scope of negation, the sentence must be true even when Taro quit the company. Furthermore, when the wide scope reading of a reason adverbial clause with respect to negation is pragmatically weird, the sentence becomes unacceptable, as shown in the following:

- (43) #Taro-wa [*pro* benkyoo-ga suki-da kara] gakkoo-ni ik-anak-atta.
 Taro-TOP *pro* study-NOM like-COP because school-DAT go-NEG-PAST
 = # ‘Taro didn’t go to school because he likes studying.’
 = *‘Taro went to school not because he likes studying’

If the adverbial clause were able to take scope under negation, the sentence should be acceptable.

I conclude from these observations that a reason adverbial clause cannot take scope under clause-mate negation. I assume from this that reason adjuncts are higher than NegP. Because NegP is higher than *v*P, it follows that reason adjuncts are outside of *v*P.

Note that a reason adverbial clause can take scope under negation in the higher clause, as shown in the following:

- (44) Boku-wa [Taro-ga [*pro* **baka-da kara**] kaisya-o yame-ta to]
 I-TOP Taro-NOM *pro* fool-COP because company-ACC quit-PAST C
 omottei-**na-i**.
 think-NEG-PRES
 ‘I don’t think that the reason why Taro quit the company is because he
 was a fool.’

This sentence is true even when the speaker thinks that Taro quit the company.

With this in mind, let us consider the following sentence:

- (45) *Boku-wa [Taro-wa [*pro* **baka-da kara**] kaisya-o yame-ta to]
 I-TOP Taro-TOP *pro* fool-COP because company-ACC quit-PAST C
 omottei-ru kedo, *pro* [Hanako-wa Δ yame-ta to] omottei-na-i.
 think-PRES but *pro* Hanako-TOP quit-PAST C think-NEG-PRES
 (intended) ‘I think that Taro quit the company because he was a fool,
 but I don’t think that Hanako quit the company because she was a fool.’

The second conjunct is an ellipsis sentence, which, unlike (44), does not have the narrow scope reading of the adverbial clause with respect to the matrix negation: the sentence is false if the speaker thinks that Hanako quit the company. If it contained the null adjunct meaning because she was a fool, it should be true in this situation, like (44).⁹ I conclude from this observation that a reason adjunct cannot

⁹This contrasts with an instrumental adjunct like *Word-de* ‘Word-with’, as shown in the following examples:

- (i) a. Boku-wa [Taro-ga **Word-de** ronbun-o kai-ta to] omottei-na-i.
 I-TOP Tarp-NOM Word-with paper-ACC write-PAST C think-NEG-PRES
 ‘I don’t think that Taro wrote a paper with Word.’
 b. Boku-wa [Taro-wa **Word-de** rongun-o kaik-ta to] omottei-ru kedo, *pro*
 I-TOP Taro-TOP Word-with paper-ACC write-PAST C think-NEG-PRES but *pro*
 [Hanako-wa Δ kai-ta to] omottei-na-i.
 Hanako-TOP write-PAST C think-NEG-PRES
 (intended) ‘I think that Taro wrote a paper with Word, but I don’t think that

be null.

This fact can be accounted for under the headless *vP/VP*-ellipsis analysis because reason adjuncts are outside of *vP*; *vP/VP*-ellipsis cannot elide an adjunct outside of *vP*. If this analysis is correct, we predict that a reason adjunct can be null if a larger domain than *vP* is elided. This prediction is indeed borne out, as shown in the following:

- (46) John-wa [Taro-wa [*pro* **baka-da kara**] kaisya-o yame-ta to]
John-TOP Taro-TOP *pro* fool-COP because company-ACC quit-PAST C
omottei-ru kedo, boku-wa Δ omottei-ana-i.
think-PRES but I-TOP think-NEG-PRES
(intended) ‘John thinks that Taro quit the company because he was a fool,
but I don’t think that Hanako quit the company because she was a fool.’

In the second conjunct, the entire CP complement is missing and it can be true even if the speaker thinks that Taro quit the company. This means that the reason adjunct can be null in this case. Note that the argument ellipsis analysis (combined with the oblique movement analysis) cannot account for the difference between (45) and (46).

To sum up, the fact that an adjunct can be null when clause-mate VP-internal elements are also null or it is in an intransitive sentence can be accounted for under the *vP/VP*-ellipsis analysis of null adjuncts. Furthermore, we have seen that reason

Hanako wrote a paper with Word.’

Word-de ‘Word-with’ can be within the matrix negation, as shown in (ia): the sentence is true even if the speaker thinks that Taro wrote a paper. The same meaning can obtain even in an ellipsis clause, as (ib) shows.

adjuncts, which are evidently outside of *vP*, cannot be null. This fact is expected under the *vP/VP*-ellipsis analysis of null adjuncts.

6.2.3.2 Ban Against Partial Discourse Deletion: Kuno 1998

We have seen why adjuncts *can* be null under the headless XP-ellipsis analysis. However, we need to account for why adjuncts cannot be null if any VP-internal element remains overt (i.e. why are (18), (28c), (29c), (19b), and (20b) unacceptable under the elided adjunct reading?). Suppose that a VP-internal element XP scrambles out of *vP*. Then, the adjunct should be able to be null without deleting the XP if headless *vP/VP* is elided, as illustrated by the following structure:

$$(47) \quad \text{Subj XP } \left[\begin{array}{c} \text{Adj}_{\text{XP}} \\ \text{vP } t_{\text{Subj}} \text{ Adj}_{\text{XP}} t_{\text{v}} \end{array} \right] \text{V-}v\text{-T}$$

One might argue that this derivation violates the ban on string-vacuous scrambling (see 2.4.3) because scrambling of XP does not affect word order as a result of deletion of *vP*. Thus, if the ban on string-vacuous scrambling is a representational rather than derivational condition, the unacceptability of the sentences in question might be attributed to this condition.

However, the same explanation cannot apply to the following examples, where the object *nikki-o* ‘diary-ACC’ is placed before the subject.

$$(48) \quad \begin{array}{l} * \text{Ronbun-}o_1 \text{ Taro-wa Word-de } t_1 \text{ kak-u kedo, } \mathbf{nikki-o}_2 \\ \text{paper-ACC Taro-TOP Word-with write-PRES but diary-ACC} \\ \text{pro/kare-wa } \Delta t_2 \text{ kak-ana-i.} \\ \text{pro/he-TOP write-NEG-PRES} \end{array}$$

(intended) ‘Taro writes a paper with Word, but he doesn’t write a diary with Word.’

In (48), scrambling of the object affects word order, hence not string-vacuous scrambling. Still, the elided adjunct reading is unavailable. Thus, the ban on string-vacuous scrambling cannot account for (48).

I argue that the sentences where a VP-internal element remains overt are unacceptable because they violate Kuno’s (1998) ban against partial discourse deletion, which I used in 5.8.3 when I accounted for the impossibility of scrambling out of an elided CP complement in Japanese.

(49) *Ban Against Partial Discourse Deletion* (Kuno 1998:84)

If discourse deletion of recoverable constituents is to apply, apply it across the board to non focus constituents. Nonfocus constituents which are left behind by partial discourse deletion will be reinterpreted, if possible, as representing contrastive foci.

According to this constraint, in order to interpret a sentence as involving a null element, all non-focused and/or non-contrastive elements must be null. With this in mind, let us consider (48) again. In order to interpret the second conjunct in (48) as containing the null adjunct, all non-focused and non-contrastive elements must be null. However, the scrambled object *nikki-o* ‘diary-ACC’ (and the subject as well if it is an overt pronoun rather than *pro*) is neither focused nor contrastive. As a result, this sentence cannot be construed as a null adjunct sentence: it can only be

interpreted as a non-ellipsis sentence meaning that he doesn't write a diary at all.

The contrast between the following sentences confirms that this explanation is on the right track:

- (50) a. Taro-wa Word-de ronbun-o kak-u kedo, *pro* Δ **nikki-wa**
Taro-TOP Word-with paper-ACC write-PRES but *pro* diary-TOP
kak-ana-i.
write-NEG-PRES
(intended) 'Taro writes a paper with Word but, he does not write a
diary with Word.'
- b. *Taro-wa Word-de ronbun-o kak-u kedo, *pro* Δ **nikki-o**
Taro-TOP Word-with paper-ACC write-PRES but *pro* diary-ACC
kak-ana-i.
write-NEG-PRES
(intended) 'Taro writes a paper with Word but, he does not write a
diary with Word.'

These sentences are different only in that the stranded object is marked with the contrastive focus maker *wa* in (50a) while it is marked with the accusative marker *o* in (50b). (50a) can be interpreted as involving a null adjunct because the only non-null element is contrastive. On the other hand, in (50b), the non-focused and non-contrastive object remains overt, violating Kuno's constraint. The same contrast between a contrastive-marked element and an accusative-marked element can be found in other environments, as shown in the following:¹⁰

¹⁰Note that the argument ellipsis analysis, combined with the oblique movement analysis, can also account for the most of the data if Kuno's constraint is adopted. However, it is a mystery why there is a contrast between (51b) and (51c) under this analysis. This analysis predicts that they are both unacceptable under the elided adjunct reading. This is so because there is no null argument that the adjunct *teineini* 'carefully' can adjoin to in these sentences.

