Japanese Gapping in Minimalist Syntax

Kumiko Kato

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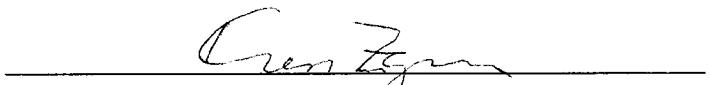

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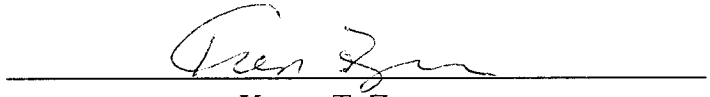

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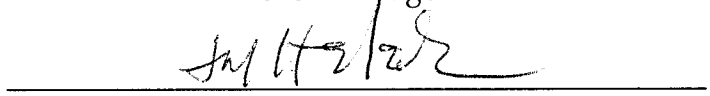

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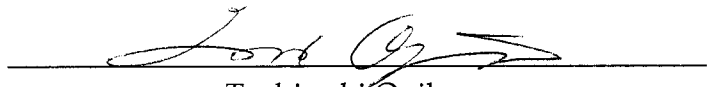

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Abstract

Japanese Gapping in Minimalist Syntax

Kumiko Kato

Chair of the Supervisory Committee:
Professor Karen T. Zagona
Department of Linguistics

This dissertation investigates an elliptical construction called *Gapping* in Japanese. Gapping is the omission of a predicate in clauses that are conjoined. The study focuses on capturing the correlation between Gapping and coordinate structures conjoined with the conjunction *sosite* 'and', which is not accounted for in previous analyses. Also, I attempt to account for the following additional properties of Japanese Gapping: (a) the omitted predicate in one clause is interpreted as identical to the overt predicate in the other clause, and (b) the gap must be in a non-final conjunct or conjuncts.

The proposed analysis is made possible by the assumptions of the Minimalist Program, such as the operations Select, Copy and Merge, and principles of economy. I propose that *sosite* has a special function of copying lexical items in a numeration due to its intrinsic property of reduplicating items. This operation is called AND-Copy. AND-Copy targets particular lexical items in the numeration and creates phonologically null copies, following principles of economy. Thus, under the proposed analysis the source of the gap is the phonologically null copy. Since the copy guarantees identity with the original item, this accounts for why the gap in one clause is interpreted as identical to the overt element in the other clause.

I propose a structure in which the conjunction *sosite* is the head and

takes one TP as complement on its left and another TP as specifier on its right. I further propose that AND-Copy must be immediately followed by Merge by adopting the definition of the operation Move, which consists of Copy and Merge. This nicely accounts for the directionality of the gap: once the copy is created by AND-Copy, it must be immediately used for the derivation of the complement clause. As a result, the gap occurs in the non-final clause while the overt item is used in the final clause.

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Finally, and most importantly, I would like to express my deepest gratitude to my parents, Mutsuko Kato and Katsumi Kato, for selfless support and unfailing love.

DEDICATION

To my parents, Katsumi Kato and Mutsuko Kato

1 Introduction

This thesis is concerned with issues in reductions in coordinate structures. Centering my discussions on an elliptical construction called *Gapping*, I will investigate the nature of such reductions within the general framework of the Minimalist Program developed by Chomsky (1995).

1.1 Empirical Issue and Major Questions

Gapping is the omission of a verb (and other elements) shared between clauses. The following sentence is a typical example of Japanese Gapping (where ▲ shows a gap for *katta* 'bought'): [1]

(1) John-ga hon-o ▲ sosite Mary-ga hana-o katta
John-NOM book-ACC (bought) and Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

'John bought books, and Mary flowers.'

This sentence is composed of two conjuncts that share the identical verb *katta*

[1] Sag (1976:189) notes that Ross (1970) referred to a transformational rule to account for these sentences as Gapping, which has become a standard term for the construction.

'bought', and the verb *katta* 'bought' is omitted in the first conjunct. I refer to this type of elliptical construction as *Japanese Gapping*.[2]

Gapping is restricted to conjoined clauses, in particular, to clauses that are conjoined by a particular type of conjunction, *sosite* 'and'. For example, if the conjunction is *keredomo* 'but', the gapped sentence is ungrammatical as shown below:

(2) * John-ga hon-o ▲ keredomo Mary-ga
John-NOM book-ACC (bought) but Mary-NOM

hana-o katta
flower-ACC bought

'(Lit.) John (bought) books, but Mary bought flowers.'

'John bought books, but Mary flowers.'

---

[2] English sentence-internal ellipsis of verbs has been widely regarded as Gapping (e.g. SVO + SO). Following this, I will focus on cases with transitive verbs for Japanese Gapping (e.g. SO + SOV). Cf. Gapping of intransitive verbs is possible as follows:

(i) John-ga ▲ sosite Mary-ga hasiru
John-NOM and Mary-NOM run
'(Lit.) John (runs) and Mary runs.'

However, the sentence sounds more natural if it has adjunct phrases:

(ii) John-ga kayoubi-ni sosite Mary-ga doyoubi-ni hasiru.
John-NOM Tuesday-on and Mary-NOM Saturday-on run
'(Lit.) John (runs) on Tuesdays, and Mary runs on Saturdays.'

This is the core empirical issue of Gapping that needs to be accounted for. The question is described as follows:

(3) Empirical issue:

Why is Gapping restricted to clauses that are conjoined by the conjunction *sosite* 'and'?

There are other relevant properties of Gapping as shown in sentence (1). In (1), the missing verb in the first conjunct can only be interpreted as *katta* 'bought'. In other words, sentence (1) can never mean that *John read books and Mary bought flowers*, where *read* is the missing verb.

In addition, Gapping must occur in the non-final conjunct. If not, the sentence would be ungrammatical as shown in (4):

(4) * John-ga hon-o katta sosite Mary-ga
John-NOM book-ACC bought and Mary-NOM

hana-o ▲
flower-ACC (bought)

'(Lit.) John bought books, and Mary (bought) flowers.'

'(Intended reading) John bought books, and Mary flowers.'

As indicated by the triangle symbol (▲), Gapping is in the final conjunct and the sentence is ungrammatical.

These observations are summarized below:

(5) Other relevant properties of Gapping:

a. The gapped element is interpreted as identical to the overt element.

b. The gap must be in a non-final conjunct or conjuncts (in other words, the rightmost conjunct may not contain the gap) in Japanese.

Based on these properties, there are at least three questions that need to be addressed. The first question is that the grammar needs to know what the source of the gap is. The second question is related to the first one: why the gap is interpreted as identical to the overt element in the full clause. And, the

third question is why the gap must be in a non-final conjunct. The questions are summarized as below:

(6) Major questions regarding Gapping:

a. What is the source of the phonologically empty element (the gap)?

b. Why is the gapped element interpreted as identical to the overt one?

c. Why does the gap occur in a non-final conjunct or conjuncts in Japanese?

Before starting the discussion, I will introduce basic properties of Japanese Gapping with examples in more detail in the next section.

1.2 Properties of Japanese Gapping

In this section, I present basic properties of Japanese Gapping. Also I introduce a few terms that I will use in this thesis. Let us reexamine the first example below:

(1) John-ga hon-o ▲ sosite Mary-ga hana-o katta
John-NOM book-ACC (bought) and Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

'John bought books, and Mary flowers.'

I will call the first conjunct the *gapped conjunct*, and the second conjunct the *full conjunct*. Following the literature (Sag 1976, J.-S. Kim 1997), I refer to *John-ga* 'John-NOM' and *hon-o* 'book-ACC' in the gapped conjunct as *remnants* as they are remainders of Gapping, and *Mary-ga* 'Mary-NOM' and *hana-o* 'flower-ACC' in the full conjunct as *correspondents*, as *Mary-ga* corresponds to the remnant *John-ga* and *hana-o* corresponds to the remnant *hon-o*:

(7) Terms:

[*gapped conjunct* John-NOM book-ACC (bought)]
and
[*full conjunct* Mary-NOM flower-ACC bought]

remnants

correspondents

In what follows, I will introduce five important properties of Japanese Gapping, which are summarized as follows:

(8) Properties of Japanese Gapping:

a. Gapping is found only in coordinate structures with the conjunction *sosite* 'and', and not with other conjunctions.

b. The gapped element is interpreted as identical to the overt element in the full conjunct.

c. Japanese Gapping allows multiple remnants in the gapped conjunct.

d. Japanese Gapping occurs in multiple coordinate structures.

e. Japanese Gapping requires the rightmost conjunct to be the full conjunct.

In the following subsections, I will present examples for each property.

1.2.1 Gapping is Found only in Coordinate Structures

In this subsection, I present data for property (8a), which is the most salient characteristic of Gapping: the construction is restricted to coordinate structures. Gapping between the main clause and the subordinate clause is not allowed. Observe the following gapped sentence that contains the adverbial clause:

(9) a. * [John-ga hon-o ▲ **atode/toki**], Mary-ga hana-o
John-NOM book-ACC (bought) after/when Mary-NOM flower-ACC

katta
bought

'(Lit.) After/When John (bought) books, Mary bought flowers.'

b. * [John-ga hon-o katta **atode/toki**],
John-NOM book-ACC bought after/when

Mary-ga hana-o ▲
Mary-NOM flower-ACC (bought)

'(Lit.) After/When John bought books, Mary (bought) flowers.'

In sentence (9a), the verb *katta* 'bought' in the adverbial clause given by *when* (or *after*) is omitted and the sentence is not grammatical. Sentence (9b), where the verb in the main clause is omitted, is not grammatical either.

Similarly, elements in a relative clause cannot be omitted even if they are identical with elements in a matrix clause. Consider sentence (10b) (Sentence (10a) is a grammatical sentence without any gap):

(10) a. Mary-ga [John-ga yonda] hon-o yonda
Mary-NOM [John-NOM read] book-ACC read

'Mary read a book that John read.'

b. * Mary-ga [John-ga ▲] hon-o yonda
Mary-NOM [John-NOM (yonda)] book-ACC read

'(Lit.) Mary read a book that John (read).'

In sentence (10b), the verb *yonda* 'read' in the relative clause is omitted and the sentence is not grammatical.

We have seen that Gapping is observed only in coordinate structures. Furthermore, the conjunction *sosite* 'and' is the only one in coordinate structures that allows Gapping. Observe the following sentences:[3]

---

[3] Among *or* conjunctions (*matawa, aruiwa, mosikuwa*), the gapped sentences with the conjunction *aruiwa* seem more acceptable than those with other conjunctions to some speakers:

(i) ?? John-ga hon-o aruiwa Mary-ga hana-o katta
John-NOM book-ACC or Mary-NOM hana-ACC bought
'John bought books, or Mary flowers.'
(Benjamin Barrett, personal communication)

Furthermore, sentence (i) sounds more natural if the predicate involves a modal verb such as *kamosirenai* 'might' or *ni chigainai* 'must', which expresses the speaker's conjecture, as in (ii):

(ii) John-ga hon-o aruiwa Mary-ga hana-o katta-kamosirenai
John-NOM book-ACC or Mary-NOM hana-ACC bought-might
'(Lit.) John books, or Mary might have bought flowers.'
'John might have bought books, or Mary flowers.'

(11) a. * John-ga hon-o ▲ **demo/keredomo/sikasi**
John-NOM book-ACC (bought) **but/but/however**

Mary-ga hana-o katta
Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, but/however Mary bought flowers.'

b. * John-ga hon-o ▲ **matawa/aruiwa/mosikuwa**
John-NOM book-ACC (bought) **or/or/or**

Mary-ga hana-o katta
Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, or Mary bought flowers.'

As the ungrammaticality of the sentences in (11) shows, conjunctions other than *sosite* 'and', such as *demo* 'but', *keredomo* 'but', *sikasi* 'however', *matawa* 'or', or *aruiwa* 'or' are not compatible with Gapping.

I will refer below to *sosite* as an instance of *additive conjunction*, by which I mean ordinary coordination, which forms a compound element by conjoining

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I exclude this conjunction in this study. At least we would need to research (a) why only *aruiwa* among *or* conjunctions allows Gapping, and (b) why sentence (ii) sounds better if certain modal verbs are used.

constituents of the same type. This characteristic is not shared by *keredemo* 'but' or the other conjunctions mentioned above.[4]

The next subsection will deal with property (8b).

1.2.2 The Gap is Interpreted as Identical to the Overt Element

In Gapping, the gapped element is interpreted as identical to the overt element in the full conjunct. Consider the following example:

(12)	*	John-ga	salada-o	▲	sosite	Mary-ga	otya-o	nonda
		John-NOM	salad-ACC		and	Mary-NOM	tea-ACC	drank

'(Lit.) John (drank) salad, and Mary drank tea.'

The gapped sentence in (12) is not acceptable because the gapped predicate is interpreted based on the predicate in the full conjunct, which is *nonda* 'drank', and the sentence is not interpretable under normal circumstances.

---

[4] In Japanese, NPs are combined by a conjunction *to* 'and':

(i) John to Mary-ga kita
John and Mary-NOM came
'John and Mary came.'

If *sosite* is used in place of *to*, the sentence will imply there are two separate events; *John came and Mary came*:

(ii) John sosite Mary-ga kita
John and Mary-NOM came
'John, and Mary came.'

Similarly, even if the lexical item is semantically the same, Gapping is not allowed if the item is phonologically different. The following sentence shows this point:

(13) * John-ga watasi-ni hon-o ▲ sosite
John-NOM I-DAT book-ACC and

Mary-ga Sue-ni hana-o ageta
Mary-NOM Sue-DAT flower-ACC gave

'(Lit.) John (gave) me books, and Mary gave Sue flowers.'

In this example, the verb *ageta* 'gave' is gapped. In Japanese, there are two different forms of giving verbs: *ageru* and *kureru*. The verb *ageru* 'to give' cannot be used when the recipient is first person. Since the gapped verb is interpreted as *ageru* in the past tense while the recipient is *watasi-ni* 'I-DAT ', the sentence is ungrammatical.

The next subsection will provide data that illustrates the properties of (8c) multiple remnants and (8d) the directionality of ellipsis in Gapping.

1.2.3 Multiple Remnants and Multiple Coordination

Japanese Gapping allows multiple remnants in a gapped conjunct as the following example shows:

(14) [John-ga kinou Fred-ni hon-o ▲] sosite
John-NOM yesterday Fred-DAT book-ACC (bought) and

[Mary-ga kyou Susan-ni hana-o katta]
Mary-NOM today Susan-DAT flower-ACC bought

'(Lit.) John (bought) books for Fred yesterday, and Mary bought flowers for Susan today.'

The gapped conjunct in sentence (14) contains four remnants; *John-ga* 'John-NOM', *kinou* 'yesterday', *Fred-ni* 'Fred-DAT' and *hon-o* 'book-ACC', and it is a grammatical sentence.

Also, it is possible to have multiple conjuncts in a sentence with a gapped sequence in all but the final conjunct as in (15):

(15) [John-ga hon-o] sosite [Mary-ga hana-o] sosite
John-NOM book-ACC and Mary-NOM flower-ACC and

[Fred-ga pen-o] sosite [Sue-ga kitte-o katta]
Fred-NOM pen-ACC and Sue-NOM stamp-ACC bought

'(Lit.) John (bought) books, and Mary (bought) flowers, and Fred (bought) pens, and Sue bought stamps.'

'John bought books, Mary flowers, Fred pens, and Sue stamps.'