- (51) a. Taro-wa teineiini kuruma-o araw-anak-atta.
Taro-TOP carefully car-ACC wash-NEG-PAST
'Taro didn't wash the car carefully.'
- b. John-mo/wa Δ **kuruma-wa/zitensya-wa** araw-anak-atta.
John-also/TOP car-TOP/bicycle-TOP wash-NEG-PAST
(intended) 'John (also) didn't wash the car/the bicycle carefully.'
- c. *John-mo/wa Δ **kuruma-o/zitensya-o** araw-anak-atta.
John-also/TOP car-ACC/bicycle-ACC wash-NEG-PAST
(intended) 'John (also) didn't wash the car/the bicycle carefully.'
- (52) a. Q: Kimi-wa Word-de ronbun-o kak-u no?
you-TOP Word-with paper-ACC write-PRES Q
'Do you write a paper with Word?'
- b. A: Iya, *pro* Δ **ronbun-wa** kak-ana-i-yo.
no *pro* paper-TOP write-NEG-PRES-PRT
(intended) 'No, I don't write a paper with Word.'
- c. *A: Iya, *pro* Δ **ronbun-o** kak-ana-i-yo.
no, *pro* paper-ACC write-NEG-PRES-PRT
(intended) 'No, I don't write a paper with Word.'
- d. A: Un, demo *pro* Δ **nikki-wa** kak-ana-i-yo.
yes, but *pro* diary-TOP write-NEG-PRES-PRT
'Yes, but I don't write a diary with Word.'
- e. *A: Un, demo *pro* Δ **nikki-o** kak-ana-i-yo.
yes, but *pro* diary-ACC write-NEG-PRES-PRT
'Yes, but I don't write a diary with Word.'

Given the fact about contrastive-marked elements, I propose the following generalization as the final version:

(53) *Generalization (final version)*

An (*vP*-internal) adjunct can be null only if either

- a. clause-mate *vP*-internal elements are also null or

- b. clause-mate *vP*-internal elements are marked with *wa* or
- c. the *vP* that the adjunct modifies does not contain other elements than the adjunct.

As we have seen so far, the headless XP-ellipsis analysis, combined with Kuno's constraint, can account for this generalization. An adjunct can be null when there is no overt clause-mate *vP*-internal element because headless XP-ellipsis can apply to a headless *vP* that contains the adjunct. An adjunct cannot be null when there is an overt non-contrastive-marked *vP*-internal element since Kuno's constraint forces a non-ellipsis interpretation.

6.2.4 Adverbial *-Sika* NPIs

Kuno's constraint in (49) can also account for Takita's (2011) counterexamples against the existence of headless *vP*/*VP*-ellipsis in Japanese. Takita (2011) uses *-sika* NPIs, especially an adjunct usage of them. NPs can be turned into NPIs by the suffix *-sika*. In (54a), the object is a *-sika* NPI. A *-sika* NPI can also be associated with another NP. In (54b), the *-sika* NPI, *tomato-sika* 'tomato-SIKA', is associated with the object, *yasai-o* 'vegetable-ACC'.

- (54) a. Taro-wa tomato-sika tabe-nak-atta.
 Taro-TOP tomato-SIKA eat-NEG-PAST
 'Taro eat only tomatoes.'
- b. Taro-wa tomato-sika yasai-o tabe-nak-atta.
 Taro-TOP tomato-SIKA vegetable-ACC eat-NEG-PAST
 'Among vegetables, Taro eat only tomatoes.'

Takita (2011) argues, based on data concerning long-distance scrambling, that *-sika* NPIs without associated NPs are arguments while *-sika* NPI with associated NPs are adjuncts.

Given these two types of *-sika* NPIs, he argues that the following data provide evidence that the argument ellipsis analysis is superior to the VP-ellipsis analysis.

Let us first consider (55), which involves an argumental *-sika* NPI.

- (55) a. Taro-wa [zibun-no tukut-ta ringo]-sika tabe-nak-atta.
 Taro-TOP self-GEN grow-PAST apple-SIKA eat-NEG-PAST
 ‘Taro ate only the apples that he had grown.’
- b. Hanako-mo Δ tabe-nak-atta.
 Hanako-also eat-NEG-PAST
 (intended) ‘Hanako also ate only the apples that she had grown.’
 (Takita 2011)

The null object sentence in (55b) allows the intended NPI reading, which means that the argumental *-sika* NPI can be null. In contrast with the argumental *-sika* NPI, an adverbial *-sika* NPI cannot be null, as the following sentences indicate:

- (56) a. Taro-wa [zibun-no tukutta mono]-sika yasai-o
 Taro-TOP self-GEN grew thing-SIKA vegetables-ACC
 tabe-na-katta.
 eat-NEG-PAST
 ‘Among vegetables, Taro ate only the things that he had grown.’
- b. *Hanako-wa Δ kudamono-o tabe-na-katta.
 Hanako-TOP fruits-ACC eat-NEG-PAST
 (intended) ‘Among fruits, Hanako ate only the things that she had grown.’
 (Takita 2011, slightly modified)

The sentence in (56b) does not allow the intended NPI reading.

Takita (2011) argues that the argument ellipsis analysis can capture this difference between the two types of *-sika* NPIs while the VP-ellipsis analysis cannot. The logic is the same as in the case of null adjuncts in chapter 6.5.1. Argument ellipsis can only elide arguments. This is why argumental *-sika* NPIs can be null while adverbial *-sika* NPIs cannot under the argument ellipsis analysis. On the other hand, under the VP-ellipsis analysis, it is unexpected that the adverbial *-sika* NPI cannot be null in (56b) since headless XP-ellipsis should be able to apply to VP after the object *kudamono-o* ‘fruits-ACC’ scrambles out of the VP.

However, the impossibility of the null adverbial *-sika* NPI in (56b) can be accounted for by Kuno’s constraint even if headless VP-ellipsis is available in Japanese. In (56b), the object *kudamono-o* ‘fruits-ACC’ is neither focused nor contrastive. Thus, according to Kuno’s constraint, it has to be construed as a non-ellipsis sentence meaning that Hanako didn’t eat fruits at all. Although (56b) could redundantly be accounted for by the ban on string-vacuous scrambling, Kuno’s constraint is required to account for (57b), where the scrambled object *kudamono-o* ‘fruits-ACC’ precedes the subject.

- (57) a. Yasai-o Taro-wa [zibun-no tukutta mono]-sika *t*
 vegetables-ACC Taro-TOP self-GEN grew thing-SIKA
 tabe-na-katta.
 eat-NEG-PAST
 ‘Among vegetables, Taro ate only the things that he had grown.’
- b. *Kudamono-o Hanako-wa Δ *t* tabe-na-katta.
 fruits-ACC Hanako-TOP eat-NEG-PAST
 (intended) ‘Among vegetables, Hanako ate only the things that she had grown.’

Furthermore, if the scrambled objects are replaced by contrastive-marked elements, the acceptability under the NPI reading significantly increases, as the following examples show:

- (58) a. **Yasai-wa** Taro-ga [zibun-no tukutta mono]-sika *t*
 vegetables-TOP Taro-NOM self-GEN grew thing-SIKA
 tabe-na-katta.
 eat-NEG-PAST
 ‘As for vegetables, it is Taro who ate only the things that he had grown.’
- b. ?**Kudamono-wa** Hanako-ga Δ *t* tabe-na-katta.
 fruits-TOP Hanako-NOM eat-NEG-PAST
 (intended) ‘As for fruits, it is Hanako who ate only the things that she had grown.’

This suggests that the unacceptability of (57b) under the NPI reading is due to a violation of Kuno’s constraint. Therefore, Takita’s (2011) argument against the existence of headless *vP/VP*-ellipsis loses its force under the present analysis.

One might say that the present analysis predicts that the adverbial *-sika* NPI can be null in (56b) if the object is also null. The prediction appears to be borne out, as (59) shows.

- (59) a. Taro-wa [zibun-no tukutta mono]-sika yasai-o
 Taro-TOP self-GEN grew thing-SIKA vegetables-ACC
 tabe-na-katta.
 eat-NEG-PAST
 ‘Among vegetables, Taro ate only the things that he had grown.’
- b. Hanako-mo Δ tabe-na-katta.
 Hanako-also eat-NEG-PAST
 (intended) ‘Among vegetables, Hanako also ate only the things that she had grown.’

The sentence in (59b) allows the intended NPI reading. However, this does not necessarily mean that the adverbial *-sika* NPI can be null in (59b). This is because the underlying sentence for (59b) might not contain the associated NP *yasai-o* ‘vegetable-ACC’. That is, (59b) could be derived from a sentence like (60), in which the *-sika* NPI is an argument.

- (60) Hanako-mo [zibun-no tukut-ta mono]-sika tabe-nak-atta.
 Hanako-also self-GEN grow-PAST thing-SIKA eat-NEG-PAST
 ‘Hanako ate only things that she had grown.’

Therefore, although (59) is compatible with the present analysis, it does not support it.

In sum, Takita’s (2011) counterexamples against the existence of headless *vP/VP*-ellipsis in Japanese can be accounted for by Kuno’s constraint (49) even if headless *vP/VP*-ellipsis is available in Japanese.