The sentence contains four conjuncts: three gapped conjuncts and one full conjunct, and it is grammatical.

The next subsection will describe the direction of Japanese Gapping, which is the property in (8e).

1.2.4 Direction of Gapping in Japanese

This section presents data on the directionality of ellipsis in Gapping. In Japanese, Gapping occurs in all conjuncts but the rightmost conjunct in a sentence. For example, if the sentence is composed of two conjuncts that share the same predicate, then Gapping occurs in the first conjunct, not in the second conjunct. Let us refer to this phenomenon as *direction of Gapping*. Observe sentence (1) again:

(1) [John-ga hon-o ▲] sosite [Mary-ga hana-o katta]
John-NOM book-ACC (bought) and Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

'John bought books, and Mary flowers.'

The verb *katta* in the first conjunct, not in the second conjunct, is gapped. In other words, the second conjunct needs to be the full conjunct. If *katta* is omitted in the second conjunct, the sentence would be ungrammatical:

(1') * [John-ga hon-o katta] sosite [Mary-ga hana-o ▲]
John-NOM book-ACC bought and Mary-NOM flower-ACC (bought)

'(Lit.) John bought books, and Mary (bought) flowers.'

'John books, and Mary bought flowers'

The same thing is true of sentences with more than two conjuncts, as shown in sentence (15), which contains four conjuncts:

(15) [John-ga hon-o] sosite [Mary-ga hana-o] sosite
John-NOM book-ACC and Mary-NOM flower-ACC and

[Fred-ga pen-o] sosite [Sue-ga kitte-o katta]
Fred-NOM pen-ACC and Sue-NOM stamp-ACC bought

'(Lit.) John (bought) books, and Mary (bought) flowers, and Fred (bought) pens, and Sue bought stamps.'

'John bought books, Mary flowers, Fred pens, and Sue stamps.'

Gapping occurs in all conjuncts but the final conjunct: the final conjunct *Sue-ga kitte-o katta* 'Sue bought stamps' needs to be the full conjunct.

1.3 Assumptions in Minimalist Syntax

I will discuss issues with elliptical constructions in this thesis, applying the general framework of the Minimalist Program developed in Chomsky 1995. The Minimalist Program can provide theoretical tools for solutions to the issues with Gapping that traditional generative syntax cannot, which will be presented in the proposed approach in Chapter 3. In this section, I will review the core assumptions of the theory.

Under the Minimalist Program developed in Chomsky 1995, a language consists of a computational system and a lexicon. Lexical items are selected from the lexicon and put into a numeration. The computational system is

thought of as mapping the items in the numeration to a Phonetic Form (PF) representation and a Logical Form (LF) representation.

There are two linguistic interface levels: an articulatory-perceptual (A-P) level and a conceptual-intentional (C-I) level. The two levels are assumed to provide instructions for the A-P system and the C-I system, respectively. The A-P level is considered to be Phonetic Form (PF) and the C-I level is taken to be Logical Form (LF). Given the numeration, syntactic objects are constructed by syntactic operations. Syntactic operations are Select,[5] Merge, Move, Delete, Copy and Spell-Out. Move is considered to be Copy + Merge. The syntactic objects constructed are Spelled-Out, with phonological representations going to PF and syntactic representations to LF. The overall picture is illustrated as follows:

---

[5] *Select* refers to selection of lexical items from a lexicon to form a numeration as well as selecting a lexical item from the formed numeration to build a syntactic object.

(16)

Lexicon
↓
Numeration
↓
Spell-Out → PF
↓
LF

The component from numeration to Spell-Out is called overt syntax, and the component from Spell-Out to LF is called covert.

The details of each procedure are as follows. A lexical item in the numeration is selected by the operation Select for building a syntactic object. The operation Merge then combines a pair of syntactic objects and replaces them with a new combined syntactic object.

Each lexical item is assumed to carry lexical features (semantic and phonetic features) and formal features. Some formal features are intrinsic, listed in a lexical item in a lexicon, while others are optional, added as the lexical item enters a numeration. For example, a categorial feature [nominal] and person and gender features of a noun are considered as intrinsic formal features whereas a Case feature and number features are considered optional. Chomsky (1995) distinguishes features as to whether they are interpretable or uninterpretable. Features that enter into interpretation at LF are considered to be interpretable. Uninterpretable features must be checked and deleted in

order for the derivation to converge.[6]

The dislocation of the syntactic object is driven by the need of features to be checked. The syntactic object undergoes movement by the operations Copy (by which a copy of the syntactic object is created and left at the original location) and Merge (by which the syntactic object is combined with a higher syntactic object). Feature checking is a core property of the computational system of language in Minimalist assumptions. Under minimalist syntax, every movement must be driven by the necessity of feature checking.

Also, principles of economy have been much emphasized in minimalist syntax. Under economy principles, superfluous constituents and operations are banned, and using fewer constituents, derivations or grammatical operations is considered "economical".

Chomsky (1995:315), following Hale and Keyser (1993), postulates the following structure of a clause (with a transitive verb):

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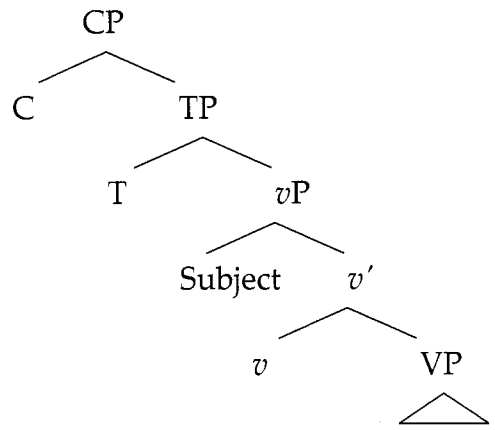
[6] In Chomsky 1995, features are also classified by strength: strong features versus weak features. I will not adopt feature strength since it is eliminated in a newer theoretical model in Chomsky 2000, 2001.

(17)



The projection of an empty verb v (called a light verb) creates the configuration for an external argument (i.e., a subject), and accusative Case is checked by v. Also, Chomsky (1995) argues that a strong, uninterpretable EPP feature exists in T independently of Case and that it triggers overt movement of a subject to the specifier of T.

1.4 Summary of Chapter 1

In section 1.1, I have presented the empirical issue and major questions regarding Gapping. In section 1.2, I have presented five basic properties of Japanese Gapping with examples. Gapping is observed only in coordination with the *additive* conjunction, *sosite* (Section 1.2.1). In Gapping, the gap is interpreted as identical to the overt item in the corresponding full element (Section 1.2.2). We have also observed that remnants in a gapped conjunct can

be multiple in Japanese (Section 1.2.3) and that no gaps should occur in the rightmost conjunct (Section 1.2.4). Furthermore, Gapping can occur in multiple coordination with more than two conjuncts (Section 1.2.3). These properties are relevant in the sense that they are peculiar to Gapping. Based on these properties, I have raised the following questions: (i) what the source of the gap is, (ii) why the gap is interpreted as identical to the overt element in the full conjunct, and (iii) why the gap occurs in a non-final conjunct or conjuncts in Japanese. Any analysis of Japanese Gapping should be able to provide an account for these questions.

Section 1.3 has covered basic assumptions of the Minimalist Program, which I will adopt in order to propose an analysis within this framework.

1.5 Outline of the Dissertation

The organization of this dissertation is as follows. In Chapter 2, I will review four different types of previous analyses of Japanese Gapping and point out issues with each analysis, focusing on relevant properties of Gapping. In Chapter 3 I will propose a new approach to Japanese Gapping under minimalist assumptions: a new copy operation that applies to a numeration. Chapter 4 will propose the structure of coordination for Gapping and illustrate the whole derivation of gapped sentences by the proposed

operations. Chapter 5 will discuss additional cases of Gapping and attempt to extend the proposal to other cases of ellipsis. Chapter 6 will provide a summary of the current study and discuss how the proposal would be reinterpreted within a recent theoretical model.

2 Gapping: Previous Analyses

In this chapter, I will review five types of previous analyses of Japanese Gapping. Those analyses deal with Gapping at overt syntax, at LF and at PF, which will illustrate the fact that Gapping is a phenomenon that involves various aspects of sentence grammar.

First, the core arguments of each analysis will be presented, and then each will be evaluated against the properties of Gapping that I introduced in the previous chapter. I will point out empirical and theoretical advantages and problems associated with each of them. The aforementioned properties are repeated below:

(8) Properties of Japanese Gapping:

a. Gapping is found only in coordinate structures with the conjunction *sosite* 'and', and not with other conjunctions (Section 1.2.1).

b. The gapped element is interpreted as identical to the overt element in the full conjunct (Section 1.2.2).

c. Japanese Gapping allows multiple remnants in the gapped conjunct (Section 1.2.3).

d. Japanese Gapping occurs in multiple coordinate structures (Section 1.2.3).

e. Japanese Gapping requires the rightmost conjunct to be the full conjunct (Section 1.2.4).

In what follows, I will review previous analyses, focusing on whether the relevant properties in (8a-e) are accounted for. For property (8e), I will discuss it separately in Chapter 4.

2.1 Overview of Previous Analyses

I will summarize major analyses of Gapping in this section, focusing on those that deal with Japanese Gapping in order to observe the variety of approaches found in the literature. For example, Ross (1970), Sag (1976), Kuno

(1976), and Hankamer and Sag (1976) adopt a deletion theory in which Gapping is the result of deletion. Jackendoff (1971), Williams (1977), and Pesetsky (1982: 640-659) propose interpretive rules of Gapping, while Johnson (1994) proposes Across-the-Board (ATB) movement in Gapping. Specifically speaking for Japanese Gapping, Saito (1987) claims that a gapped sentence is the result of stylistic PF rightward movement, while Jeong-Seok Kim (1997) and Sohn (1999) argue that Gapping involves syntactic movement and PF deletion. Abe and Hoshi (1997, 1999) develop an LF copying analysis. Zoerner and Agbayani (2000) apply ATB movement, following Johnson (1994). Mukai (2003) argues that Gapping is the result of PF string deletion.

Adopting the taxonomy by Winkler and Schwabe (2003:5), I have classified these approaches to Gapping as follows:

(18) Taxonomy of Approaches to Gapping

- Deletion:
  - Syntactic Deletion:
    - -Ross 1970
    - -Sag 1976
    - -Hankamer and Sag 1976
    - -Kuno 1976
    - etc.
  - PF-Deletion:
    - -Chomsky and Lasnik 1993
    - -J.-S. Kim 1997
    - -Sohn 1999
    - -Mukai 2003
    - etc.
- Non-Deletion:
  - Interpretive/LF Copy:
    - -Jackendoff 1971
    - -Williams 1977
    - -Pesetsky 1982
    - -Abe and Hoshi 1997, 1999
    - etc.
  - Syntactic Movement:
    - -Johnson 1994
    - -Zoerner and Agbayani 2000
    - etc.
  - PF Movement:
    - -Saito 1987
    - etc.

In what follows, I will discuss the following five approaches to Gapping drawn

from each type in the taxonomy:

(19) Previous analyses to be reviewed:

a. Syntactic movement approach (Johnson 1994, Zoerner and Agbayani 2000)

b. LF copy approach (Abe and Hoshi 1997, 1999)

c. PF movement approach (Saito 1987)

d. PF deletion approach (Mukai 2003)

e. PF deletion preceded by syntactic movement (J.-S. Kim 1997, Sohn 1999)

Each of the approaches will be examined in separate subsections below. In each subsection, I will first summarize the core claim of the given analysis. Then I will discuss advantages and disadvantages of the analysis.

2.1.1 Syntactic Movement Approach

In this section, I will review the syntactic movement analysis developed in Johnson 1994 and Zoerner and Agbayani 2000. Their analyses involve Across-the-Board (ATB) movement, which moves elements that are identical among conjuncts to a single higher position. The gap is a trace of the moved element under their approach.

2.1.1.1 Johnson 1994

From observation of English examples, Johnson (1994) claims that in Gapping, *and* conjoins VPs and the gap is a trace generated by Across-the-Board (ATB) movement from the conjoined VPs.[7] ATB movement under their analysis is an operation that moves element *a* in a conjunct *XP1* and element *b* in a conjunct *XP2* in parallel where *a* and *b* are identical terms, and that merges the two into one at a higher position in the structure.

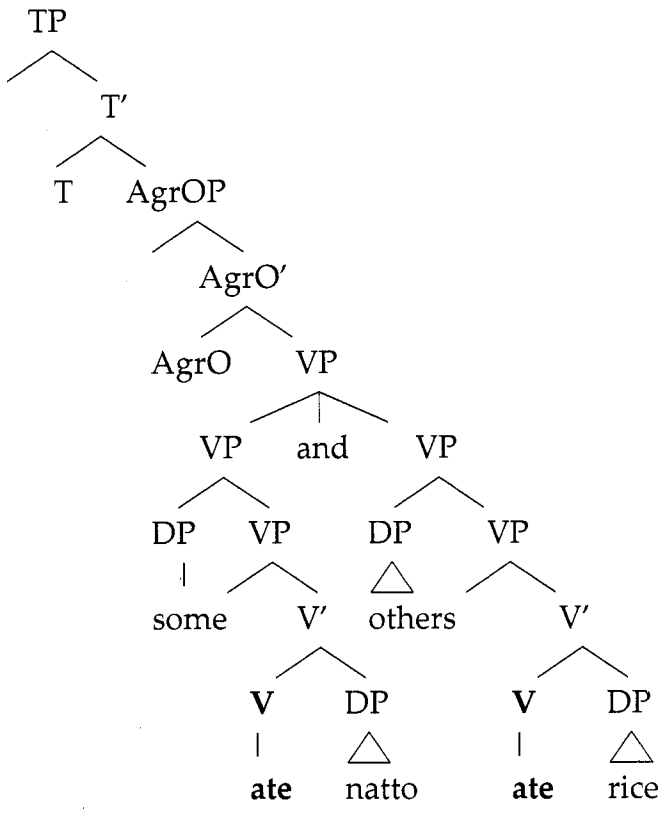
Under Johnson's theory, a gapped sentence in (20b) is derived as tree diagrams (21) (before ATB movement) and (22) (after ATB movement) illustrate. In (20a), the verb *ate* is identical and it is a target of the movement:

(20) a. Some ate natto, and others ate rice (before ATB movement)

b. Some ate natto, and others ▲$_{ate}$ rice (after ATB movement)

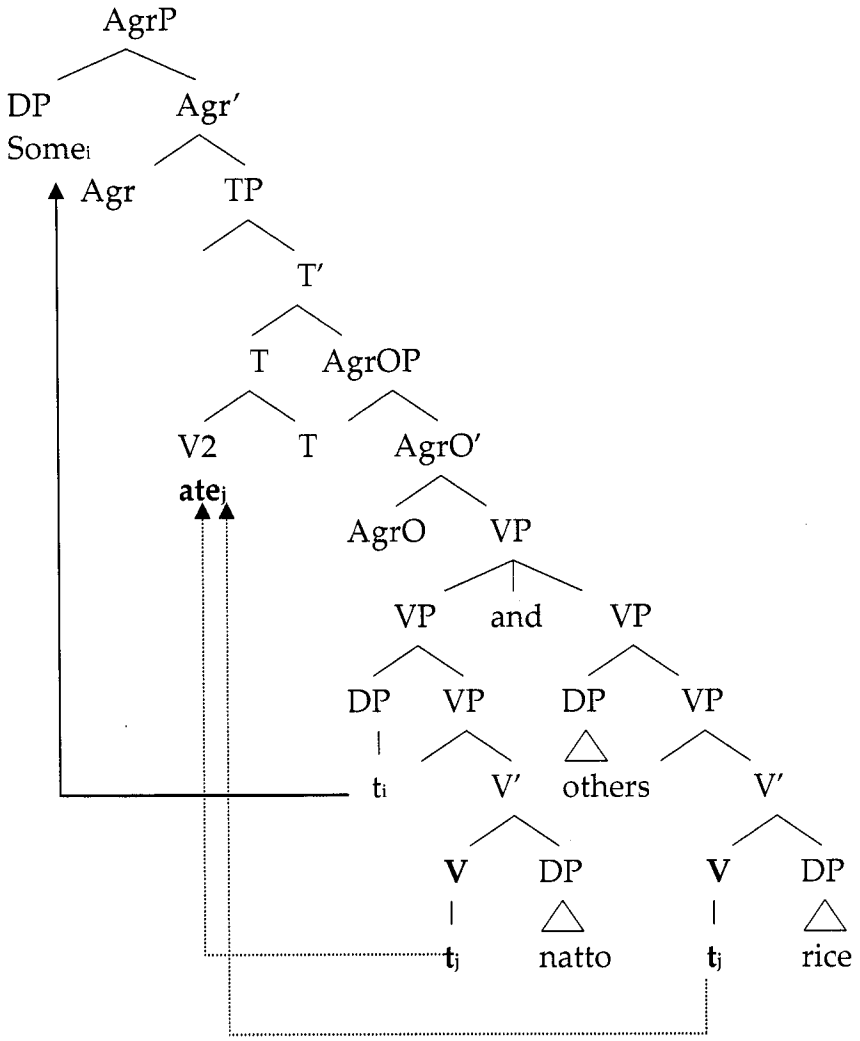
[7] The term "across-the-board" was introduced by Ross (1967:176).