6.3 Verbal Identity Requirement

6.3.1 Overview

The generalization that Goldberg (2005) refers to as the verbal identity requirement holds in languages in which headless *vP/VP*-ellipsis is allowed (see also Doron 1999 and Potsdam 1997). The generalization states that the root of the stranded verb of the elided VP must be identical to the root of the verb of the antecedent sentence. The following Hebrew examples illustrate this:

- (61) a. (Ha'im) Miryam **hevi'a** et Dvora la-xanut?
 Q Miryam bring.PAST.3.F.SG ACC Dvora to.the-store
 '(Did) Miryam bring Dvora to the store?'
- b. Ken, hi **hevi'a**.
 yes she bring.PAST.3.F.SG
 'Yes, she brought Dvora to the store.'
- c. *Ken, hi **lakxa**.
 yes she take.PAST.3.F.SG
 'Yes, she took Dvora to the store.'
- d. *Lo, hi **šalxa!**
 no she send.PAST.3.F.SG
 'No, she sent Dvora to the store!' (Hebrew: Goldberg 2005:160)

The sentence in (61b) is derived by applying headless XP-ellipsis to *vP/VP* that contains the direct object and the goal argument, hence acceptable. On the other hand, (61c) and (61d) cannot be derived by headless XP-ellipsis because the stranded verbs (*lakxa* 'take.PAST.3.F.SG' in (61c) and *šalxa* 'send.PAST.3.F.SG' in (61d)) are not identical to the antecedent verb *hevifa* 'bring.PAST.3.SG'.

Irish, European Portuguese, and Russian are also subject to the verbal identity requirement, as shown in (62), (63), and (64), respectively.

- (62) a. ***Léigh** mé an dán ach níor **thuig**.
 read.PAST I the poem but not.PAST understand.PAST
 'I read the poem, but I didn't understand the poem.'
- b. ***Bhris** siad an chathaoir agus **dheisigh** ina-dhiaidh-sin.
 break.PAST they the chair and repair.PAST after.that
 'They broke the chair and they repaired the chair after that.'
 (Irish: Goldberg 2005:168–169)

- (63) a. Quando a Ana **pôs** os óculos na mesa, a Maria também
 When the Ana put the glasses on.the table, the Maria too
pôs.
 put
 ‘When Ana put the glasses on the table, Maria put the glasses on the
 table too.’
- b. *Quando a Ana **colocou** os óculos na mesa, a Maria
 When the Ana placed the glasses on.the table, the Maria
 também **pôs**.
 too put.
 ‘When Ana placed the glasses on the table, Maria put the glasses on
 the table too.’ (European Portuguese: Cyrino and Matos 2002:180)
- (64) a. Kto-to **uronil** ètu vazú.
 someone dropped.SG.M this.ACC vase.ACC
 ‘Someone dropped this vase.’
- b. *Tot fakt, što nikto ne **podnjaj** Δ, menja očén’
 the fact that no.one.NOM NEG under.hold.SG.M me.ACC very
 ogorčáet.
 upsets.3.SG
 (intended) ‘The fact that no one picked it up upsets me.’
 (Russian: Gribanova 2013:118; slightly modified)

However, Lasnik (1997) argues that the following example shows that the verbal identity requirement does not hold in Hebrew:

- (65) Dina **ohévet** ko sveder Se-hi loveSet aval ima Sela **sonet** Δ.
 Dina loves every sweater that-she wears but mother hers hates
 (intended) ‘Dina₁ loves every sweater that she wears but her mother₂ hates
 every sweater that she₂ wears.’ (Hebrew: Lasnik 1997:182)

However, as Goldberg (2005 : 158–159) points out, the possibility of *pro* and argument ellipsis is not controlled for in this example. Furthermore, in this example, the verb in the first conjunct *ohévet* ‘love’ and that in the second conjunct *sonet* ‘hate’

are contrastive in meaning. As we will see in 6.3.4, at least in some languages such as European Portuguese, Russian, and Japanese, the verbal identity requirement is obviated when the verbs are contrastive. Given these considerations, I conclude that Lasnik's example does not constitute a counterexample against the verbal identity requirement.

Other potential counterevidence against the verbal identity requirement comes from Serbo-Croatian and Swahili:

- (66) a. Ivan **piše** rad pažljivo, a njegov asistent **čita** Δ .
 Ivan writes paper carefully and his assistant reads
 (intended) 'Ivan writes a paper carefully and his assistant is reading it carefully.'
- b. Marko **gradi** sebi kucu, a Marija **kupuje** Δ .
 Marko builds himself house and Marija buys
 (intended) 'Marko builds himself a house and Maria is buying herself a house.'
 (Serbo-Croatian: Lasnik 1997:180)
- (67) M-kurugenzi a-li-**omb**-a wazee wa-tembele-e ki-wanda ch-ote
 I-director 1Su-PAST-ask-FV them 2Su-visit-subjunctv 7-factory 7-all
 lakini meneja a-li-**amuru** Δ .
 but 1-manager 1Su-PAST-command
 'The director told them to visit the entire factory, but the manager commanded them to visit the entire factory.' (Swahili: Ngonyani 1998:131)

First of all, as we saw in 5.6.1.6 for Swahili and in 5.6.1.7 for Serbo-Croatian, it is not clear if these languages allow headless XP-ellipsis to derive null objects. Furthermore, the verbs in the first conjuncts and the verbs in the second conjuncts are contrastive in meaning, as in the case of the Hebrew example in (65). Therefore, even if it turns out that headless XP-ellipsis is available to derive null objects in

these languages, these examples do not constitute counterevidence against the verbal identity requirement.

If a null object construction in a language exhibits the verbal identity requirement effect, it provides evidence that it involves headless *vP/VP*-ellipsis rather than *pro* or argument ellipsis. This is so because it is not clear at all why *pro* and argument ellipsis would require that the verb in the antecedent clause and that in the ellipsis clause be identical. On the other hand, as we will see in 6.3.4, it is possible to account for why headless *vP/VP*-ellipsis is subject to the verbal identity requirement.

In this section, I show that the verbal identity requirement effect is observable in Japanese if we properly control for the other ways to derive null objects (i.e. *pro* and argument ellipsis). Given the above discussion, this constitutes evidence that Japanese allows headless *vP/VP*-ellipsis.

6.3.2 Verbal Identity Requirement in Japanese

Otani and Whitman (1991) argue that the stranded verb and the antecedent verb need not be identical in headless *vP/VP*-ellipsis constructions in Japanese, providing the following examples, where the stranded verb *keru* ‘kick’ is not identical to the antecedent verb *tataku* ‘beat’:

- (68) John-wa zibun-no roba-o **tatai**-ta kedo, Bill-wa Δ **ket**-ta.
John-TOP self-GEN donkey-ACC beat-PAST but Bill-TOP kick-PAST
(Lit.) ‘John beat his donkey, but Bill kicked.’

(Otani and Whitman 1991:350-351)

They claim that the second sentence in (68) is derived by headless *vP/VP*-ellipsis because the null object allows the sloppy identity reading (the second sentence can mean that Bill kicked his own donkey). However, null objects with the sloppy identity reading can obtain via either indefinite *pro* (Hoji 1998) or argument ellipsis (Oku 1998), as we saw in 6.1. Therefore, (68) does not necessarily indicate that the verbal identity requirement does not hold in Japanese. The following examples from Saito 2007 cannot constitute evidence that the verbal identity requirement does not hold in Japanese for the same reason:¹¹

- (69) a. Taro-wa zibun-no hahaoya-o **tazune**, Hanako-wa Δ
Taro-TOP self-GEN mother-ACC visit.and Hanako-TOP
denwa-si-ta.
phone-do-PAST
'Taro visited his mother, and Hanako called her mother.'
- b. Taro-wa zibun-no hahaoya-ni **at-ta** ga, Hanako-wa Δ
Taro-TOP self-GEN mother-DAT meet-PAST but Hanako-TOP
oikaesi-ta.
chase.away-PAST
'Taroo met his mother, but Hanako chased her mother away.'
(Saito 2007:15)

¹¹Saito (2007) does not argue, based on (69a) and (69b), that the verbal identity requirement does not hold in Japanese. He uses (69a) and (69b) to argue that argument ellipsis does not require that Case of the elided argument is identical to Case of the antecedent argument. *Tazune* 'visit' and *oikaesi* 'chase.away' take an accusative-object while *denwa-si* 'phone-do' and *aw* 'meet' take a dative-object.

In order to see whether the verbal identity requirement holds in Japanese, thus, we need properly control for the other ways to derive null arguments. Given the discussion in 6.2, we can use null adjuncts data for this purpose since null adjuncts can only be derived by headless *vP/VP*-ellipsis. The predictions are the following:

- (70) a. If the verbal identity requirement holds in Japanese, null adjuncts can be derived only if a stranded verb and an antecedent verb are identical.
- b. If the verbal identity requirement does not hold in Japanese, null adjuncts can be derived even if a stranded verb and an antecedent verb are not identical.

In what follows, I show that the prediction (70a) is the correct one.

When the same verb, *ka(w)* ‘buy’, is used both in the antecedent clause and in the ellipsis clause, an adjunct like *kurezittokaado-de* ‘credit.card-with’ can be null, as shown in the following examples:

- (71) a. Taro-wa (itumo) kurezittokaado-de hon-o **ka-u** kedo,
 Taro-TOP (always) credit.card-with book-ACC buy-PRES but
 Hanako-wa Δ **kaw-ana-i**.
 Hanako-TOP buy-NEG-PRES
 (intended) ‘Taro (always) buys a book with a credit card, but Hanako (always) does not buy a book with a credit card.’
- b. Taro-wa (itumowa) kurezittokaado-de hon-o **kaw-ana-i**.
 Taro-TOP (usually) credit.card-with book-ACC buy-PRES
 Hanako-mo Δ **kaw-ana-i**.
 Hanako-also buy-NEG-PRES
 (intended) ‘Taro (usually) does not buy a book with a credit card.
 Hanako (usually) does not buy a book with a credit card either.’

These ellipsis clauses can mean that Hanako does not buy a book with a credit card. Thus, they can be true when Hanako buys a book by cash. This means that the adjunct *kurezittokaado-de* ‘credit.card-with’ as well as *hon-o* ‘book-ACC’ are null in these ellipsis sentences.

This also holds true when the verb *koonyuusur* ‘purchase’, which is synonymous with *ka(w)* ‘buy’, is used, as shown in the following examples:

- (72) a. Taro-wa (itumo) kurezittokaado-de hon-o **koonyuusur-u**
 Taro-TOP (always) credit.card-with book-ACC purchase-PRES
 kedo, Hanako-wa Δ **koonyuusi-na-i**.
 but Hanako-TOP purchase-NEG-PRES
 (intended) ‘Taro (always) purchases a book with a credit card, but Hanako (always) does not purchase a book with a credit card.’
- b. Taro-wa (itumowa) kurezittokaado-de hon-o **koonyuusi-na-i**.
 Taro-TOP (usually) credit.card-with book-ACC purchase-PRES
 Hanako-mo Δ **koonyuusi-na-i**.
 Hanako-also purchase-NEG-PRES
 (intended) ‘Taro (usually) does not purchase a book with a credit card. Hanako (usually) does not purchase a book with a credit card either.’

However, the elided adjunct reading becomes impossible when one verb is used in the antecedent clause and the other in the ellipsis clause, as shown in the following examples:

- (73) a. *Taro-wa (itumo) kurezittokaado-de hon-o **ka-u** kedo,
 Taro (always) credit.card-with book-ACC buy-PRES but
 Hanako-wa Δ **koonyuusi-na-i**.
 Hanako-TOP purchase-NEG-PRES
 (intended) ‘Taro (always) buys a book with a credit card, but Hanako (always) does not purchase a book with a credit card.’

- b. *Taro-wa (itumowa) kurezittokaado-de hon-o **kaw**-ana-i.
 Taro (usually) credit.card-with book-ACC buy-NEG-PRES
 Hanako-mo Δ **koonyuusi**-na-i.
 Hanako-also purchase-NEG-PRES
 (intended) ‘Taro (usually) does not buy a book with a credit card.
 Hanako (usually) does not purchase a book with a credit card either.’
- (74) a. *Taro-wa (itumo) kurezittokaado-de hon-o **koonyuusur**-u kedo,
 Taro (always) credit.card-with book-ACC purchase-PRES but
 Hanako-wa Δ **kaw**-ana-i.
 Hanako-TOP buy-NEG-PRES
 (intended) ‘Taro (always) purchase a book with a credit card, but
 Hanako (always) does not buy a book with a credit card.’
- b. *Taro-wa (itumowa) kurezittokaado-de hon-o **koonyuusi**-na-i.
 Taro (usually) credit.card-with book-ACC purchase-NEG-PRES
 Hanako-mo Δ **kaw**-ana-i.
 Hanako-also buy-NEG-PRES
 (intended) ‘Taro (usually) does not purchase a book with a credit card.
 Hanako (usually) does not buy a book with a credit card either.’

In (73), *ka(w)* ‘buy’ is used in the antecedent clause and *koonyuusur* ‘purchase’ in the ellipsis clause. These sentences are false when Hanako purchases a book, meaning that the adjunct *kurezittokaado-de* ‘credit.card-with’ cannot be null. (74) shows that the same holds when *koonyuusur* ‘purchase’ appears in the antecedent clause and *ka(w)* ‘buy’ in the ellipsis clause. This means that an adjunct cannot be null when different verb roots are used in the antecedent clause and in the ellipsis clause, confirming that the prediction (70b) is borne out.

The verbal identity requirement can be observed also in intransitive sentences. An adjunct like *zikandoorini* ‘on.time’ can be null when the intransitive verb, *ku/o* ‘come’, is used both in the antecedent clause and in the ellipsis clause, as shown in the following examples:

- (75) a. Taro-wa (itumo) zikandoorini **ku-ru** kedo, Hanako-wa Δ
 Taro-TOP (always) on.time come-PRES but Hanako-TOP
ko-na-i.
 come-NEG-PRES
 (intended) ‘Taro (always) comes on time, but Hanako (always) does
 not come on time.’
- b. Taro-wa (itumo) zikandoorini **ko-na-i.** Hanako-mo Δ
 Taro-TOP (always) on.time come-NEG-PRES Hanako-also
ko-na-i.
 come-NEG-PRES
 (intended) ‘Taro (always) does not come on time. Hanako (always)
 does not come on time either.’

The ellipsis clauses in these examples can mean that Hanako does not come on time.

Thus, *zikandoorini* ‘on.time’ can be null in these sentences.

Omieninar ‘come.HON’ is an honorific form of *ku/o* ‘come’. The following examples show that *zikandoorini* ‘on.time’ can be null when *omieninar* ‘come.HON’ is used both in the antecedent clause and in the ellipsis clause:

- (76) a. Yamada-sensei-wa (itumo) zikandoorini **omieninar-u** kedo,
 Yamada-teacher-TOP (always) on.time come.HON-PRES but
 Tanaka-sensei-wa Δ **omieninar-ana-i.**
 Tanaka-teacher-TOP come.HON-NEG-PRES
 (intended) ‘Professor Yamada always comes on time, but Professor
 Tanaka (always) does not come on time.’
- b. Yamada-sensei-wa (itumo) zikandoorini **omieninar-ana-i.**
 Yamada-teacher-TOP (always) on.time come.HON-NEG-PRES
 Tanaka-sensei-mo Δ **omieninar-ana-i.**
 Tanaka-teacher-also come.HON-NEG-PRES
 (intended) ‘Professor Yamada (always) does not come on time.
 Professor Tanaka (always) does not come on time either.’

On the other hand, the elided adjunct reading becomes impossible when one verb form is used in the antecedent clause and the other in the ellipsis clause, as shown in the following:

- (77) a. *Taro-wa (itumo) zikandoorini **ku-ru** kedo,
 Taro-TOP (always) on.time come-PRES but
 Tanaka-sensei-wa Δ **omieninar-ana-i**.
 Tanaka-teacher-TOP come.HON-NEG-PRES
 (intended) ‘Taro (always) comes on time, but Professor Tanaka (always) does not come on time.’
- b. Taro-wa (itumo) zikandoorini **ko-na-i**.
 Taro-TOP (always) on.time come-NEG-PRES.
 *Tanaka-sensei-mo Δ **omieninar-ana-i**.
 Tanaka-teacher-also come.HON-NEG-PRES
 (intended) ‘Taro (always) does not come on time. Professor Tanaka (always) does not come on time either.’
- (78) a. *Yamada-sensei-wa (itumo) zikandoorini **omieninar-u** kedo,
 Yamada-teacher-TOP (always) on.time come.HON-PRES but
 Hanako-wa Δ **ko-na-i**.
 Hanako-TOP come-NEG-PRES
 (intended) ‘Professor Yamada (always) comes on time, but Hanako (always) does not come on time.’
- b. Yamada-sensei-wa (itumo) zikandoorini **omieninar-ana-i**.
 Yamada-teacher-TOP (always) on.time come.HON-NEG-PRES
 *Hanako-mo Δ **ko-na-i**.
 Hanako-also come-NEG-PRES
 (intended) ‘Professor Yamada (always) does not come on time. Hanako (always) does not come on time either.’

All these data indicate that the prediction (70a) is correct while (70b) is not. Given this, I conclude that the verbal identity requirement holds in Japanese, as in European Portuguese, Hebrew, Irish, and Russian. This adds plausibility to the main claim in this chapter that Japanese has headless *vP*/*VP*-ellipsis.

6.3.3 No CP-Ellipsis

The verbal identity requirement effect reveals an interesting fact about CP-ellipsis in Japanese. In English, a CP-complement cannot be elided, as shown in the following:

- (79) John thinks that he is the best, but Mary does not think { Δ /so}.

The pro-form *so* is required after *think* in the second conjunct.

In contrast with English, it has been generally assumed that Japanese allows CP-complement-ellipsis (see Saito 2007, Shinohara 2006, Takita 2010, and Tanaka 2008). This assumption is based on the acceptability of sentences like the following under the sloppy identity reading:

- (80) a. Taro-wa₁ [zibun₁-ga itiban-da to] **omottei**-ru kedo, Hanako-wa
Taro-TOP self-NOM the.best-COP C think-PRES but Hanako-TOP
 Δ **omottei**-na-i.
think-NEG-PRES.
(intended) ‘Taro thinks that he is the best, but Hanako does not think
that she is the best.’
- b. Taro-wa₁ [zibun₁-ga itiban-da to] **kangaetei**-ru kedo,
Taro-TOP self-NOM the.best-COP C think-PRES but
Hanako-wa Δ **kangaetei**-na-i.
Hanako-TOP think-NEG-PRES.
(intended) ‘Taro thinks that he is the best, but Hanako does not think
that she is the best.’