(21) Before ATB movement:



Johnson argues that the verb *ate* overtly moves in across-the-board fashion from both conjuncts to the head T, leaving its trace (t_j) in each conjunct as illustrated in tree diagram (22) below. The solid arrow shows the subject movement and the broken arrow shows the ATB movement of the verbs:

(22) After ATB movement:



(Johnson 1994:23 (65))

As this tree diagram shows, there are originally two instances of the verb *ate*, but only one appears after ATB movement.[8]

Based on the ATB movement analysis, Zoerner and Agbayani (2000)

[8] I will discuss this point later in section 2.1.1.3.

discuss Japanese Gapping. I will first introduce their analysis in the next subsection and then examine the ATB movement approach.

2.1.1.2 Zoerner and Agbayani 2000

Following Johnson (1994), Zoerner and Agbayani (2000) extend the application of the ATB analysis to Japanese Gapping as well. They claim that Gapping involves ATB movement from *v*P (not VP, unlike Johnson 1994), based on the assumption that subjects are base-generated in Spec of *v*P.

Let us see how the Japanese gapped sentence (1), which is repeated below, is analyzed under their ATB movement approach. Our focus is the verb *katta* 'bought' and the subject *John-ga* 'John-NOM' in the first conjunct:

(1) John-ga hon-o ▲ sosite Mary-ga hana-o katta
John-NOM book-ACC (bought) and Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

'John bought books, and Mary flowers.'

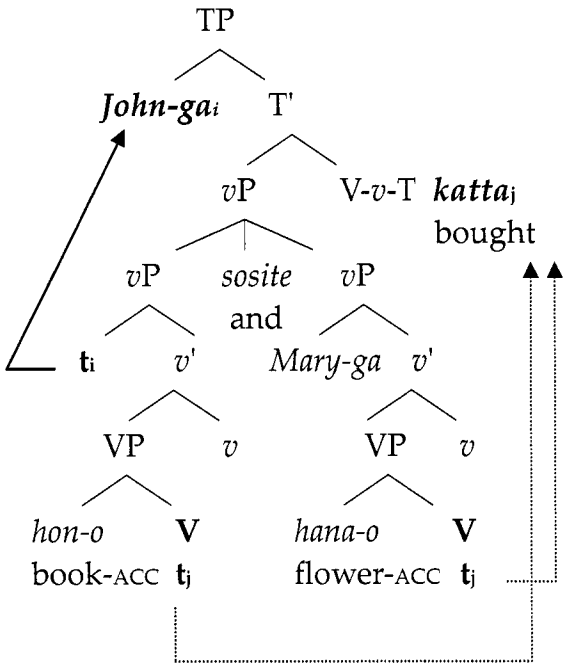
Under their approach, the sentence starts as (23), in which the two identical verbs *katta* 'bought' are highlighted:

(23) John-ga hon-o **katta** sosite Mary-ga hana-o **katta**
John-NOM book-ACC bought and Mary-NOM flower-ACC bought

'John bought books, and Mary bought flowers.'

Given that ATB movement targets identical phrases, the two instances of the verb *katta* 'bought' move as shown in (24) by the broken arrow:

(24) After ATB movement:



The subject *John-ga* 'John-NOM' in the first conjunct undergoes leftward movement to Spec of TP while the verb *katta* 'bought' in each conjunct undergoes rightward ATB movement to *v* and then to T. Notice that only the

subject *John-ga* in the first conjunct moves to Spec of TP and the subject *Mary-ga* in the second conjunct remains in situ.

To summarize the point of the ATB movement approach, the movement applies for identical phrases among conjuncts in coordinate structures and moves them to a higher position by merging the two into one. As a result, a trace of the movement in the first conjunct becomes a gap.

In the next subsection, I will review how the ATB movement analysis accounts for the aforementioned characteristics of Japanese Gapping.

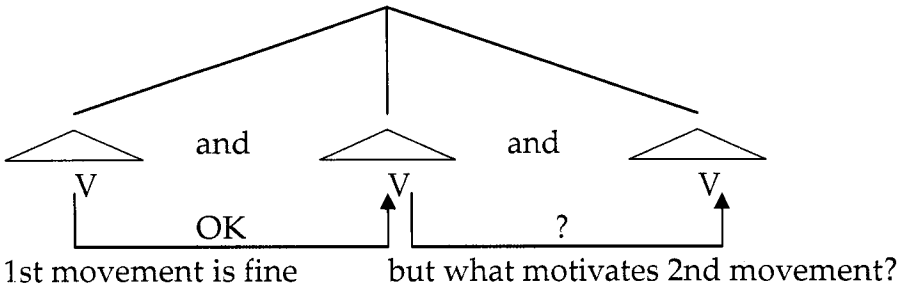
2.1.1.3 Critique of the Syntactic ATB Movement Approach

Let us evaluate the ATB movement approach by checking whether it accounts for each of the aforementioned properties of Japanese Gapping presented in (8). This approach deals with two properties well but fails to capture two other properties.

First, ATB movement can deal with the identity between the gap and the overt element (property 1.2.2) by making identical phrases between two conjuncts the target of the ATB movement, although they do not make it explicit how identity is to be defined. Second, since what is moved is what is going to be gapped, the number of remnants in a gapped conjunct (property 1.2.3) is not an issue for the approach, at least for Japanese Gapping.

However, two properties are not captured in this approach. First, this approach does not account for why Gapping occurs only in coordinate structures with *and* conjunction (property 1.2.1). Second, neither Johnson (1994) nor Zoerner and Agbayani (2000) discuss the structure of coordinate clauses, nor do they discuss how multiple coordination (property 1.2.3) will be accounted for.[9] It will be a challenge to the ATB approach to account for Gapping in multiple coordination because this approach expects one instance of movement, if we grant that movement from one to another is possible. Our expectation is that no subsequent movement should be allowed because if one movement satisfies the feature checking requirement, it cannot move further:

(25)



This approach has three additional problems in other areas than the

[9] Johnson (1994:2 n.18) states that ternary branching for coordinate structures is used in his examples merely for expository reasons, and he does not discuss it further.

aforementioned properties. First, the fact that ATB movement takes elements only from the first VP conjunct is an apparent violation of the *Coordinate Structure Constraint* by Ross (1967), which prohibits the extraction of any element in a conjunct out of that conjunct or the movement of a conjunct itself.[10] [11]

The second issue concerns subjects staying in situ. In the ATB movement analysis, only the subject in the gapped conjunct raises to a higher position, as seen in the tree diagrams in (22) and (24). This means that the subject in the full conjunct stays in situ. Johnson (1994) argues that such treatment is on the right track by presenting one of Siegel's (1987) English examples, in which the subject in the second conjunct is in the accusative Case instead of the nominative Case:[12]

(26) Ward likes caviar, and **him** beans.

---

[10] The Coordinate Structure Constraint:

> In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct.
>
> (Ross 1967:161 (4.84))

[11] Johnson (1994:24-25) acknowledges the issue and states that the Coordinate Structure Constraint needs to be modified in such a way that it allows A-movement from the first conjunct, but not from the second one.

[12] Johnson (1994:24) only mentions that *and* may license Case on the second conjunct's subject, without further details.

This line of analysis, however, may not be fully applicable for Japanese because the subject in the gapped conjunct in Japanese Gapping appears with the *-ga* nominative Case marker, which needs to be checked by T by raising to Spec of TP. Therefore, if the subject remains in situ as they claim, the derivation would crash because of lack of Case feature checking. This aspect remains unexplained for Japanese Gapping in the ATB movement approach.

Lastly, ATB movement is a special kind of movement because multiple instances of verbs originally exist in the structure, but only one of them appears at the landing position. Such a process is not a standardly motivated or well-understood syntactic process. It is not discussed how multiple ATB-moved elements become one at the end although the process is central to ATB movement.

In addition, this approach implies that languages that exhibit Gapping always have overt V-to-T raising through ATB movement. However, Japanese is one of the languages which lack overt verbal agreement. It is not made clear in their arguments what forces the identical predicate ATB-move to overtly move from V to T for Japanese. Also, it is an open question which feature triggers the ATB movement that they propose since their approach is not made in the minimalist framework.

To point out the most critical issue as a summary, the ATB movement

approach is not successful in accounting for how to identify shared elements among multiple conjuncts and how to justify ATB movement, which makes multiple moved elements into one.

Next, I will review the LF copy approach by Abe and Hoshi (1997, 1999).

2.1.2 LF Copy Approach

In this subsection, I review Abe and Hoshi's (1997, 1999) approach. They deal with the Gapping phenomenon by assuming that a gap is a radically null (abstract) object. Under their analysis, the gap is given full interpretation in LF by copying from a full conjunct to a gapped conjunct in LF.

2.1.2.1 Abe and Hoshi 1997, 1999

Abe and Hoshi (1997, 1999) argue that Japanese Gapping involves empty objects and covert movement of correspondents followed by copying of the identical part (which is I' in their analysis) from the full conjunct to the gapped conjunct at LF.

Let us see how sentence (1) is generated under their analysis. Sentence (1) is repeated below:

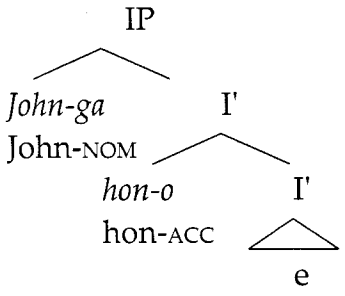
(1) John-ga hon-o ▲ sosite Mary-ga hana-o katta
John-NOM book-ACC (bought) and Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

'John bought books, and Mary flowers.'

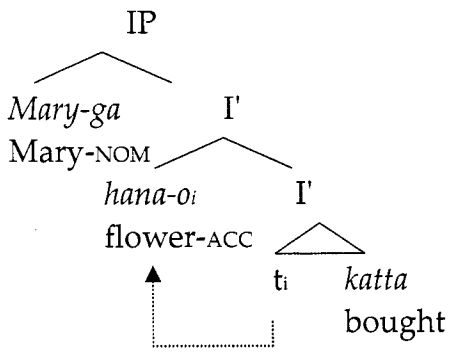
According to the LF Copy analysis, first, the gapped conjunct starts with an empty I' (which is going to become a gap) and with the object NP in the Spec of IP, as illustrated in tree diagram (27):

(27) Gapped conjunct (= first conjunct):



The lowest I' is empty as 'e' in the tree diagram indicates. The lower Spec of IP contains the object NP *hon-o* 'book-ACC' and the higher Spec of IP contains the subject NP *John-ga* 'John-NOM'. On the other hand, the full conjunct looks like the following:

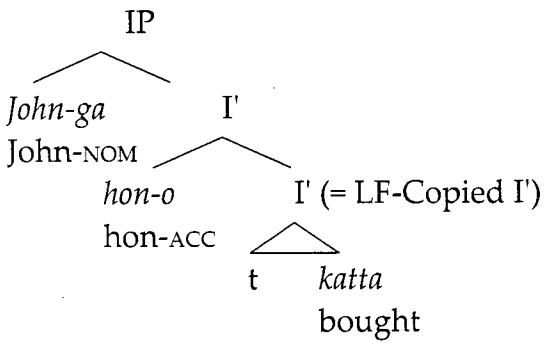
(28) Full conjunct (= second conjunct):



The lowest I' contains the object NP *hana-o* 'flowers-ACC' and a verb *katta* 'bought' at the beginning. The object NP moves out of its original position and raises to the Spec of IP. Then the subject NP is attached to the Spec of IP above the object NP. This movement is necessary for the full conjunct to have a structure identical to the gapped conjunct, which is the lowest I'.

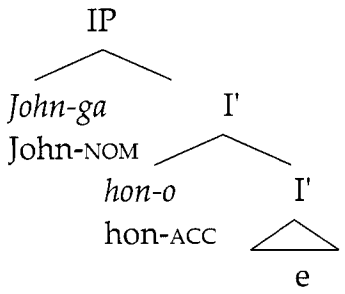
Lastly, the lowest I' [I' t katta] in the full conjunct in (28) is copied to the lowest empty I' [I' e] in the gapped conjunct in (27) at LF for the sake of obtaining full interpretation of the gapped conjunct. After this copying process, the gapped conjunct has the following LF representation:

(29) Gapped conjunct (= first conjunct) after LF Copy of the lowest I':



Compare (29) with (27), which is repeated below:

(27) Gapped conjunct (= first conjunct) before LF Copy of the lowest I':



With the LF-Copied I' as in (29), the gapped IP is given full interpretation.

One question that arises is why the movement is necessarily covert, and never overt. Abe and Hoshi's covert movement analysis is motivated by attempting to account for the fact that Japanese Gapping includes the following case where a postposition *nituite* 'about' is elided as well as a predicate:

(30) John-ga Bill-▲ ▲ sosite
John-NOM Bill-(about) (talked) and

Mary-ga Susan-nituite hanasita
Mary-NOM Susan-about talked

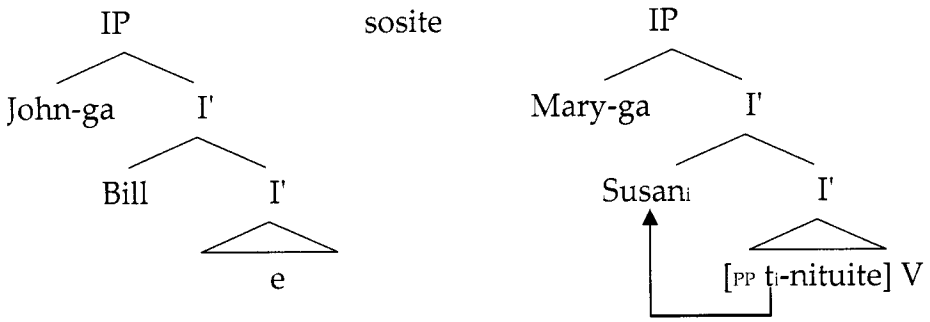
'(Lit.) John (talked about) Bill, and Mary talked about Susan.'

The sentence has the following structure at LF under their analysis:

(31) a. [IP John-ga [I' Bill [I' e]]], sosite
John-NOM Bill and

[IP Mary-ga [I' Susan$_i$ [I' [PP t_i-nituite] hanasita]]]
Mary-NOM Susan about talked

b.



The first conjunct contains empty I', which is going to become a gap, and the

second conjunct contains every element. If *Susan* moves overtly leaving *nituite* 'about' behind, the sentence would be ungrammatical as the following sentence indicates:[13]

(32) * Susan$_i$ Mary-ga t$_i$-nituite hanasita
Susan Mary-NOM t-about talked

'Susan, Mary talked about.'

In this example, *Susan* is separated from *nituite* 'about' and it is overtly moved to the initial position of the sentence, which is not allowed. However, a similar sequence is permitted in Gapping. In order to account for the well-formedness of sentence (31), they claim that if movement is covert and leftward (but not overt leftward), then postposition stranding is allowed.[14]

As for the fact that Japanese Gapping allows multiple remnants (property 1.2.3) while English Gapping does not, Abe and Hoshi deal with this by using the following constraint, adopting Pesetsky's (1982) crossing constraint on Gapping:

---

[13] The movement of *Susan* is not motivated by any feature under their analysis. It moves for the sake of building a structure that LF Copy needs.
[14] Please see Abe and Hoshi 1997:112-113, 1999:200 n. 7 for more details.

(33) Crossing Constraint on Gapping (CCG):

A contrasted element cannot cross another contrasted element.

According to Abe and Hoshi, the following English Gapping in (34) is ungrammatical because the movement of *with a hammer* crosses *the house*, which violates the Crossing Constraint on Gapping:

(34) * John built the house with a hammer, and Mary the garage with a saw.

This sentence is generated as follows:

(35) * [IP John [I' [I' [I' built t_i t_j] the house$_i$] with a hammer$_j$]] and

[IP Mary [I' [I' [I' e] the garage] with a saw]]

As (35) illustrates, *the house* in the first conjunct undergoes a rightward movement to a higher I' and then *with a hammer* moves out to another higher I'. At the second movement, *with a hammer* crosses *the house*.

Abe and Hoshi further claim that the Crossing Constraint on Gapping only concerns A'-movement by arguing that Japanese Gapping involves

clause-internal A-movement, not A'-movement.[15] Let us repeat the example of Japanese Gapping with multiple remnants here:

[15] First Abe and Hoshi (1997:131 n. 12) point out the fact that A-movement is not subject to CCG because the following English sentence is grammatical:

(i) **John**$_i$ seems **to his mother** [$_{IP}$ **t**$_i$ to be intelligent] and **Mary to her father**.

The movement of *John* crosses the other contrasted element *to his mother*, and yet the sentence is grammatical. Second, they point out the fact that Scrambled contrasted elements in Japanese Gapping do not cause the sentence to be ungrammatical. This can be accounted for if the movement is assumed to be A-movement, adopting the idea that clause-internal Scrambling is A-movement (Cf. Mahajan 1990, Saito 1992):

(ii) [Bill-nituite John-ga] sosite [Susan-nituite$_i$ Mary-ga t$_i$ hanasita]
Bill-about John-NOM and Susan-about Mary-NOM talked
'John talked about Bill, and Mary about Susan.'
(Abe and Hoshi 1997:121 (76))

In this sentence, *Susan-nituite* 'Susan-about' is Scrambled by crossing *Mary-ga* 'Mary-NOM', and yet the sentence is grammatical. Therefore, Abe and Hoshi conclude that the movement should be considered as A-movement and that CCG is not violated.

(14) John-ga kinou Fred-ni hon-o ▲, sosite
John-NOM yesterday Fred-DAT book-ACC (bought) and

Mary-ga kyou Susan-ni hana-o katta
Mary-NOM today Susan-DAT flower-ACC bought

'(Lit.) John (bought) books for Fred yesterday, and Mary bought flowers for Susan today.'

Under Abe and Hoshi's analysis, the second conjunct that involves the movements of contrasted elements will have the following LF structure:

(36) [IP Mary-ga [I' kyoui [I' Susan-nij [I' hana-ok [I' ti tj tk] katta]]]]
Mary-NOM today Susan-DAT flower-ACC bought

The movement of *kyou* 'today', *Susan-ni* 'Susan-DAT' and *hana*-o 'flower-ACC' is all considered as A-movement, hence not a violation of the Crossing Constraint on Gapping. It then follows that there is no limit to the number of contrasted elements in Japanese Gapping.

To summarize their LF Copy approach, the gap already exists in overt syntax and what the grammar needs to do is to provide the gap with a copy of identical elements in LF for the gap to be fully interpreted.

Next, I will discuss advantages and disadvantages of this approach.

2.1.2.2 Critique of the LF Copy Approach

Abe and Hoshi's analysis ensures that the interpretation of an elided sequence in the gapped conjunct is identical to that of the corresponding sequence in the full conjunct by copying the corresponding part to the elided part in LF.

Their analysis also deals with the fact that Japanese Gapping allows multiple remnants (property 1.2.3) while English Gapping does not by claiming that Japanese Gapping involves A-movement and that the movement is not subject to their constraint called Crossing Constraint on Gapping in (33), which they claim only concerns A'-movement. As a result, Japanese Gapping allows multiple contrasted elements to move.

Abe and Hoshi's analysis faces at least four problems. First, as they acknowledge, their postposition-stranding account cannot explain the ungrammaticality of the following gapped sentence, where a postposition *de* 'with' and a verb *tukutta* 'built' are omitted in the first conjunct: [16]

[16] Please see Abe and Hoshi 1997:133 n. 20 for their comment.

(37) * Mary-ga nokogiri-▲ gareezi-o ▲ sosite
Mary-NOM saw-(with) garage-ACC, (tukutta) and

John-ga hammaa-de ie-o tukutta
John-NOM hammer-with house-ACC built

'Mary built the garage with a saw, and John the house with a hammer.'

(Abe and Hoshi 1997:133 n. 20)

Under their approach, this sentence would have the following LF structure:

(38) [IP Mary-ga [I' nokogiri-▲ [I' gareezi-o [I' e]]]] sosite
Mary-NOM saw-(with) garage-ACC and

[IP John-ga [I' hammaai [I' ie-oj [I' [PP ti-de] tj tukutta]]]]
John-NOM hammer house-ACC -with built

In order to supply the postposition *de* 'with' and the verb *tukutta* 'built' from the second conjunct to the first conjunct, *hammaa* 'hammer' in the second conjunct moves out with the postposition *de* 'with' left behind. As a result, the lowest I' in the second conjunct contains the postposition and the verb as indicated in gray in (38). Since nothing prevents this postposition-stranding movement, it is expected that the sentence should be grammatical. On the contrary, it turns out to be ungrammatical. Thus, this approach makes an incorrect prediction

for sentences like (37).

Secondly, Abe and Hoshi's claim that Japanese Gapping involves movement based on examples that show island effects may not be strong enough as supporting evidence. This is because the grammaticality of the examples may not be due to movement, but due to the lack of Case-markers/postpositions. Let us examine how they argue the existence of movement in Japanese Gapping once again. Assuming that LF movement as well as syntactic movement is subject to the Subjacency Condition, Abe and Hoshi present the following sentences with marginal grammatical judgments as supporting evidence for their analysis that Gapping involves movement (Abe and Hoshi 1997:115 (51a, b)): [17] [18]

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[17] Brackets, gap symbols and literal translations have been added to the examples for clarity.

[18] The Subjacency Condition is a condition such that movement cannot cross more than one bounding node, where bounding nodes are IP and NP. Extraction from adjuncts is also accounted for by the Subjacency Condition. See Chomsky 1986a for more details.

(39) Relative clause island effect:

?? [IP Harry-ga [NP [VP imiron-▲ ▲] ▲] ▲]
Harry-NOM semantics-(ACC) (researching) (linguist-DAT) (met)

sosite
and

[IP Alfonse-ga [NP [VP toogoron-o kenkyuusiteiru] gengogakusya-ni]
Alfonse-NOM syntax-ACC researching linguist-DAT

atta]
met

'(Lit.) Harry (met a linguist who studies) semantics, and Alfonse met a linguist who studies syntax.'

'Harry met a linguist who studies semantics, and Alfonse syntax.'

The sentence contains relative clauses as highlighted. Gapped phrases in the first conjunct are the verb *kenkyuusiteiru* 'researching', the head NP *gengogakusya-ni* 'linguist-DAT', the accusative Case-marker *o* of the object NP in the relative clause, and the verb *atta* 'met' in the main clause. According to Abe and Hoshi, this example illustrates the relative clause island effect. Under their analysis, the elements in the second conjunct that correspond to the gaps in the first conjunct covertly move, which violates the Subjacency Condition and results in the marginal acceptability of the sentence.

Similarly, they argue that the marginal acceptability of the following example shows the adjunct clause island effect:

(40) Adjunct clause island effect:

?? [IP John-ga [PP suugaku-▲ ▲ ▲] ▲] sosite
John-NOM math-(ACC) (study) (before) (ate) and

[IP Mary-ga [PP eego-o benkyoosuru mae-ni] syokujisita]
Mary-NOM English-ACC study before ate

'(Lit.) John (had a meal before he studied) math, and Mary had a meal before she studied English.'

'John had a meal before he studied math, and Mary English.'

The adjunct clauses are highlighted in the example. The sentence contains gaps in the first adjunct clause. Its grammaticality is marginal for the same reason as (39): the movement of elements in the second conjunct that corresponds to the gaps violates the Subjacency Condition.

It is true that those sentences do not sound perfectly acceptable. However, the marginal grammaticality may be due to the fact that the object NP in the first conjunct in both sentences (that is, *imiron* 'semantics' in (39) and *suugaku* 'math' in (40)) lacks a Case-marker *o* 'ACC'. As a matter of fact, the grammaticality of the sentences improves when the accusative Case-marker of

the object NP is not omitted as shown in the following revised sentences:

(41) ? Harry-ga [imiron-**o** ▲ ▲ ▲] sosite
Harry-NOM semantics-**ACC** (researching) (linguist-DAT) (met) and

Alfonse-ga [toogoron-o kenkyuusiteiru] gengogakusya-ni atta
Alfonse-NOM syntax-ACC researching linguist-DAT met

'(Lit.) Harry (met a linguist who studies) semantics, and Alfonse met a linguist who studies syntax.'

'Harry met a linguist who studies semantics, and Alfonse syntax.'

The object NP *imiron* 'semantics' has the accusative Case-marker *o*, and the whole sentence becomes acceptable. In the same way, the object NP *suugaku* 'math' gets the accusative Case-marker *o*, and the sentence becomes grammatical:

(42) John-ga [suugaku-o ▲] sosite
John-NOM math-ACC and

Mary-ga [eego-o benkyoosuru mae-ni] syokuji-sita
Mary-NOM English-ACC study before eating-did

'(Lit.) John (had a meal before he studied) math, and Mary had a meal before she studied English'

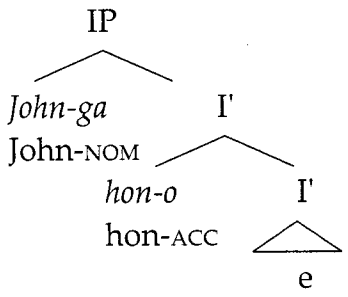
'John had a meal before he studied math, and Mary English.'

The result of the above observation indicates that the movement analysis is not strongly supported by their examples, which seemingly show island effects.

Thirdly, Abe and Hoshi's analysis does not capture the fact that Gapping occurs only in coordinate structures with *sosite* (property 1.2.1), since their approach does not clearly explain the relation between the existence of the empty syntactic object and the coordinate structure.

Fourth, their account faces a theoretical difficulty in the framework of minimalist syntax. As illustrated in tree diagram (27), repeated below, a syntactic structure is built on an empty syntactic object in their analysis:

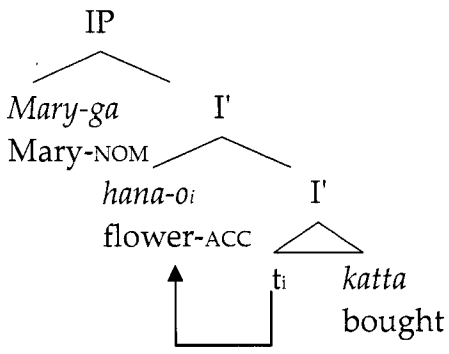
(27) Gapped conjunct (= first conjunct):



As illustrated with 'e' in the tree, the object NP *hon-o* 'book-ACC' is assumed to be merged with an empty I'. This is problematic if this approach is assumed to be built within minimalist syntax, in which lexical items must be selected from the numeration to begin with and then a pair of lexical items must be merged. Clearly, the empty I' is not a legitimate object to merge.

As far as the target of movement is concerned, as pointed out in the review of the ATB movement approach, it seems that somehow LF movement knows which element to target in order to create a structure to copy to the empty I', but this is not explicitly explained. That is, in a minimalist syntactic sense, there is no motivation for *hana-o* 'flower-ACC' to raise to a specifier position of a higher I' as (28) illustrates, which is repeated here:

(28) Full conjunct (= second conjunct):



To summarize, the key issue is that like the ATB movement approach, the LF Copy approach fails to provide an account for how the grammar knows which elements should move or identifies which elements are shared.

In the next two sections, I will review the PF movement approach in Saito 1987 and the PF deletion approach in Mukai 2003.

2.1.3 PF Movement Approach

This section discusses the PF movement approach proposed by Saito (1987), who claims that Gapping involves PF stylistic movement and that the source of the gap is a trace of PF movement.

2.1.3.1 Saito 1987

Saito (1987) argues that Japanese Gapping involves a rightward

movement of the shared part and that the movement takes place at PF as a stylistic rule. This rightward movement is called *Right-Node Raising*.[19] The derivation of sentence (1) is illustrated in tree diagrams (43a, b):

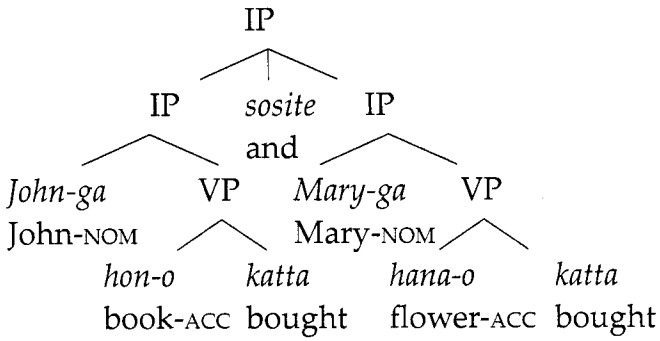
(1) John-ga hon-o ▲ sosite Mary-ga hana-o katta
John-NOM book-ACC (bought) and Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

'John bought books, and Mary flowers.'