The second conjuncts in these sentences can mean that Hanako does not think that she is the best (the sloppy identity reading). Given that the pro-form cannot induce

the sloppy identity reading,¹² we can conclude that these clauses involve ellipsis of some kind. However, we cannot conclude from this fact that these sentences involve CP-ellipsis since headless *vP/VP*-ellipsis can also derive such null complement-CP sentences, as illustrated in the following:

- (81) a. Subj [~~CP~~ ...] V
 b. Subj [~~*vP/VP* ... [CP ...] *t_{v/V}*~~] V

Contrary to the standard assumption, I argue that headless *vP/VP*-ellipsis is the only option to derive null CP-complement sentences. The crucial observation is that null CP-complement sentences become severely degraded when different verbs are used in the antecedent clause and in the ellipsis clause, as shown in the following:

- (82) a. *Taro-wa₁ [zibun₁-ga itiban-da to] **omottei**-ru kedo, Hanako-wa
 Taro-TOP self-NOM the.best-COP C think-PRES but Hanako-TOP
 Δ **kangaetei**-na-i.
 think-NEG-PRES.
 (intended) ‘Taro thinks that he is the best, but Hanako does not think that she is the best.’
- b. *Taro-wa₁ [zibun₁-ga itiban-da to] **kangaetei**-ru kedo,
 Taro-TOP self-NOM the.best-COP C think-PRES but
 Hanako-wa Δ **omottei**-na-i.
 Hanako-TOP think-NEG-PRES.
 (intended) ‘Taro thinks that he is the best, but Hanako does not think that she is the best.’

¹²Actually, even if the ellipsis site Δ is replaced by the pro-from *soo* ‘so’, the sloppy reading can be obtained, as we will see. I will discuss this shortly.

The degraded status of these sentences is due to the null complement-CP because the sentences become acceptable when the ellipsis site Δ is replaced by the overt CP, as shown in the following sentences:

- (83) a. Taro₁-wa [zibun₁-ga itiban-da to] **omottei**-ru kedo, Hanako₂-wa Taro-TOP self-NOM the.best-COP C think-PRES but Hanako-TOP [zibun₂-ga itiban-da to] **kangaetei**-na-i.
self-NOM the.best-COP C think-NEG-PRES.
(intended) ‘Taro thinks that he is the best, but Hanako does not think that she is the best.’
- b. Taro₁-wa [zibun₁-ga itiban-da to] **kangaetei**-ru kedo, Taro-TOP self-NOM the.best-COP C think-PRES but Hanako₂-wa [zibun₂-ga itiban-da to] **omottei**-na-i.
Hanako-TOP self-NOM the.best-COP C think-NEG-PRES.
(intended) ‘Taro thinks that he is the best, but Hanako does not think that she is the best.’

The unacceptability of (82) is a mystery if null CP-complements can be derived by CP-ellipsis since it is unclear why ellipsis of CP requires the identity of the verb in the antecedent clause and that in the ellipsis clause. On the other hand, if we assume that complement-CP cannot be elided in Japanese like in English, the unacceptability of those sentences can be accounted for because headless *vP/VP*-ellipsis is the only option to derive these sentences under the sloppy identity reading. Given this, I assume that complement-CP cannot be elided in Japanese.

Further evidence for the impossibility of CP-ellipsis in Japanese comes from sentences with the pro-from *soo*. Tanaka (2008), attributing the observation to a reviewer, observes that sentences like (80) allow the sloppy identity reading even when *soo* is used, as shown in the following examples:

- (84) a. Taro-wa₁ [zibun₁-ga itiban-da to] **omottei**-ru kedo, Hanako-wa
 Taro-TOP self-NOM the.best-COP C think-PRES but Hanako-TOP
soo **omottei**-na-i.
 so think-NEG-PRES.
 ‘Taro thinks that he is the best, but Hanako does not think so.
 (√/strict, √/sloppy)
- b. Taro-wa₁ [zibun₁-ga itiban-da to] **kangaetei**-ru kedo,
 Taro-TOP self-NOM the.best-COP C think-PRES but
 Hanako-wa *soo* **kangaetei**-na-i.
 Hanako-TOP so think-NEG-PRES.
 ‘Taro thinks that he is the best, but Hanako does not think so
 (√/strict, √/sloppy)

In order to account for this fact, Tanaka (2008) argues that *soo* in these sentences is not a substitution for the complement-CPs but an adverb. *Soo* can be used even if a complement CP overtly appears, as shown in the following:

- (85) a. Hanako₂-wa [zibun₂-ga itiban-da to] *soo* kangaetei-na-i.
 Hanako-TOP self-NOM the.best-COP C so think-NEG-PRES.
 (Lit.) ‘Hanako does not think that she is the best so.’
- b. Hanako₂-wa [zibun₂-ga itiban-da to] *soo* omottei-na-i.
 Hanako-TOP self-NOM the.best-COP C so think-NEG-PRES.
 (Lit.) ‘Hanako does not think that she is the best so.’

Given this, Tanaka (2008) assumes that sentences like (84) are derived from sentences like (85) by CP-ellipsis. Under the headless *vP*/*VP*-ellipsis analysis of null complement-CP, they are derived as in the following:

- (86) ...*soo* [~~*vP*/*VP*~~ [~~CP ...~~] *t_v*/*V*] V

Given Tanaka's discussion, I assume that *soo* has (at least) two usages: an adverb as in (85) and a genuine pro-form substituting for a CP. *Soo* in (84) can be an adverb because headless *vP/VP*-ellipsis is available to derive a null complement-CP. Thus, the sloppy identity reading can be obtained.

If this analysis of *soo* and the *vP/VP*-ellipsis analysis of null complement-CP are correct, it is predicted that the sentences in (82) do not allow the sloppy identity reading even if *soo* is added to the sentences. This prediction is borne out, as shown in the following:

- (87) a. Taro-wa₁ [zibun₁-ga itiban-da to] **omottei**-ru kedo, Hanako-wa
 Taro-TOP self-NOM the.best-COP C think-PRES but Hanako-TOP
soo **kangaetei**-na-i.
 so think-NEG-PRES.
 'Taro thinks that he is the best, but Hanako does not think so.
 (√/strict, *sloppy)
- b. Taro-wa₁ [zibun₁-ga itiban-da to] **kangaetei**-ru kedo,
 Taro-TOP self-NOM the.best-COP C think-PRES but
 Hanako-wa *soo* **omottei**-na-i.
 Hanako-TOP so think-NEG-PRES.
 'Taro thinks that he is the best, but Hanako does not think so
 (√/strict, *sloppy)

These sentences are acceptable only under the strict identity reading. Headless *vP/VP*-ellipsis is not available to derive these sentences since different verbs are used in the antecedent clause and in the ellipsis clause. Thus, *soo* in these sentences can be construed only as the genuine pro-form. Given that the pro-form *soo* only allows the strict identity reading, the impossibility of the sloppy identity reading in these sentences can be accounted for. If CP-ellipsis were available in Japanese,

there should be no difference between sentences like (84) and sentences like (87) in the availability of the sloppy identity reading.

To sum up, by using the verbal identity requirement effect as a tool controlling for the possibility of headless *vP/VP*-ellipsis, I have shown that complement-CP cannot be elided in Japanese like in English. The difference between Japanese and English is in that the former allows headless *vP/VP*-ellipsis while the latter does not. As a result, English does not allow a null CP-complement at all even if the identical verb is used both in the antecedent clause and in the ellipsis clause, as we saw in (79).

6.3.4 Remarks on Explanation of the Verbal Identity Requirement

Before closing the discussion, a remark is in order with regard to theoretical explanation for the verbal identity requirement. There are at least two important questions about the verbal identity requirement: To what kind of an identity condition on ellipsis can the verbal identity requirement be reduced?; why do “traces” of verbs matter in computing the identity between the antecedent VP and the elided VP? I argue, following the spirit of Rouveret 2012, that the verbal identity requirement is reduced to Chung’s (2006) lexical identity condition and “traces” of verbs matter because they are copies rather than “traces”.

6.3.4.1 Lexical Identity Condition

Merchant (2001:26–37) provides a semantic identity condition on ellipsis, which amounts to requiring that the non-focused portions of the antecedent and those of the elided elements entail each other. With Merchant’s semantic identity condition, we can account for why the ellipsis clause in the following example can mean that Ben called Chuck an idiot, but not that Ben insulted Chuck:

- (88) Abby [_{VP} called Chuck an idiot] after Ben did.
- a. = ...after Ben did [~~_{VP} call Chuck an idiot~~]
- b. = *...after Ben did [~~_{VP} insult Chuck~~] (Merchant 2001:27)

Calling Chuck an idiot entails insulting Chuck but not vice versa. Therefore, if the VP [*insult Chuck*] is elided when the antecedent VP is [*call Chuck an idiot*], it violates Merchant’s semantic identity condition.