The following is the structure before PF Right-Node Raising movement applies:

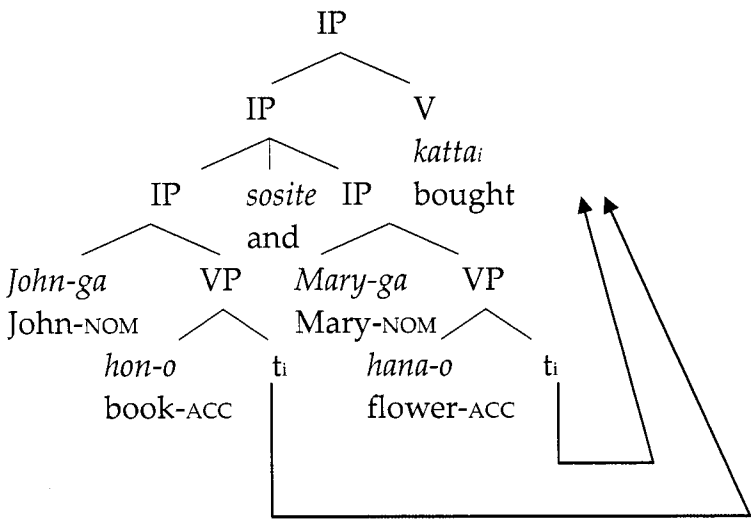
(43) a. Before PF Right-Node Raising:



[19] The term Japanese Gapping and Right-Node Raising (RNR) in Japanese refer to the same phenomenon.

In the following structure, arrows indicate the movement:

b. After PF Right-Node Raising:



The verb *katta* 'bought', which is shared in the first and second conjuncts, undergoes Right-Node Raising from each conjunct and adjoins to IP (=S in Saito 1987) at PF, resulting in only one *katta* there.

First, Saito argues that Japanese Gapping involves rightward movement based on the contrast in the grammaticality of the following examples from the Kobe dialect of Japanese. The Kobe dialect usually allows the empty complementizer, but this is not the case for gapped sentences:

(44) a. John-ga [Kobe-ni iku te] ▲ sosite
John-NOM Kobe-to go COMP (said) and

Mary-ga [Tokyo-ni iku te] yuuta
Mary-NOM Tokyo-to go COMP said

'John said that he was going to Kobe, and Mary said that she was going to Tokyo.'

(Saito 1987:318 (47a))

b. * John-ga Kobe-ni iku te ▲ sosite
John-NOM Kobe-to go COMP (said) and

Mary-ga [Tokyo-ni iku *e*] yuuta
Mary-NOM Tokyo-to go (COMP) said

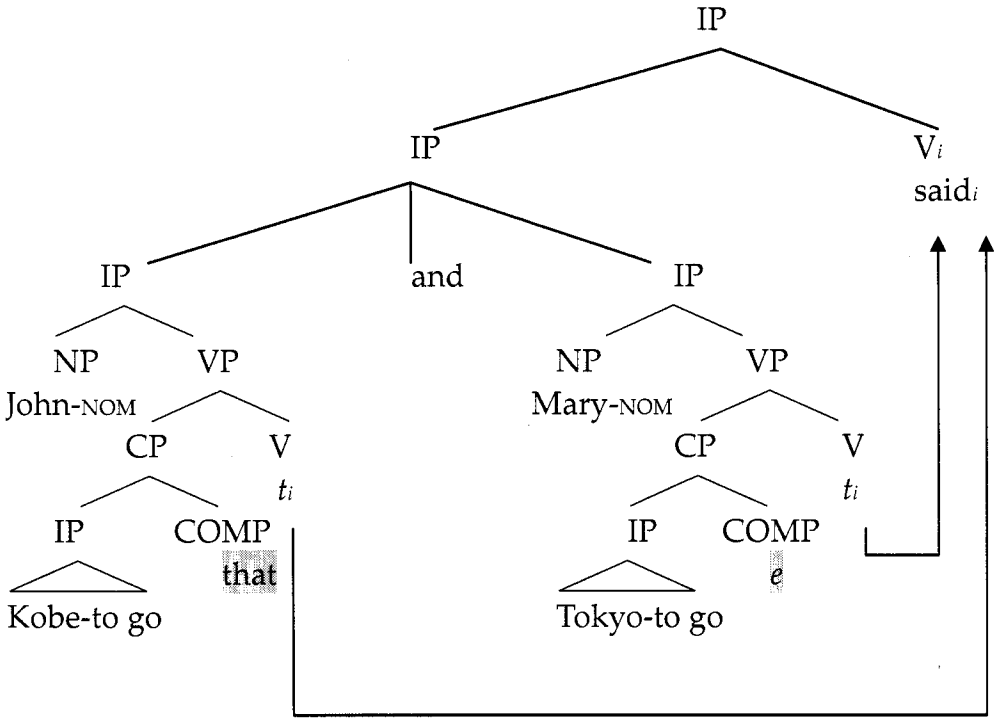
'John said that he was going to Kobe, and Mary said she was going to Tokyo.'

(Saito 1987:318 (47b))

In both sentences, the main verb *yuuta* 'said' is shared between the two conjuncts. The difference between (44a) and (44b) is that the complementizer in the second conjunct is omitted in (44b). Saito explains that the ungrammaticality of (44b) would be easily accounted for if we assume that the shared verb *yuuta* 'said' moves rightward across the board and what remains there is its trace. Let us look at the structure after Right-Node Raising

movement of the verbs, which is illustrated with the solid arrow:

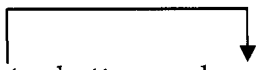
(45) Tree for Sentence (44b):



In the second conjunct, the verb *yuuta* moves rightward to adjoin to IP, leaving its trace in V. The empty complementizer in the second conjunct violates the Empty Category Principle (ECP), assuming that a trace is not considered a proper governor.

Second, Saito argues that Right-Node Raising is a PF movement because overt rightward movement, namely, rightward Scrambling, is not allowed in Japanese, as the following example shows:

(46)



* John-ga Mary-ni t_i katta hana-o_i

John-NOM Mary-DAT bought flower-ACC

'John bought Mary flowers.'

If the object NP *hana-o* 'flower-ACC' undergoes rightward Scrambling, the resulting sentence is ungrammatical.

Thus, Saito's analysis of Gapping involves movement of shared elements at PF and traces (which are gaps) of the PF movement.

2.1.3.2 Critique of the PF Right-Node Raising Approach

The PF Right-Node Raising approach proposed by Saito (1987) may capture well the empty complementizer case of the Kobe dialect, but his argument does not apply for standard Japanese because standard Japanese does not allow the empty complementizer at any time. It is questionable how strongly the examples from Kobe dialect support his proposal.

More importantly, this approach basically shares the same issues observed in the ATB movement approach proposed by Johnson (1994) and

Zoerner and Agbayani (2000): it is not well explained how multiple instances of segments are raised, while only one of them appears at the landing position.[20]

Thirdly, Saito's movement does not have any trigger. No clear account is given for what motivates PF Right-Node Raising and what information is available or used to recognize targeted constituents for the movement. Lastly, as Saito (1987:328) mentions, this approach implies that syntactic structures are still available at PF and that the objects move at PF.[21] However, these assumptions are not fully discussed.

To summarize, PF Right-Node Raising also has the same theory-internal issue as ATB movement, and it lacks an account of what mechanism guarantees the identity of phrases of the movement target.

2.1.4 PF Deletion Approach

In this section, I review another PF approach, discussed in Mukai 2003. She analyzes the gap as the result of phonological deletion.

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[20] James D. McCawley (1988:531) uses the notion of *fusion* to create a single output of the Right-Node Raising transformation rule, but it still does not explain the process sufficiently.

[21] Saito (1987:328) states, "It implies that brackets and traces are still visible at PF, and consequently that PF is not literally the level of phonetic representation. In this sense, if the ECP applies at PF, then we are postulating a new level of syntactic representation."

2.1.4.1 Mukai 2003

Mukai (2003) claims that Gapping solely involves a PF deletion operation, rejecting movement approaches. She argues that if Gapping involves movement, then the following sentence would be incorrectly ruled out:

(47) Mike-ga [NP raion-ni ▲ ▲] ▲
Mike-NOM lion-by (was.attacked) (man-ACC) (saved)

Tom-ga [NP kuma-ni osowareta otoko]-o tasuketa
Tom-NOM bear-by was.attacked man-ACC saved

'(Lit.) Mike (saved the man who was being attacked) by a lion, and Tom saved the man who was being attacked by a bear.'

(Mukai 2003:210 (16))[22]

The sentence contains a relative clause. If the gapped elements within the relative clause such as *osowareta* 'was attacked' and *otoko* 'man' moved out of the clause, it would violate the Subjacency Condition and the sentence would be ruled out. On the contrary, the sentence is grammatical.

Mukai proposes an alternative solution to Gapping, which involves a phonetic operation called String Deletion. According to her, String Deletion

[22] The gap symbols and the NP bracket in the first conjunct have been added.

applies to a phonetic string under identity, regardless of whether the target string is a constituent or not, as long as the string meets conditions such that it is continuous and contains a verb.[23] Let us look at how the above sentence is derived under her analysis:

(48) Mike-ga [NP raion-ni ~~osowareta otoko]-o tasuketa~~
Mike-NOM lion-by was.attacked man-ACC saved

Tom-ga [NP kuma-ni osowareta otoko]-o tasuketa
Tom-NOM bear-by was.attacked man-ACC saved

'(Lit.) Mike (saved the man who was being attacked) by a lion, and Tom saved the man who was being attacked by a bear.'

The gapped sentence in (47) is derived by the application of String Deletion, which deletes the *osowareta otoko-o tasuketa* 'saved the man who was being attacked' sequence under phonetic identity at PF, as the strikethrough in (48) indicates.

To sum up, Gapping is considered to be a phonetic phenomenon under Mukai's analysis, in which a gap is created by deletion of a phonetic string.

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[23] Mukai (2003) states that both LF and PF identity between conjuncts are necessary for Gapping. However, she does not fully account for how to determine LF identity between the conjuncts.

2.1.4.2 Critique of the PF Deletion Approach

Mukai's (2003) PF String Deletion approach has the advantage of being able to account for sentences that do not show island effects. Let us take sentence (41), repeated here, which Abe and Hoshi's (1997, 1999) approach would incorrectly rule out:

(41) Harry-ga [imiron-**o** ▲ ▲ ▲] sosite
Harry-NOM semantics-ACC (researching) (linguist-DAT) (met) and

Alfonse-ga [toogoron-o kenkyuusiteiru] gengogakusya-ni atta
Alfonse-NOM syntax-ACC researching linguist-DAT met

'(Lit.) Harry (met a linguist who studies) semantics, and Alfonse met a linguist who studies syntax.'

'Harry met a linguist who studies semantics, and Alfonse syntax.'

In this sentence, the identical sequence is *kenyuusiteiru gengogakusya-ni atta* 'met a linguist who studies'. It is continuous and it contains a verb, which satisfies Mukai's two conditions for String Deletion, and therefore String Deletion successfully applies to the string at PF to generate a well-formed gapped sentence. The process is illustrated in (49):

(49) PF String Deletion process for sentence (41):

Harry-ga [imiron-o ~~kenkyuusiteiru] gengogakusya-ni atta~~
Harry-NOM semantics-ACC researching linguist-DAT met

sosite
and

Alfonse-ga [toogoron-o kenkyuusiteiru] gengogakusya-ni atta.
Alfonse-NOM syntax-ACC researching linguist-DAT met

'(Lit.) Harry ~~met a linguist who studies~~ semantics, and Alfonse met a linguist who studies syntax.'

'Harry met a linguist who studies semantics, and Alfonse syntax.'

As the strikethrough in (49) shows, the identical sequence is deleted in the first conjunct.

Also, this approach is able to deal with multiple remnants because what String Deletion is concerned with is not what is left (= remnants) but what should be deleted (= shared sequence). As long as the shared sequence is phonetically continuous and contains a verb, the operation applies to the shared sequence and a correct gapped sentence is generated.

There are, however, at least two problems with Mukai's PF String Deletion approach. First, PF String Deletion under identity makes incorrect predictions for gapped sentences that involve Scrambling. Consider the

following gapped sentence, in which *Susan-ni* 'Susan-DAT' is Scrambled to the sentence-initial position:

(50) Susan-ni [John-ga hon-o ▲] sosite
Susan-DAT John-NOM book-ACC (gave) and

[Mary-ga hana-o ageta]
Mary-NOM flower-ACC gave

'(Lit.) To Susan, John (gave) books, and (to Susan) Mary gave flowers.'

There are at least two possible overt structures with the scrambled phrase. Suppose that *Susan-ni* 'Susan-DAT' has been scrambled in both conjuncts. We would have the following structure at Spell-Out:

(51) **Susan-ni**$_i$ [John-ga t_i hon-o ageta] sosite
Susan-DAT John-NOM book-ACC gave and

Susan- ni$_i$ [Mary-ga t_i hana-o ageta]
Susan-DAT Mary-NOM flower-ACC gave

'(Lit.) To Susan, John gave books, and to Susan Mary gave flowers.'

At PF, *Susan-ni* 'Susan-DAT' and *ageta* 'gave' are phonetically identical between the two conjuncts. But they are not continuous, which fails to satisfy one of the

conditions for String Deletion. Therefore the PF deletion cannot apply to them. As another possibility, suppose that *Susan-ni* 'Susan-DAT' has been scrambled only in the first conjunct. In this case, we would have scrambled *Susan-ni* in the first conjunct and *Susan-ni* in situ in the second conjunct:

(52) **Susan-ni**$_i$ [John-ga t_i hon-o ageta] sosite
Susan-DAT John-NOM book-ACC gave and

[Mary-ga **Susan-ni** hana-o ageta]
Mary-NOM Susan-DAT flower-ACC gave

'(Lit.) To Susan, John gave books, and Mary gave flowers to Susan.'

Again, the indirect object NP *Susan-ni* and the verb *ageta* do not form a continuous string. Therefore PF String Deletion cannot apply to them contrary to the fact that the sentence is grammatical.

Second, PF String Deletion may incorrectly produce elided sentences as it does not have any condition that restricts it from applying to constructions other than Gapping (property 1.2.1). Consider examples with subordinate clauses (9), which are repeated here:

(9) a. * [John-ga hon-o ▲ atode/toki]
John-NOM book-ACC (bought) after/when

Mary-ga hana-o katta
Mary-NOM flower-ACC bought

'(Lit.) After/When John (bought) books, Mary bought flowers.'

b. * [John-ga hon-o katta atode/toki]
John-NOM book-ACC bought after/when

Mary-ga hana-o ▲
Mary-NOM flower-ACC (bought)

'(Lit.) After/When John bought books, Mary (bought) flowers.'

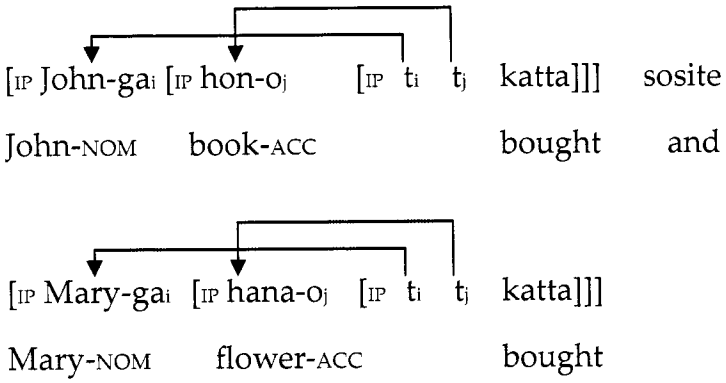
In these sentences, the shared part contains a verb and further continuity does not matter as the verb *katta* 'bought' is the only element that is shared between the subordinate clause and the main clause. The application of PF String Deletion would not be prevented in any way, as a result of which, both of the sentences would be incorrectly generated as grammatical ones. Thus, Mukai's PF deletion approach does not capture the correlation between Gapping and coordinate structures.