Chung (2006), however, argues that Merchant’s condition is too weak to accommodate examples like the following:

- (89) a. They’re jealous, but it’s unclear **of who** [~~they’re jealous *t*_{ofwho}~~].
- b. *They’re jealous, but it’s unclear **who(m)** [~~they’re jealous of *t*_{who(m)}~~].
(Chung 2006:80)

These examples involve what Chung et al. (1995) call sprouting, which is a kind of sluicing in which a remnant of ellipsis (*of who* in (89a) and *who(m)* in (89b))

corresponds to an implicit element in the antecedent clause. In (89a), the preposition *of* is pied-piped. On the other hand, the preposition is stranded in the elided TP in (89b). Given the lack of semantic content of the preposition *of*, Chung (2006) argues that the contrast between (89a) and (89b) is a mystery under Merchant's semantic identity condition since the elided TP in (89a) and that in (89b) should be semantically equivalent; it is not clear why ellipsis in (89a) is licensed while ellipsis in (89b) is not under the semantic identity condition.

In order to account for this fact, Chung (2006) proposes that in addition to some version of Merchant's semantic identity condition, sluicing is subject to a lexical identity condition like the following:

(90) *Lexical Identity Condition on Sluicing* (Chung 2006:84)

Every lexical item in the numeration of the sluice [(the elided TP)] that ends up (only) in the elided [T]P must be identical to an item in the numeration of the antecedent CP.

This condition requires that a set of lexical items of which the elided TP consists be a subset of lexical items of which the antecedent CP consists. In (89a), the numeration out of which the elided TP is constructed contains *they*, *be*, *jealous*, *of*, and *who*. Three among these lexical items end up in the elided TP (i.e. *they*, *be*, and *jealous*). Each of these three lexical items is identical to a lexical item in the numeration out of which the antecedent CP is constructed. Therefore, ellipsis in (89a) observes the lexical identity condition.

In contrast, in (89b), lexical items that end up in the elided TP are *they*, *be*, *jealous*, and *of*. There is no lexical item in the antecedent CP that is identical to *of*. Thus, ellipsis in (89b) violates the lexical identity condition.

In order to account for the verbal identity requirement, Merchant’s semantic identity condition is not sufficient either but some kind of a lexical identity condition is required as in the case of sluicing. To see this, let us consider the relevant examples that violate the verbal identity requirement, which are repeated below:

- (91) a. *Taro-wa kurezittokaado-de hon-o **ka-u** kedo, Hanako-wa {
 Taro credit.card-with book-ACC buy-PRES but Hanako-TOP
~~kurezittokaado-de hon-o~~ ~~t_{koonyuus}~~ **koonyuusi**-na-i.
 credit.card-with book-ACC purchase-NEG-PRES
 (intended) ‘Taro buys a book with a credit card, but Hanako
 does not purchase a book with a credit card.’
- b. *Taro-wa zikandoorini **ku-ru** kedo, Tanaka-sensei-wa {
 Taro-TOP on.time come-PRES but Tanaka-teacher-TOP
~~zikandoorini~~ ~~t_{omieninar}~~ **omieninar**-ana-i.
 on.time come.HON-NEG-PRES
 (intended) ‘Taro comes on time, but Professor Tanaka does not come
 on time.’
- c. *Taro-wa₁ zibun₁-ga itiban-da to **omottei-ru** kedo, Hanako-wa {
 Taro-TOP self-NOM the.best-COP C think-PRES but Hanako-TOP
~~zibun-ga itiban-da~~ ~~to~~ ~~t_{kangaetei}~~ **kangaetei**-na-i.
 self-NOM the.best-COP C think-NEG-PRES.
 (intended) ‘Taro thinks that he is the best, but Hanako does not think
 that she is the best.’

The unacceptability of these sentences cannot be attributed to Merchant’s mutual entailment condition. For example, the antecedent VP entails the elided VP and vice versa in (91a) because *ka(w)* and *koonyuus* are synonymous. The same holds true of the other pairs of the verbs, *ku/o* and *omieninar* in (91b) and *omottei* and

kangaetei in (91c). This is confirmed by the fact that the following sentences sound contradictory:

- (92) a. #Taro-wa kono hon-o **ka-ta** ga, **koonyuusi-nak-atta**.
 Taro-TOP this book-ACC buy-PAST but purchase-NEG-PAST
 ‘Taro bought this book, but not purchased it.’
- b. #Taro-wa kono hon-o **koonyuusi-ta** ga, **kaw-anak-atta**.
 Taro-TOP this book-ACC purchase-PAST but buy-NEG-PAST
 ‘Taro purchased this book, but not bought it.’
- (93) a. #Tanaka-sensei-wa **ki-ta** ga, **omieninar-anak-atta**.
 Tanaka-teacher-TOP come-PAST but come.HON-NEG-PAST
 ‘Professor Tanaka came, but not came.’
- b. #Tanaka-sensei-wa **omieninat-ta** ga, **ko-nak-atta**.
 Tanaka-teacher-TOP come.HON-PAST but come-NEG-PAST
 ‘Professor Tanaka came, but not came.’
- (94) a. #Taro-wa₁ [zibun₁-ga itiban-da to] **omottei-ru** ga, soo
 Taro-TOP self-NOM the.best-COP C think-PRES but so
kangaetei-na-i.
 think-NEG-PRES
 ‘Taro thinks that he is the best but not thinks so.’
- b. #Taro-wa₁ [zibun₁-ga itiban-da to] **kangaetei-ru** ga, soo
 Taro-TOP self-NOM the.best-COP C think-PRES but so
omottei-na-i.
 think-NEG-PRES
 ‘Taro thinks that he is the best but not thinks so.’

Therefore, the data concerning the verbal identity requirement in Japanese suggest that the verbal identity requirement cannot be reduced to Merchant’s semantic identity condition.

Given this discussion, I argue, with Rouveret (2012), that the verbal identity requirement is reduced to a some kind of lexical identity condition. However, in order to see how this is possible, we need to consider a status of “traces” in the relevant lexical identity condition.

6.3.4.2 “Traces” of Verbs

Identity conditions on ellipsis usually do not care about the identity of “traces” of moved elements, as Lasnik (1997) and Goldberg (2005) point out. This is illustrated by (95a) and (95b), which are drawn from Goldberg 2005:172, 173.

- (95) a. Joey was [accepted t_{Joey} to the conference], and Mikael will be [~~accepted~~
 ~~t_{Mikael} to the conference~~], too.
- b. We know how [Mikinari fixed the TV t_{how}], but we don't know why
~~[Mikinari fixed the TV t_{why}].~~

In these examples, the antecedent domain and the ellipsis domain contain traces (traces of *Joey* and *Mikael* in (95a) and traces of *how* and *why* in (95b)). Precisely these traces are not identical. Therefore, in order to license ellipsis in these sentences, we have to assume that (both semantic and lexical) identity conditions do not care about the identity of traces. In Chung's lexical identity condition on sluicing (90), this ignorance of traces is implemented by restricting its application to lexical items that end up in the elided TP.

In contrast, in order to implement the verbal identity requirement, we cannot ignore traces of verbs. This is illustrated by the following European Portuguese example:

- (96) *Quando a Ana **colocou** [_{colocou} os óculos na mesa], a Maria
 When the Ana placed the glasses on.the table, the Maria
 também **pôs** [_{pôs} ~~os óculos na mesa~~].
 too put the glasses on.the table.
 ‘When Ana placed the glasses on the table, Maria put the glasses on
 the table too.’ (European Portuguese: Cyrino and Matos 2002:180)

In order to rule out this example by the verbal identity requirement, we have to assume that the trace of *colocou* ‘placed’ and the trace of *pôs* ‘placed’ are not identical and that this non-identity of traces is prohibited by an identity condition. Given this, the question arises, why does headless *vP*/*VP*-ellipsis care about the identity of traces of verbs?

Rouveret (2012) argues that this is because traces of verbs are actually copies of verbs under copy theory of movement. Thus, the representation of the sentence (96) is as the following:

- (97) *Quando a Ana **colocou** [**colocou** os óculos na mesa], a Maria
 When the Ana placed placed the glasses on.the table, the Maria
 também **pôs** [**pôs** ~~os óculos na mesa~~].
 too put put the glasses on.the table.
 ‘When Ana placed the glasses on the table, Maria put the glasses on
 the table too.’ (European Portuguese: Cyrino and Matos 2002:180)

In this representation, the verbs leave their copies within *VP*. Lexical items in the elided *VP* are *pôs*, *os*, *óculos*, *na*, and *mesa*. However, there is no identical element

to *pô*s in a set of lexical items of which the antecedent VP constitutes. Thus, the lexical identity condition can rule out this sentence. In this way, under copy theory of movement, the verbal identity requirement can be reduced to the lexical identity condition.

A question that immediately arises is, why can the identity of copies be ignored in sentences like (95)? Under copy theory of movement, those sentences are represented as the following:

- (98) a. Joey was [accepted **Joey** to the conference], and Mikael will be [~~accepted~~
~~**Mikael** to the conference~~], too.
- b. We know how [Mikinari fixed the TV **how**], but we don't know why
[~~Mikinari fixed the TV **why**~~].

Given these representations, ellipsis should not be licensed because it violates the lexical identity condition. What is the difference between (97) and (98)? Why does the lexical identity condition rule out (97) but not (98)?

In order to distinguish cases like (97) and case like (98), Rouveret (2012) resorts to the notion of contrastiveness. In (98), the relevant copies are contrasted in meaning while they are not in (97). Furthermore, he observes that the verbal identity requirement is obviated if the verb in the antecedent clause and the verb in the ellipsis clause are contrasted, as shown in the following European Portuguese example:

- (99) O João **comprou** livros a feira e a Ana **vendeu** Δ.
 the João bought books at.the fair and the Ana sold.
 ‘João bought books at the fair, and Ana sold books at the fair.’
 (European Portuguese: Rouveret 2012:931; slightly modified)

In this headless *vP*/*VP*-ellipsis sentence, the verb in the antecedent clause and that in the ellipsis clause are not identical, violating the verbal identity requirement. In spite of this, the sentence is acceptable. A crucial difference between this example and (97) is that the verbs are contrasted (or antithetic) in the former while they are not in the latter. Gribanova (2013) observes the same effect in Russian, as shown in the following:

- (100) Kto-to ètu vazu **uronil**, i tot fakt, što nikto Δ
 someone this.ACC vase.ACC dropped.SG.M and the fact that no.one
 ne **podnjaj**, menja ogorčæet.
 NEG under.hold.SG.M me.ACC upsets.3SG
 (intended) ‘Someone dropped this vase, and the fact that no one picked it
 up upsets me.’ (Russian: Gribanova 2013:119)

Moreover, the same seems to hold also in Japanese, as shown in the following:

- (101) Taro-wa genkin-de hon-o **ur-ana-i.** Hanako-wa Δ
 Taro-TOP cash-by book-ACC sell_{NEG-PRES} Hanako-TOP
kaw-ana-i.
 buy-NEG-PRES
 ‘Taro does not sell a book by cash. Hanako does not buy a book by cash.’
 (Japanese)

Given these considerations, I propose the following condition on *vP*/*VP*-ellipsis, which is based on Chung’s (2006) lexical identity condition on sluicing and Mer-

chant's (2001) notion of the F-closure:

(102) *Lexical Identity Condition on vP/VP-ellipsis*

Every lexical item of which the C-closure of the elided *vP/VP* consists must be identical to a lexical item of which the antecedent *vP/VP* consists.

(103) The C-closure of α is the result of replacing contrasted parts of α with \exists -bound variables of the appropriate type.

To see how this condition works, let us consider how a sentence that violates the verbal identity condition like (91a) can be ruled out. Under copy theory of movement, (91a) is represented as the following (assuming that elided domain is *vP*):

(104) *Taro-wa [_{vPa} Taro-wa kurezittokaado-de hon-o **ka**] **ka-u**
 Taro-TOP Taro-TOP credit.card-with book-ACC buy buy-PRES
 kedo, Hanako-wa [_{vPe} ~~Hanako-wa kurezittokaado-de hon-o~~
 but Hanako-TOP Hanako-TOP credit.card-with book-ACC
~~koonyuusi~~] **koonyuusi**-na-i.
 purchase purchase-NEG-PRES
 (intended) 'Taro buys a book with a credit card, but Hanako
 does not purchase a book with a credit card.'

In this sentence, *Hanako-wa* 'Hanako-TOP' is contrasted with *Taro-wa* 'Taro-TOP'. Thus, *Hanako-wa* is replaced by a variable in the C-closure of *vPe*. Suppose that variables are not lexical items.¹³ Then, the C-closure of *vPe* contains *kurezittokaado-*

¹³I assume that lexical items are elements drawn from the lexicon. \exists -bound variables are not drawn from the lexicon but are introduced by the semantic rule that yields a C-closure. Thus, variables are not lexical items.

de ‘credit.card-with’, *hon-o* ‘book-ACC’, and *koonyuusi* ‘purchase’. *vPa* consists of *Taro-wa* ‘Taro-TOP’, *kurezittokaado-de* ‘credit.card-with’, *hon-o* ‘book-ACC’, and *ka* ‘buy’. There is no lexical item identical to *koonyuusi* ‘purchase’ in the set of the lexical items of which *vPa* consists, violating (102).

Let us next consider the case of (headed) *vP/VP*-ellipsis:

- (105) **Joey** was [_{*vPa*} accepted **Joey** to the conference], and **Mikael** will be [~~_{*vPe*} accepted **Mikael** to the conference~~], too.

Mikael is contrasted with *Joey*. Thus, the C-closure of *vPe* contains *accepted*, *to*, *the*, and *conference*. *vPa* consists of *Joey*, *accepted*, *to*, *the*, and *conference*. Every lexical item in the C-closure of *vPe* is identical to a lexical item of *vPa*. Therefore, ellipsis in this sentence is unproblematic in terms of the lexical identity condition.

Finally, let us consider the case of headless *vP/VP*-ellipsis in which the verbs are not identical but contrasted:

- (106) Taro-wa [_{*vPa*} Taro-wa genkin-de hon-o **ur**] **ur**-ana-i.
 Taro-TOP Taro-TOP cash-by book-ACC sell sell_{NEG-PRES}
 Hanako-wa [~~_{*vPe*} Hanako-wa genkin-de hon-o **kaw**~~] **kaw**-ana-i.
 Hanako-TOP Hanako-TOP cash-by book-ACC buy buy_{NEG-PRES}
 ‘Taro does not sell a book by cash. Hanako does not buy a book by cash.’

In this sentence, the subjects (*Taro-wa* ‘Taro-TOP’ and *Hanako-wa* ‘Hanako-TOP’) as well as the verbs (*ur* ‘sell’ and *kaw* ‘buy’) are contrasted. Thus, they are replaced by variables in the C-closure of the *vPe*. As a result, the C-closure of *vPe* contains *genkin-de* ‘cash-by’, *hon-o* ‘book-ACC’. *vPa* contains *Taro-wa* ‘Taro-TOP’, *genkin-de*

‘cash-by’, *hon-o* ‘book-ACC and *ur* ‘sell’. Every lexical item of the C-closure of the vPe is identical to a lexical item of vPa . Therefore, ellipsis in this sentence observes the lexical identity condition.

In sum, I proposed a lexical identity condition on vP/VP -ellipsis in order to account for the verbal identity condition. The proposed identity condition can distinguish the cases where “traces” are ignored from the cases where they are not, by resorting to the notion of C-closure. “Traces” of contrasted elements are ignored since they are replaced by \exists -bound variables while those of non-contrasted elements are not ignored because they remain copies of moved elements.

6.4 Kuno’s Constraint Revisited

Now we have the lexical identity condition on vP/VP -ellipsis in order to account for the verbal identity condition. With this in mind, let us reconsider the cases of scrambling out of elided headless vP/VP that we discussed in 6.2.3.2. We saw that headless vP/VP -ellipsis is impossible when a non-contrastive VP-internal element remains overt, as shown in (107b). On the other hand, vP/VP -ellipsis is allowed if an overt VP-internal element is marked with the contrastive marker *wa*, as shown in (107c).

- (107) a. Taro-wa Word-de ronbun-o kak-ana-i.
 Taro-TOP Word-with paper-ACC write-NEG-PRES
 ‘Taro does not write a paper with Word.’
- b. *Hanako-wa Δ **nikki-o** kak-ana-i.
 Hanako-TOP diary-ACC write-NEG-PRES
 (intended) ‘Hanako does not write a diary with Word.’

- c. Hanako-wa Δ **nikki-wa** kak-ana-i.
 Hanako-TOP diary-TOP write-NEG-PRES
 (intended) ‘Hanako does not write a diary with Word.’

In 6.2.3.2, I attributed this contrast to Kuno’s ban against partial discourse deletion in (49). According to Kuno’s constraint, in order to interpret a sentence as involving a null element, all non-focused and/or non-contrastive elements must be null. (107b) cannot be construed as a null adjunct sentence since the object *nikki-o* ‘diary-ACC’ is overt but non-focused and non-contrastive. On the other hand, in (107c), the overt object is marked with the contrastive marker *wa*. Thus, it can be construed as a null adjunct sentence.

This contrast could also be accounted for by the lexical identity condition in (102) if we assume that in order for NPs to be contrastive in Japanese, the contrastive marker *wa* is obligatorily attached to the NPs. (107a) and (107b) have the following structure under copy theory of movement (the copies for the subjects are ignored for expository purposes):

- (108) a. Taro-wa [_{vPa} Word-de ronbun-o kak] kak-ana-i.
 Taro-TOP Word-with paper-ACC write write-NEG-PRES
 ‘Taro does not write a paper with Word.’
- b. *Hanako-wa nikki-o [_{vPe} ~~Word-de nikki-o kak~~]
 Hanako-TOP diary-ACC Word-with diary-ACC write
 kak-ana-i.
 write-NEG-PRES
 (intended) ‘Hanako does not write a diary with Word.’

There is no contrastive element in the *vPe* since the VP-internal copy of *nikki-o* ‘diary-ACC’ is not marked with *wa*. Thus, the C-closure of the *vPe* contains *Word-*

de ‘Word-with’, *nikki-o* ‘diary-ACC’, and *kak* ‘write’. The *vPa* consists of *Word-de* ‘Word-with’, *ronbun-o* ‘paper-ACC’, and *kak* ‘write’. There is no identical lexical item to *nikki-o* ‘diary-ACC’ in the *vPa*, violating the lexical identity condition. (107c) is acceptable since the relevant object *nikki-wa* ‘diary-TOP’ is contrastive.