2.1.4.3 Syntactic Movement followed by PF Deletion Approach

Jeong-Seok Kim (1997) and Sohn (1999) claim that a gapped sequence is a result of PF deletion. What is different in their analyses from Mukai 2003 is that for them, gapped sentences are hybrids of syntactic operations and PF operations. Jeong-Seok Kim (1997) and Sohn (1999) argue that PF deletion under identity is preceded by overt movement of remnants and correspondents. J.-S. Kim claims that overt movement is focus movement driven by a focus feature that remnants and correspondents carry, while Sohn claims that overt movement is string-vacuous Scrambling of remnants and correspondents. Although they propose different types of overt movement, it is their common goal to have a structure where the part that needs to be deleted later at PF does not contain contrastive phrases. In what follows, I present Sohn's analysis first and then J.-S. Kim's analysis.

Let us first look at the analysis proposed by Sohn (1999). According to Sohn, the first thing that happens is that remnants in the first conjunct (*John-ga* and *hon-o*) and correspondents in the second conjunct (*Mary-ga* and *hana-o*) undergo Scrambling to adjoin to IP in overt syntax as the arrows illustrate:

(53)



As you can see, *John-ga* and *hon-o* move out of their original IP and adjoin to the IP in the first conjunct. Similarly, in the second conjunct, *Mary-g*a and *hana-o* move out of their original IP and adjoin to the IP. As a result, the original IP in both conjuncts only contains two traces and the verb, which he calls "a proper deletion site" (Sohn 1999:380).

The second step is that the lowest IP that contains traces of remnants and the verb (= [IP ti tj katta]) in the first conjunct is deleted at PF under identity.

Scrambling is usually understood to be a movement that generates a different word order. But in gapped sentences, the surface order of the remnants shows no change. Sohn (1999) briefly states in a footnote (n. 8) that string-vacuous Scrambling is allowed when focus is involved, with no further discussion.

Sohn also addresses the following generalization on Korean/Japanese Gapping:

(54) Clustering effect in Right-Node Raising (RNR):[24]

In the RNR construction, nothing can intervene in the sequence

A- B- and -A' -B' in X-A-B-and-A'-B'-Y

(where X, Y are variables; A, B remnants and A', B' correspondents)

(Sohn 1999:378 (45))

According to Sohn, this means that all the remnants and correspondents must cluster in the initial position of both conjuncts. He argues that the following sentence is ungrammatical because *Mary-ga* 'Mary-NOM' intervenes between *Bill-ni* 'Bill-DAT' and *tyoko-o* 'chocolate-ACC':

[24] Sohn refers to Korean/Japanese Gapping constructions as Right Node Raising (RNR) constructions in his paper, so RNR constructions in this generalization are about Korean/Japanese Gapping.

(55) * [John-ni hana-o] sosite
John-DAT flower-ACC and

[Bill-ni **Mary-ga** tyoko-o okutta]
Bill-DAT Mary-NOM chocolate-ACC gave

'Flowers, to John and Mary gave a chocolate to Bill.'

(Sohn 1999:378 (46b))

Also, Sohn claims that multiple remnants in Korean/Japanese are allowed because multiple Scrambling is possible in these languages.

Now let us move on to review J.-S. Kim's (1997) analysis. J.-S. Kim argues that Gapping is created by a combination of (i) overt focus movement of remnants and correspondents and (ii) deletion of a Tense Phrase[25] (which becomes a gap) in one of the conjuncts in PF.[26] Creating an identical structure between two conjuncts by raising remnants and correspondents is basically the same idea entertained in Abe and Hoshi 1997, but J.-S. Kim's approach is developed strictly within the assumptions of the Minimalist Program developed in Chomsky 1993, 1995.

J.-S. Kim assumes that remnants and correspondents in a gapped

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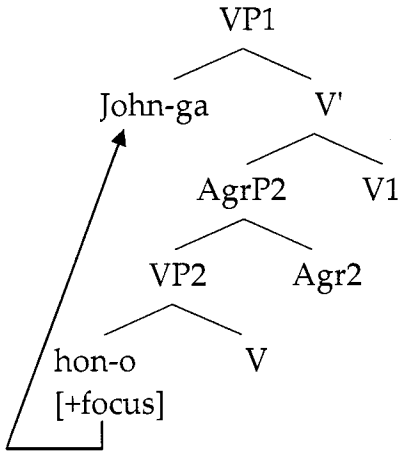
[25] J.-S. Kim uses a split IP model (i.e. AgrP and TP).
[26] TP in the first conjunct gets deleted in Korean/Japanese while TP in the second conjunct gets deleted in English (Cf. Section 1.2.4.).

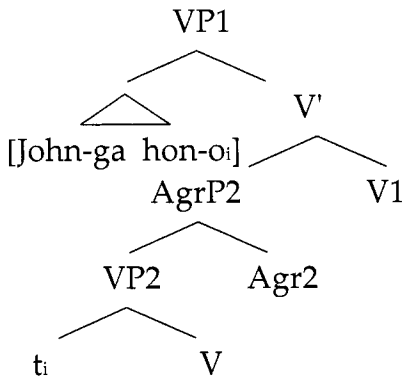
sentence carry a strong focus feature because they are contrastive (hence focused) elements, and that the feature drives overt focus movement of those elements because of its strength. The gapped sentence in (1) is derived as follows under J.-S. Kim's analysis.[27] First, the lower focused phrase (= *hon-o* 'book-ACC') amalgamates to the higher focused phrase (= *John-ga* 'John-NOM') in order to check its own strong feature against the same feature of the higher one (a process which J.-S. Kim calls *Checking-through-Adjunction*). The tree diagram in (56) illustrates the process of amalgamation of *hon-o* 'book-ACC' to *John-ga* 'John-NOM', and (57) shows the result of the operation:

(56) Process of amalgamation:



[27] This is a simplified derivation. Please see J.-S. Kim 1997:175-176 for a more detailed illustration of the derivation.

(57) Result of amalgamation:



As a result of amalgamating *hon-o* to *John-ga*, a single complex NP is formed.

Second, the complex NP of two amalgamated focused phrases [NP *John-ga hon-o*] moves to Spec of Focus Phrase (FocP) as a single unit to check off the strong [+focus] of the head Focus (Foc). Finally, TP, which no longer contains the contrastive focused phrases, is deleted from the first conjunct at PF as the strikethrough illustrates:

(58) [FocP John-ga hon-o ~~[TP t John-ga t hon-o katta]~~]

John-NOM book-ACC bought

TP that contains *katta* is deleted and we obtain the gapped conjunct.

To summarize Kim and Sohn's approach, a gap is a result of PF deletion of TP, from which non-shared elements (remnants and correspondents) have

been overtly moved.

2.1.4.4 Critique of the Syntactic Movement and PF Deletion Approach

J.-S. Kim deals with multiple remnants (property 1.2.3) by positing a new mechanism called amalgamation of focused phrases while Sohn attributes the property to the availability of multiple Scrambling.

There are a few problems with each analysis. First, in Sohn 1999, it is not made clear what triggers Scrambling of remnants and correspondents, or why this particular type of Scrambling is obligatory for Gapping while Scrambling is usually an optional movement.[28]

Secondly, it is not clearly explained how PF identity (Cf. property 1.2.2) is determined and how the application of PF deletion is prevented for a subordinate clause that happens to contain an identical string as the main clause.

Thirdly, Sohn's analysis does not account for the ungrammaticality of sentence (55) successfully. This sentence, repeated here, contains *Mary-ga* between the contrastive phrases *Bill-ni* and *tyoko-o* in the second conjunct:

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[28] Sohn (1999:380 n. 8) seems to assume that there is a strong focus feature in the contrastive phrases in Gapping (=RNR in his term) and that it triggers Scrambling, but this assumption is not explicitly discussed in his proposal section.

(55) *[John-ni hana-o] sosite
John-DAT flower-ACC and

[Bill-ni **Mary-ga** tyoko-o okutta]
Bill-DAT Mary-NOM chocolate-ACC gave

'Flowers, to John and Mary gave a chocolate to Bill.'

(Sohn 1999:378 (46b))

Sohn accounts for its ungrammaticality by attributing the cause to the fact that *Mary-ga* does not undergo Scrambling and that the sentence fails to satisfy the identity requirement (whatever it is) that PF deletion needs.

Now, let us look at issues with J.-S. Kim's (1997) analysis. The reason that J.-S. Kim has to introduce amalgamation of focused phrases and a new checking device called *Checking-through-Adjunction* is because he adopts Saito's (1994) amalgamation analysis of wh phrases and extends it to focused phrases, which allows multiple phrases to be hosted in a position. By amalgamating one focused phrase to another, J.-S. Kim tries to make a single specifier position that can host more than one phrase at once. With such an operation, focus feature checking gets more complicated because the same feature must be driven both by *Greed* and *Attract*. The lower focused phrase *hon-o* 'book-ACC' amalgamates to the higher focused phrase *John-ga* 'John-NOM' in order to have

its own focus feature checked by that of the higher phrase (Greed movement). On the other hand, the complex phrase of [*John-ga hon-o*] is attracted by the head Foc and moves up to the Spec of FocP in order to check off the focus feature of the head (Attract movement).

Lastly, neither Sohn's nor J.-S. Kim's analysis provides a successful mechanism to deal with the correlation between coordinate structures and Gapping (property 1.2.1) although both J.-S. Kim (1997:194) and Sohn (1999:369) observe the property as relevant.

2.2 Summary of Chapter 2

In this chapter, I have reviewed seven previous analyses for five different approaches: (i) syntactic ATB movement analyses by Johnson (1994) and by Zoerner and Agbayani (2000), (ii) LF Copy analysis by Abe and Hoshi (1997, 1999), (iii) PF movement analysis by Saito (1987), (iv) PF deletion analysis by Mukai (2003) and (v) a hybrid analysis of syntactic movement and PF deletion by J.-S. Kim (1997) and Sohn (1999).

I have examined each analysis to show if the relevant properties of Japanese Gapping in (8) are accounted for under the analysis in question. I have also pointed out empirical and theoretical issues found in each of the analyses.

Among several issues, the issue found common to all the analyses is that targets for movement or deletion are not successfully accounted for: they are implicitly assumed to be found under a condition named "identity" without any detailed definition of identity. This issue is closely related to another issue: that it is not explicitly discussed why Gapping occurs only in coordinate structures with the conjunction *sosite*.

Furthermore, the common tendency that I have found in many of the previous analyses is that movement or deletion is argued to take place without an explicit trigger or motivation in order to obtain the gap.

In the next chapter, I will propose an alternative approach that solves these issues and that provides a more general account of Gapping.

3 Proposed Analysis

3.1 Introduction

In this chapter, I will discuss my alternative approach to Japanese Gapping. The goal of my proposed analysis is (i) to account for the role of the specific conjunction *sosite* in licensing, (ii) the identity of a gapped sequence with a sequence in the full conjunct, and (iii) the direction of the gap, within the minimalist framework.

We have seen that none of these aspects is successfully accounted for in the approaches reviewed in the preceding chapter. It will be claimed below that the proposed analysis provides a solution to them, as well as providing an account of all the central properties of Japanese Gapping discussed above.

I propose that the core operation involved in Gapping is a copy operation that is a property of the conjunction *sosite* 'and'. First, I argue that remnants and correspondents in a gapped sentence are contrastive pairs and that the contrast should be realized in the form of a feature. Second, I propose a property of the additive conjunction that enables the conjunction have a copy function, and then I claim that the copy operation uses that feature to find its target in the numeration.

The organization of the discussion in this chapter is as follows. In section 3.2, I give an overview of the definition of focus in general and then contrastive focus. Then, I argue that Gapping involves the assignment of a contrastive focus feature. In section 3.3, I review the process of the formation of a numeration to provide the basis for the next section, and section 3.4 introduces a contrastive focus feature and its role. In section 3.5, I propose that the conjunction *sosite* 'and' has a function of copying lexical items in the numeration, using the contrastive focus feature, and I explain its mechanism and its importance in the derivation of sentences with Gapping. Section 3.6 deals with movement triggered by the new feature and its effect, and section 3.7 is about how multiple remnants in Gapping are made possible. In section 3.8, I present a step-by-step derivation of Gapping based on the proposed devices.

There are two relevant aspects of Gapping that will not be covered in this chapter: (i) the structure of coordinated phrases and (ii) how the direction of the gap is determined. They will be discussed in chapter 4.

3.2 Contrastive Focus

In this section, I argue that Gapping involves contrastive focus, which should be realized as a feature in lexical items in the numeration. First, I give

an overview of focus in general and then I propose the new feature, which will play a crucial role in a new copy operation that I will propose further on.

Rebuschi and Tuller (1999: 2) state that "focus has a discourse function, but is unquestionably a product of grammar." Focus may be marked phonologically, morphologically or syntactically. The discourse function of focus has been generally defined as providing new information, which the speaker assumes that the hearer and the speaker do not share yet. Rochemont (1986) further argues that [+focus] is assigned to lexical categories that provide new information before S-structure. Modeling my argument after Rochement's proposed analysis, I contend that focus feature assignment takes place in the numeration in minimalist syntax instead, which I will discuss in detail in section 3.4.

Focus is syntactically categorized into two types: structural focus and non-structural focus. Structural focus here refers to cases where there is an obligatory focus interpretation for a given phrase in specific sentence constructions such as cleft constructions, extrapositions, heavy NP shift constructions, etc., while non-structural focus refers to the remaining types such as phonologically, semantically or morphologically identified foci in a sentence. Non-structural foci are classified into at least two types according to

the literature: presentational focus and contrastive focus.[29] Ambar (1999:25) provides the definition of presentational and contrastive foci as follows, which I adopt:

(59) Definition of contrastive focus and presentational focus

a. Contrastive focus:

Focus where new information is viewed in contrast with other specific old or new information.

b. Presentational focus:

Focus where the focused constituent simply introduces new information without contrasting it with any other type of information, either old or new.

I argue that Gapping involves contrastive focus because the relation between a remnant in the gapped conjunct and its correspondent in the full conjunct in a gapped sentence exhibits contrastive focus as defined in (59a). For example, the subject NPs *John-ga* and *Mary-ga* are a contrastive pair, and so are the object NPs *hon-o* and *hana-o* in the following gapped sentence:

---

[29] Cf. Please see Rochemont 1986, Rochemont and Culicover 1990, Rebuschi and Tuller 1999, etc. for more details.

(1) John-ga hon-o ▲ sosite Mary-ga hana-o katta
John-NOM book-ACC (bought) and Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

'John bought books, and Mary flowers.'

Compare the following sentence with the above sentence:

(60) * John$_i$-ga hon-o ▲ sosite John$_i$-ga hana-o katta
John-NOM book-ACC (bought) and John-NOM flower-ACC bought

'(Lit.) John$_i$ (bought) books, and John$_i$ bought flowers.'

(Cf. Kuno 1976:309 (39))

In this example, *John-ga* in the second conjunct refers to the identical person *John* in the first conjunct. When the remnant-correspondent pairs are not contrastive, the sentence is not grammatical. It shows that contrastive focus is a necessary condition for Gapping to occur.

Note that contrastive focus in Gapping is a slightly different form of the standard contrastive focus found in sentences like the following:

(61) John-ga HON-O katta

John-NOM book-ACC bought

'John bought BOOKs'

In this example, *HON-O* 'book-ACC' is focused. The sentence infers that John did not buy flowers, for example, but there is only one event. On the other hand, a gapped sentence with two conjuncts refers to two separate events, and focus in Gapping is a contrast of different participants between these two separate events. Thus, Gapping establishes a special sort of contrastive focus.

In the next section, I will discuss how contrastive focus in Gapping is represented in a lexical item after reviewing how a numeration works in minimalist syntax.

3.3 Lexical Items, Features, and the Numeration

In this section, I review the basic mechanism of feature assignment and formation of a numeration in minimalist syntax as developed in Chomsky 1995, which will be important to my proposal.

According to Chomsky (1995:225-236), a numeration N is composed of lexical items (LI) and an index (i) that indicates how many times the lexical item is needed, denoted as N = (LI, i). Each lexical item has lexical features

(semantic and phonetic features) and formal features (intrinsic and optional features). It is argued that selectional features of a predicate are determined by semantic properties, not listed in the lexical item. The types of features are summarized as follows:

(62) Summary of types of features in lexical items:

- Lexical features:
  - Semantic features (including selectional features)
  - Phonetic features
- Formal features:
  - Intrinsic features
  - Optional features

Intrinsic formal features are those that are listed explicitly in the lexicon along with lexical items. Consider for example the noun *book.* The intrinsic formal features for *book* are a categorial feature [nominal], a person feature [3rd person] and a gender feature [-human]. In the case of a verb *buy,* the intrinsic formal features for *buy* are a categorial feature [verbal] and a Case feature [assign accusative].

On the other hand, optional features are assumed to be added to a

lexical item when it is selected and enters a numeration. In the above examples, *book* gets optional features such as non-categorial features, number feature and Case feature, at least. The verb *buy* gets optional features such as ϕ-features (person, number and gender) and tense, at least. The classification of the features is summarized with examples as follows:

(63) Examples of feature assignment:

a. *book*

Intrinsic:	categorial feature [nominal]
	person feature [3rd person]
	gender feature [-human]
Optional:	non-categorial features
	number feature [singular]
	Case feature [accusative]

b. *buy*

Intrinsic:	categorial feature [verbal]
	Case feature [assign accusative]
Optional:	person feature [singular]
	gender feature [-human]
	number feature [singular]
	tense [past]

Given this basic summary of features of lexical items, I now briefly review how a numeration is formed in Chomsky 1995. First, lexical items are selected from the lexicon along with the index of each lexical item, as in N = (book, 1). Second, optional features are added to the item, as in N = (book, [accusative], [plural], 1). The formation of the numeration is complete and the next step is to introduce the item *book* into the derivation by the operation Select. The process is summarized below:

(64) Process of formation of a numeration:

1. Select lexical items (with indices) from a lexicon.
2. Add optional features to the items.
3. Form a numeration with the selected items.
4. Introduce the lexical items in the numeration into the derivation by the Select operation.

In this section, I have reviewed the assumptions of feature assignment and formation of a numeration developed by Chomsky (1995). In the next section, I will propose a new formal feature that is involved in Gapping.

3.4 Feature Assignment

I propose here that an optional feature that can be added to constituents as they enter the numeration is a feature related to contrastive interpretation.

Recall that I have argued that in a gapped sentence, remnants and correspondents are contrastive pairs. Let me repeat the relevant example below. In the following gapped sentence, *John-ga* 'John-NOM' and *Mary-ga* 'Mary-NOM' are contrastive, and so are *hon-o* 'book-ACC' and *hana-o* 'flower-ACC':

(1) John-ga hon-o ▲ sosite Mary-ga hana-o katta
John-NOM book-ACC (bought) and Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

'John bought books, and Mary flowers.'

I propose that contrast between a pair of elements should be realized in the form of a feature.[30] I state this assumption as principle (65):

(65) Contrastive focus feature in Gapping:

If an element α is contrastive, then α is assigned a contrastive focus feature ([+cfocus]).

According to this principle, each of *John-ga, hon-o, Mary-ga* and *hana-o* is assigned the contrastive focus feature [+cfocus].

The contrastive focus feature [+cfocus] is assumed to be an optional formal feature, and it is assigned at the same time that other optional formal features are added to lexical items. Let us recall the process of formation of a numeration in (66). I have modified it to illustrate the assignment of [+cfocus]

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[30] This is basically the same assumption made by J.-S. Kim (1997). I differentiate the focus feature for contrastive elements ([+cfocus]) from that for other focus cases.

for the case of a gapped sentence:

(66') Process of formation of a numeration for Gapping:

1. Select lexical items (with indices) from a lexicon.
2. **Add [+cfocus] to contrastively focused items** (as well as other optional features)
3. Form a numeration with the selected items.
4. Introduce the lexical items in the numeration into the derivation by the Select operation.

The proposed [+cfocus] feature will play an important role in the numeration, once added to a lexical item. I will show below that this feature is accessed by the conjunction *sosite* 'and'.

3.5 A Copy Operation in the Numeration

The goal of this section is to provide a formal account of the role of the conjunction *sosite* in Gapping. I propose a new operation that is involved in Gapping, which functions based on the assignment of the contrastive focus feature [+cfocus]. In the account I illustrate the process of how to form a numeration for Gapping, with the operation illustrated in detail.

In section 1.2.1 of chapter 1, I showed that Gapping is observed only in coordinate structures with *sosite*. The relevant examples that illustrate this point are repeated below. Gapping is not observed in a clause with subordinate structure (= (9)) or with conjunctions other than *sosite* (= (11)):

(9) a. * [John-ga hon-o ▲ atode/toki]
John-NOM book-ACC (bought) after/when

Mary-ga hana-o katta
Mary-NOM flower-ACC bought

'(Lit.) After/When John (bought) books, Mary bought flowers.'

b. * [John-ga hon-o katta atode/toki]
John-NOM book-ACC bought after/when

Mary-ga hana-o ▲
Mary-NOM flower-ACC (bought)

'(Lit.) After/When John bought books, Mary (bought) flowers.'

(11) a. * John-ga hon-o ▲ demo/keredomo/sikasi
John-NOM book-ACC (bought) **but/but/however**

Mary-ga hana-o katta
Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, but/however Mary bought flowers.'

b. * John-ga hon-o ▲ **matawa/aruiwa/mosikuwa**
John-NOM book-ACC (bought) **or/or/or**

Mary-ga hana-o katta
Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, or Mary bought flowers.'

The examples in (9) illustrate that Gapping is not allowed in subordinate structures, and the sentences in (11) show that the conjunctions other than *sosite* do not allow Gapping. These facts lead us to assume that it is natural to conceive that the conjunction *sosite* plays a crucial role in Gapping.

In the review of the literature in chapter 2, I pointed out that all the approaches used the condition "under identity" but that it is an open question in the previous analyses how identity among conjuncts is to be determined or guaranteed.

I claim that a key to guaranteeing the identity of a sequence to be

gapped is due to a property of the conjunction *sosite*. I propose that the conjunction has a special function of copying lexical items in a numeration. Essentially, the idea is that this particular conjunction has a type of "reduplicating" function, which can be observed in English phrases such as the following:

(67) a. John laughed and laughed and laughed.

b. She said it over and over and over again.

In these cases, the conjunction *and* can be used to iterate predicates, and a particular meaning is produced by iterations of identical predicates. The meaning is an intensifying or emphatic one. Japanese has similar sentences, too:

(68) John-ga warat-te, warat-te, warai-koroge-ta.
John-NOM laugh-GERUND laugh-GERUND laugh-rolled

'John rolled with laughter.'

There is no overt additive conjunction *sosite* inserted between repeated verbs, unlike the English examples. I assume that there is a silent *sosite* in this type of

sentences since the *-te* form of the verb *warat-te* functions as the conjunction to mean 'laugh-and' and that the silent conjunction *sosite* makes overt copies of emphatic materials. This type of reduplicating effect is not possible with other conjunctions. I hypothesize that the English *and* and the Japanese *sosite* (overt or covert) have the capacity to copy lexical items in the numeration before they are selected for Merge. The copied materials in Gapping are silent because they are not emphatic or focused.

In what follows, first I illustrate the proposed Copy operation in a numeration, and then I discuss the details of which items are the target of this operation.

Let us take sentence (1) as the target sentence to generate, which is repeated below. A numeration for this sentence after the Select operation on lexical items (= step 1 in the process of formation of a numeration in (64)) looks like (69):

(1) John-ga hon-o ▲ sosite Mary-ga hana-o katta
John-NOM book-ACC (bought) and Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

'John bought books, and Mary flowers.'

(69) Intermediate numeration for (1):

{(sosite, 1), (John-ga, 1), (hon-o, 1), (Mary-ga, 1), (hana-o, 1), (katta, 1)}
and John-NOM book-ACC Mary-NOM flower-ACC bought

In (69), there is only one verb, *katta* 'bought'. The proposed operation creates a copy of the verb within the numeration.[31] The numeration is then as in (70), where there are two identical verbs, as a result of Copy, rather than two independent instances of Select:

(70) Final numeration for (1):

{(sosite, 1), (John-ga, 1), (hon-o, 1), (Mary-ga, 1), (hana-o, 1), (katta,1),
and John-NOM book-ACC Mary-NOM flower-ACC bought

<katta, 1>}
bought

The proposed Copy operation in the numeration guarantees the identity of the copied items. Let us call the operation *AND-Copy*, as it is assumed to be a specific device that the conjunction *sosite* 'and' has. I further assume that AND-Copy copies lexical elements except for phonological features. Let us call it a *silent copy* operation.

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[31] I assume that this operation can create a copy of non-predicates as well such as adverbial phrases shared between two conjuncts.

Building upon the economy idea discussed by Progovac (1999) and Winkler (2000), I claim that the silent copy operation is supported by the economy principle that merging a silent item is less costly than merging a pronounced item:

(71) Economy of silent items:

Merging a silent item is less costly than merging a pronounced item.

In order for AND-Copy to operate correctly, it must be clear what to copy and what not to copy in the numeration for Gapping. Recall that contrastive items in Gapping are assigned the contrastive focus feature [+cfocus] (section 3.4, (65)). I propose that this feature plays a role in the AND-Copy operation: AND-Copy targets lexical items that do not have this feature, as they are not contrastive. Let us look at the numeration in (69) again, with [+cfocus] specified this time:

(69') Intermediate numeration for (1):

{(sosite, 1), (John-ga, 1), (hon-o, 1), (Mary-ga, 1), (hana-o, 1), (katta, 1)}

	[+cfocus]	[+cfocus]	[+cfocus]	[+cfocus]	
and	John-NOM	book-ACC	Mary-NOM	flower-ACC	bought

As you can see, *katta* 'bought' does not have [+cfocus] among the selected lexical items in the numeration. AND-Copy targets this lexical item and operates on it. As a result, the final numeration (= (70)) contains two verbs, (katta, 1) and its copy <katta, 1>. Under my proposal, if *katta* had a [+cfocus] feature, it could not be copied. Then either (i) two different verbs would have to be selected, or (ii) the derivation would crash due to a missing predicate.

The following summarizes the process of formation of a numeration for Gapping. The difference from the general process described in (64) in section 3.4 is indicated in bold characters:

(72) Process of Formation of a Numeration for Gapping:

1. Select lexical items (with indices) from a lexicon.
2. **Add [+cfocus] to contrastively focused items** (as well as other optional features)
3. **AND-Copy lexical items that do not carry [+cfocus].**
4. Form a numeration with the selected and AND-Copied items.
5. Introduce the lexical items in the numeration into the derivation by the Select operation.

At step 2, the contrastive focus feature [+cfocus] is added to contrastive lexical

items. Once all other optional features are added to the items, the AND-Copy operation takes place, resulting in adding copied items to the numeration.

In this section, I have discussed the AND-Copy operation and proposed an account for how a numeration for a gapped sentence is formed with the AND-Copy operation. The AND-Copied items guarantee the identity of lexical items that is required for Gapping. At this point, I have established a mechanism of obtaining the numeration with which a gapped sentence is to be generated. The next discussion points are how a syntactic object is to be built and what syntactic operations are involved in Gapping. The next section will focus on these points.

3.6 Focus Phrase and Focus Movement

In this section, first I will argue that Gapping involves focus phrase movement. Then I will claim that there is a functional projection for contrastive focus, where focus-licensing takes place. Lastly I will demonstrate the process of focus-licensing in detail.

Chomsky (1976) analyzed focused phrases as operators that undergo LF movement based on the observation that focused phrases behave similarly to quantified expressions for anaphora. Example (73a) illustrates Weak Crossover, in which the pronoun *he* cannot be interpreted as a variable bound

by *someone*. Structure (b) shows LF movement of *someone*:

(73) a. * The woman he_i loved betrayed $someone_i$

b. [$someone_i$ [the woman he_i loved betrayed t_i]]

Similarly, the accented focus JOHN in example (74b) shows Weak Crossover while the non-focus counterpart (74a) does not:

(74) a. The woman he_i loved betrayed $John_i$

b. * The woman he_i loved betrayed $JOHN_i$

Based on these cases, Chomsky argued that the focused phrase *JOHN* raises at LF to end up in a structure just like (73b).

Rochemont (1986) develops this argument from Chomsky 1976 and proposes the Focus Raising rule as a kind of LF movement. The rule adjoins a focused phrase to the sentence-initial position.

But it is difficult to test whether Gapping involves covert focus raising or not, using the availability of the Weak Crossover effect as a diagnostic, because both the subject and object NPs would raise and no change in the order between them would be observed.

However, if we assume that contrastive focused phrases in Gapping move overtly to a higher position, we can account for the necessity of adjacency of shared constituents. Consider the contrast in grammaticality between the following two gapped sentences:

(75) a. [John-ga Fred-ni ▲] sosite
John-NOM Fred-to and

[Mary-ga Sue-ni **Bill-o** **shoukai-sita**]
Mary-NOM Sue-to Bill-ACC introduced

'(Lit.) John (introduced Bill) to Fred, and Mary introduced Bill to Sue.'

b. * [John-ga Fred-ni ▲] sosite
John-NOM Fred-to and

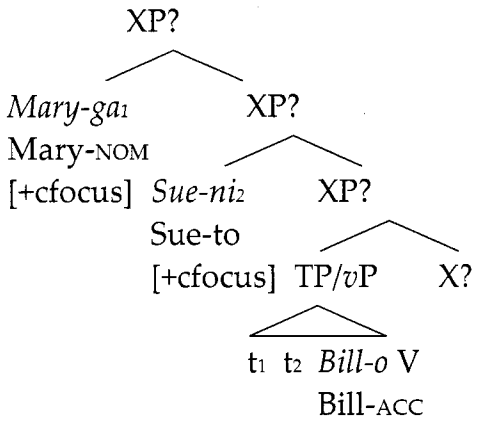
[Mary-ga **Bill-o** Sue-ni **shoukai-sita**]
Mary-NOM Bill-ACC Sue- to introduced

'(Lit.) John (introduced) to Fred (Bill), and Mary introduced Bill to Sue.'