Given this redundancy between the lexical identity condition and Kuno’s constraint, the question is, do we need Kuno’s constraint? The answer is yes since the lexical identity condition cannot account for the following data:

- (109) a. Taro-wa [_{vPa} Word-de ronbun-o kak] kak-ana-i.
 Taro-TOP Word-with paper-ACC write write-NEG-PRES
 ‘Taro does not write a paper with Word.’
- b. *Hanako-mo **ronbun-o** [~~vPe~~ ~~Word-de~~ ~~ronbun-o~~ ~~kak~~]
 Hanako-also paper-ACC Word-with paper-ACC write
 kak-ana-i.
 write-NEG-PRES
 (intended) ‘Hanako does not write a paper with Word.’

In (109b), the overt object *ronbun-o* ‘paper-ACC’ is not contrastive and the sentence cannot be interpreted as a null adjunct sentence. However, this cannot be accounted for by the lexical identity condition since the antecedent *vP* has an identical lexical item to this overt object; every lexical item in the C-closure of the *vPe* is identical to a lexical item in the *vPa*. On the other hand, Kuno’s constraint can account for the unacceptability of (109b); we cannot interpret this sentence as involving a null element since there is an overt element that is not focused or contrastive (i.e. *ronbun-o* ‘paper-ACC’).

To sum up, although the range of data that Kuno's constraint can cover largely overlaps with those that the lexical identity condition covers, we still need Kuno's constraint in order to account for data like (109b).

6.5 Conclusion

In this chapter, I provided empirical evidence that headless *vP*/*VP*-ellipsis is available in Japanese to derive null object sentences. Given the conclusion that Japanese has headless *vP*/*VP*-ellipsis, considerable attention needs to be paid to controlling for headless *vP*/*VP*-ellipsis when we investigate properties of *pro* or argument ellipsis. The verbal identity requirement effect is useful for this purpose. We can eliminate the possibility of headless *vP*/*VP*-ellipsis if we use different verbs in the antecedent clause and the ellipsis clause. For example, sentences like (68) and (69) cannot be derived by headless *vP*/*VP*-ellipsis since the verbs in the ellipsis clauses are not identical to the verbs in the antecedent clauses. I hope that this will contribute to future research of null argument phenomena in Japanese.

Chapter 7: Conclusion

In this dissertation, I proposed a theory of syntactic head movement in which head movement is assimilated as far as possible to phrasal movement and differences between these two types of movement are deduced from general principles.

First, I presented empirical evidence that there is syntactic head movement in natural languages (chapter 2). The argument for syntactic head movement was primarily based upon the peculiar case-marking pattern in conjunctive object DPs in Japanese.

Given the existence of syntactic head movement, we need to construct a theory of syntactic head movement. However, as I discussed in 1.2, head movement has a number of unusual properties that ordinary phrasal movement lacks (Chomsky 2001), which are repeated below:

- (1) a. Head movement lacks semantic effects.
- b. Head movement is countercyclic.
- c. The moved head does not c-command its trace.
- d. There is no theoretical apparatus to predict when phrasal movement takes place and when head movement takes place.
- e. Head movement observes locality conditions different from phrasal move-

ment.

- f. Head movement is an adjunction rule, by which moving head is adjoined to the target head.
- g. Head movement is not successive-cyclic (no excorporation).

Among these properties, the first three are not serious problems, as I argued in 1.2.1–1.2.4. The rest of the unusual properties are related to the difference between head movement and phrasal movement that we need to stipulate. In chapter 3, I proposed a theory of syntactic head movement in which these differences can either be derived from general principles that regulate syntactic operations or be eliminated.

The properties (1d) and (1e) concern a distributional difference between head movement and phrasal movement, which can be best described by Pesetsky and Torrego's (2001) head movement generalization, repeated below:

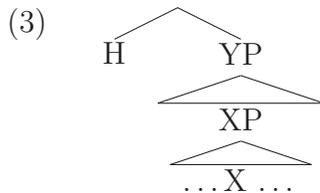
(2) *Head Movement Generalization* (Pesetsky and Torrego 2001:363)

Suppose a head H attracts a feature of XP as part of a movement operation.

- a. If XP is the complement of H, copy the head of XP into the local domain of H.
- b. Otherwise, copy XP into the local domain of H.

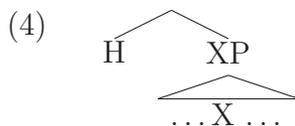
This generalization amounts to saying that a head X moves when the maximal projection of the head is the complement of a movement-inducing head while an XP moves otherwise. In 3.2, I argued that this generalization can be deduced from the

interaction of the locality constraint and the anti-locality constraint (Abels 2003, Bošković 2005, Grohmann 2003). A situation in which phrasal movement takes place is illustrated by the following structure, where H is the movement-inducing head:



In this configuration, the locality constraint requires that XP move: X cannot move because XP intervenes between H and X (A-over-A Principle effects: Chomsky 1964, Bresnan 1976).

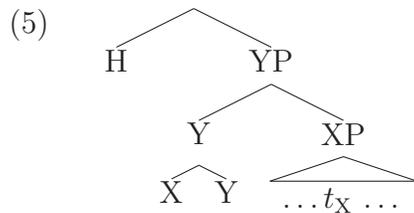
Head movement is triggered in the following situation:



Given that only elements that can potentially be a target of the relevant movement can be interveners, the anti-locality constraint guarantees that the XP does not intervene for movement of X in this configuration. This is why X can move only if its maximal projection (XP) is the complement of the movement-inducing head; XP always intervenes for movement of its head (X) when XP is not the complement of the movement-inducing head.

Note that a crucial assumption in this deduction of the distributional difference between head movement and phrasal movement is that the presence of phrasal categories could block head movement. Given this assumption, I argued that we

can also reduce the unusual property (1g) to the locality constraint (3.4). Consider the following structure:



In this configuration, X cannot move out of Y to H because its maximal projection (XP) intervenes for it (Relativized Minimality effects). This is why excorporation is prohibited.

Chapters 4–5 were devoted to the opposite situation where the presence of heads block phrasal movement. In 4.2, I showed that in a configuration like (5), XP, which is what I called a headless XP, cannot move in Dutch, English, and German (Takano’s Generalization). I argued that this is because movement of the XP is intervened by its moved head X (Relativized Minimality effects). In 5.2–5.4, I showed that headless XPs cannot be elided in Danish and English (Lasnik’s Generalization), and argued that this can also be reduced to Relativized Minimality effects under the movement analysis of ellipsis that builds on Johnson’s (2001) and Aelbrecht and Haegeman’s (2012) ideas.

A broader implication of these discussions is that the computational system of natural language does not discriminate head movement from phrasal movement in terms of locality; the presence of phrasal categories could intervene for head movement and the presence of heads could intervene for phrasal movement. This accords with the main aim of this dissertation, which tries to assimilate head movement as

far as possible to phrasal movement.

4.4 and 5.6 showed that there are exceptions to Takano's Generalization and Lasnik's Generalization, respectively; Takano's Generalization does not hold in Hebrew and Polish, and Lasnik's Generalization does not hold in Hebrew, Tagalog, Russian, Japanese, European Portuguese, Irish, and Finnish. The crosslinguistic difference in the applicability of Takano's and Lasnik's Generalizations can be reduced to parameters that are responsible for the possible number of specifiers if we eliminate another difference between head movement and phrasal movement (i.e. the property (1f)). In 3.3, I proposed the "two types of head movement" hypothesis, according to which there are two types of the operations (adjunction and substitution) not only for phrasal movement but also for head movement. This hypothesis also accords with the main aim of this dissertation, which attempts to assimilate head movement as far as possible to phrasal movement. In 4.6 and 5.7, I illustrated that the crosslinguistic variety in the applicability of Takano's and Lasnik's Generalizations can be reduced to another crosslinguistic difference in the availability of head movement via substitution, which can further be attributed to a parameter that is responsible for the possible number of specifiers: Takano's Generalization does not hold in Hebrew and Polish because these languages, unlike languages like English, allow multiple specifiers; Lasnik's Generalization does not hold in Hebrew, Tagalog, Russian, Japanese, European Portuguese, Irish, and Finnish because these languages allow either multiple specifiers or an empty Spec, TP.

Finally, chapter 6 is a case study of headless XP-ellipsis, providing arguments that null objects in Japanese can be derived by headless *v*P/VP-ellipsis. The argu-

ments are primarily based upon the data concerning null adjuncts and the verbal identity requirement. Chapter 6 also suggested a possible explanation of the verbal identity requirement (6.3).

To sum up, this dissertation showed that by eliminating the differences between head movement and phrasal movement in terms of locality and the possible mode of operation, we can explain the distributional difference between these two types of movement, and the crosslinguistic difference in the applicability of Takano's Generalization and Lasnik's Generalization. The general picture that emerges from this is that the computational system of natural languages does not care about the distinction between heads and phrases, which means that there are no constraints or rules in the grammar (or at least in syntax) that specifically refer to heads or phrases (e.g., Pesetsky and Torrego's (2001) head movement generalization and the ban on excorporation). This conception of the computational system well accords with bare phrase structure theory in which there is no distinction between heads and phrases.

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