In both sentences, what is shared is *Bill-o shoukai-sita* 'introduced Bill'. The difference between the two sentences is that the shared part is continuous in (75a) while it is not in (75b), where *Sue-ni* 'Sue-to' intervenes, and the latter

sentence is ungrammatical. It is straightforwardly explained if contrastive focused phrases are assumed to raise overtly. Look at the full conjunct of (75a). Let us assume without determining details yet that the contrastive focused phrases *Mary-ga* 'Mary-NOM' and *Sue-ni* 'Sue-to ' move up while *Bill-o* stays in situ as shown below:

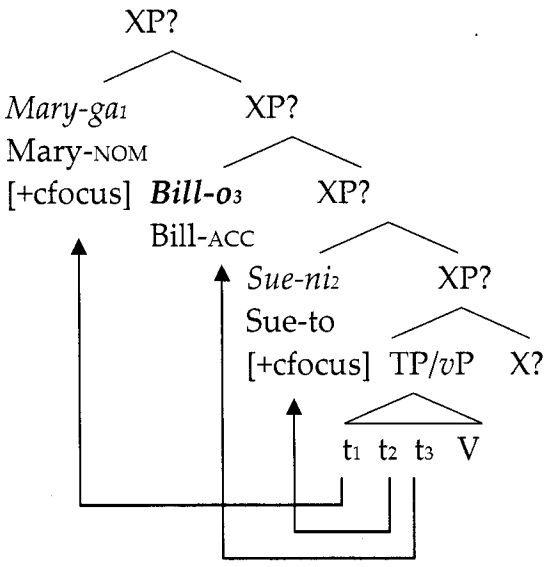
(76) (= (75a))



As a result, the order of the NPs is *Mary-ga Sue-ni Bill-o*.

On the other hand, in order to create the word order of the full conjunct in (75b), *Bill-o* should be located between *Mary-ga* and *Sue-ni* as shown below:

(77) (= (75b))



But this is impossible because *Bill-o* is not a contrastive focus phrase and does not have a trigger for movement, unlike *Mary-ga* and *Sue-ni*. In other words, the sentence in (75b) can never be generated. Thus, with the assumption of overt movement of contrastive focused phrases, the ungrammaticality of the sentence in (75b) is given a straightforward explanation.

Based on the above observation, I argue that contrastive focused phrases in Gapping undergo overt movement. I further assume that this movement is triggered by the feature [+cfocus] and that the landing site for this movement is a functional projection called *Focus Phrase*, based on Rizzi's (1997) claim that *Focus* has its own functional projection. He proposes that Focus Phrase (FocP) is located above TP (in his system, right above FinP). His proposed system is

illustrated as follows:

(78) [ForceP [TopP* [**FocP** [TopP* [FinP [IP]]]]]

(* indicates that recursion is allowed.)

Modeling on this approach, I argue that a functional projection for contrastive focus in Japanese is located above *v*P and below TP. This is because if we assume that FocP is below TP, contrastive focus cases other than Gapping would be well accounted for too. I present two such cases below: (i) contrastive focus marked with *wa*-marker, and (ii) the so-called *Left-Peripheral Deletion* case. These cases provide evidence for the structural position of FocP in Japanese.

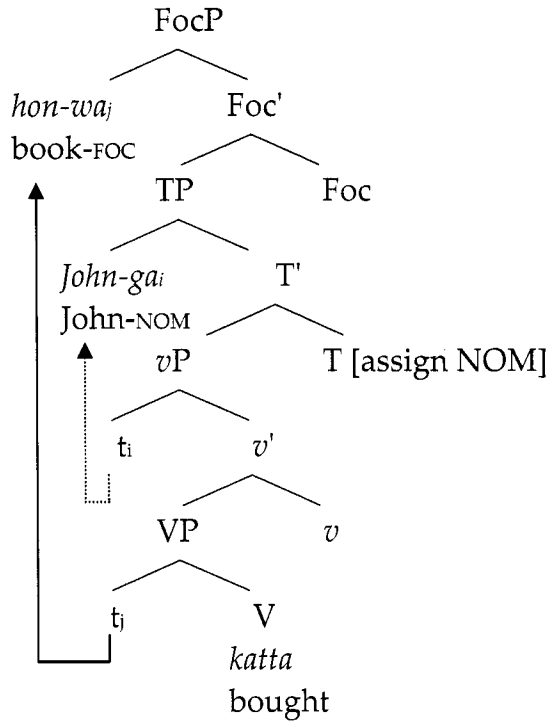
First, let us look at *wa*-marked contrastive focus in a simple sentence. The postpositional marker *wa* is often called a topic marker in Japanese, but it is also used to express contrastive focus. Observe the following example, in which I have emphasized contrastive focus by adding a contrasting continuation:

(79) John-ga **hon-wa** katta keredo **hana-wa** kawa-nakat-ta
John-NOM book-FOC bought but flower-FOC buy-not-PAST

'As for books, John bought them, but for flowers, he didn't buy them.'

The object NPs *hon-wa* 'books-FOC' and *hana-wa* 'flowers-FOC' are in contrastive focus with *wa*-marker in this sentence. With the assumption that the nominative Case must be overtly licensed (Chomsky 1995), if we would assume a structure of FocP above TP, the overt structure for the first conjunct would look like the following (where the solid arrow shows focus movement, and the broken arrow shows nominative Case-checking movement):

(80) FocP above TP:

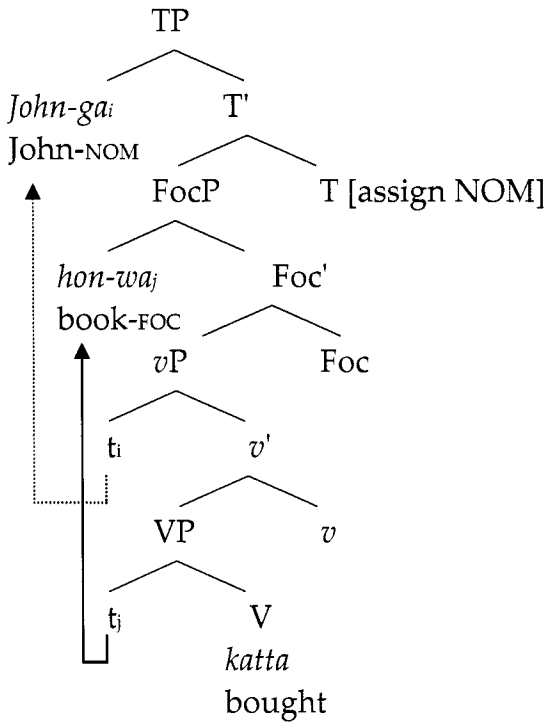


With the FocP above TP assumption, the contrastive focus *hon-wa* would end up being above the subject NP *John-ga*. Thus we could not account for how the

sentence is generated with *hon-wa* below *John-ga*.

On the contrary, the generation of sentence (79) is straightforwardly accounted for if we assume another structure of FocP below TP, which is illustrated in tree diagram (81):[32]

(81) FocP below TP:



[32] Belletti (2001) discusses the position of Focus Phrase (FocP) in Italian. According to Belletti, one FocP exists in the left pheriphery of the clause as in Rizzi 1997, and it is for a contrastive focus. The other FocP is located immediately above VP, based on examination of Italian inversion structures with a subject NP following the inflected verb.

On this assumption, the subject NP successfully ends up above the contrastive focus object NP.

The second example that supports the FocP-below-TP assumption comes from so-called *Left-Peripheral Deletion*. Left-Peripheral Deletion constructions are, as the name suggests, elliptical sentences whose identical left-peripheral material (in English) in coordinate structures are omitted:

(82) My mother met with the principal on Thursday, ▲and the dean on Friday.

(▲= my mother met with)

(Sag 1976:204 (3.2.7(a)))

The difference between Gapping and Left-Peripheral Deletion constructions is that the subject NP (= left-peripheral item) in the second conjunct is deleted in the latter constructions. The similarity between the two constructions is that the predicate is part of omission in both.

Now consider the following Japanese example, which is equivalent to the English Left-Peripheral Deletion example:

(83) [haha-ga kayoubi-ni hon-o ▲] sosite
mother-NOM Tuesday-on book-ACC (bought) and

[▲ kinyoubi-ni hana-o katta]
(mother-NOM) Friday-on flowers-ACC bought

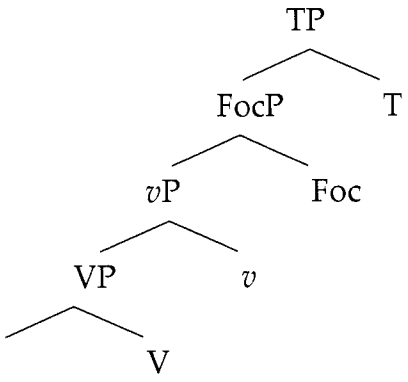
'Mother bought books on Tuesday, and flowers on Friday.'

In this example, the subject NP *haha-ga* 'mother-NOM' is not a contrastive focus element. It follows that it should end up in the Spec of TP in the overt syntax for checking the nominative Case. On the other hand, the object NPs *hon-o* 'book-ACC', *hana-o* 'flower-ACC' and the postpositional phrases *kayoubi-ni* 'Tuesday-on', *kinyoubi-ni* 'Friday-on' are contrastive focus elements. This means that these elements need to undergo overt focus movement. Again, if we would assume the FocP-above-TP structure, we would not get this sentence correctly because these focused phrases would be postulated above the subject NP incorrectly. Thus, by assuming the FocP-below-TP structure, we can account for contrastive focus, not only in Gapping, but also in Left-Peripheral Deletion. Based on the above data, I propose that FocP for contrastive focus in Japanese should be located above *v*P and below TP.[33] Let us review the

[33] It is an open question whether contrastive focus in Gapping and that in morphologically marked phrases should be dealt with as the same in every aspect. For example, *wa*-marked contrastively focused phrases allow both word orders as follows:

proposed structure:

(84) Proposal: FocP below TP structure for contrastive focus in Japanese:[34]



In the first half of this section, I have argued that there is an empirical benefit by assuming that contrastive focus phrases in Gapping undergo overt movement, not covert movement. In the second half, I have discussed a few

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(i) John-ga Sue-ni hon-wa ageta
John-NOM Sue-DAT book-FOC gave
'John gave Sue a book.'

(ii) John-ga hon-wa Sue-ni ageta
John-NOM book-FOC Sue-DAT gave
'John gave a book to Sue.'

If we assume that *wa*-marked phrases undergo overt movement to Spec of FocP above *v*P, then the word order of (i) could not be generated because *hon-wa* would be located higher than *Sue-ni*. On the other hand, without overt movement, the word order of (ii) could not be accounted for. More research will be needed on contrastive focus in other constructions in order to find solutions.

[34] The Spec positions are omitted for simplicity.

advantages of assuming that Focus Phrase is located between *v*P and TP for contrastive focus in Gapping over the assumption of placing Focus Phrase above TP. In the next section, I will account for why and how multiple remnants and correspondents are hosted in Japanese Gapping. These are the properties introduced in Chapter 1.

3.7 Multiple Specifiers for Multiple Remnants

In this section, I will argue that there are multiple specifiers in Focus Phrase (FocP) and explain how multiple remnants and correspondents are made possible in Japanese Gapping.

As we have seen in many examples above, there are at least two remnants in the first conjunct in Gapping: for example, *John-ga* 'John-NOM' and *hon-o* 'book-ACC' in (1). In addition, Japanese Gapping allows more than two remnants as in (14), which is repeated here:

(14) [John-ga kinou Fred-ni hon-o ▲] sosite
John-NOM yesterday Fred-DAT book-ACC (bought) and

[Mary-ga kyou Susan-ni hana-o katta]
Mary-NOM today Susan-DAT flower-ACC bought

'(Lit.) John (bought) books for Fred yesterday, and Mary bought flowers for Susan today.'

This sentence contains four remnants in the gapped conjunct: *John-ga* 'John-NOM', *kinou* 'yesterday', *Fred-ni* 'Fred-DAT' and *hon-o* 'book-ACC'.

Requiring multiple specifiers is not Gapping-specific, however. It is well known that Japanese can have multiple nominative subjects in a single clause (multiple subject construction) (Kuno 1973):

(85) zou-ga hana-ga nagai
elephant-NOM trunk-NOM long

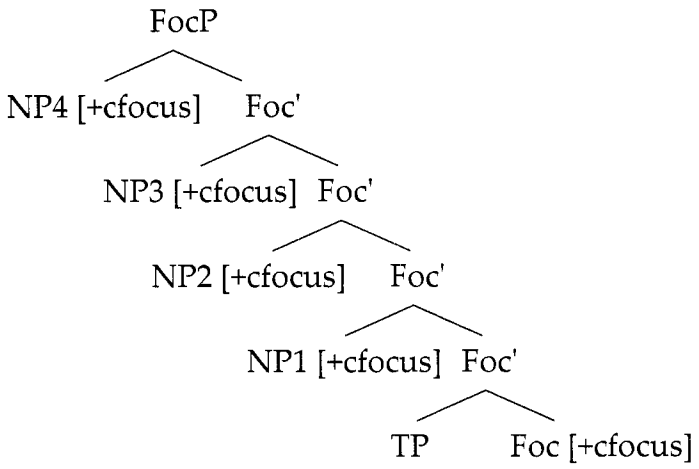
'Elephants have long trunks.'

The grammaticality of the sentence ensures that the nominative Case of the two subjects has undergone successful feature checking. Extending the idea of multiple specifiers discussed in Chomsky (1995:286), I assume that Japanese functional heads can establish multiple agreements with multiple elements for

the same feature.

Focus Phrase (FocP) in Japanese is no exception to that. In the case of Japanese Gapping, the multiple specifiers are generated to host multiple remnants (and correspondents), and upon the completion of multiple feature agreement with all the focused elements, the projection of FocP closes as illustrated:

(86) Example of Gapping with four NP remnants:



Thus, the potential for multiple remnants is attributed to the availability of multiple specifiers of the functional projection in Japanese.

3.8 Derivation (Part 1)

In the previous sections, I have accounted for the following points:

(87) Summary of points in previous sections:

a. The feature [+cfocus] is assigned in a numeration for Gapping.

b. AND-Copy creates a copy of lexical items that lack [+cfocus].

c. Focus Phrase (FocP) is located below TP in Japanese.

d. Overt focus movement is triggered by [+cfocus].

e. Multiple specifiers are possible in Japanese.

In light of all the proposals presented in the above sections, let us turn to an examination of how Japanese Gapping is derived, in a step-by-step fashion.

In section 3.3 of this chapter, I have shown the simplified numeration in (69) for sentence (1), in which there are no functional items contained. I assume that all the functional items are selected twice for a sentence that is composed of two clauses, in general. The complete initial numeration for the sentence is formed as illustrated in (88) (where lexical items in bold indicate that they are assigned the contrastive focus feature [+cfocus]):

(1) John-ga hon-o ▲ sosite Mary-ga hana-o katta
John-NOM book-ACC (bought) and Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

'John bought books, and Mary flowers.'

(88) Initial numeration after Select operation[35]

{ (sosite, 1), (**John-ga, 1**), (**hon-o, 1**), (**Mary-ga, 1**), (**hana-o, 1**),
and John-NOM book-ACC Mary-NOM, flower-ACC

(katta, 1), (*v*, 2), (T, 2), (Foc, 2), (C, 2) }
bought

We have *sosite*, four focused NPs, Focus heads (*Foc*), a non-focused verb, a light verb (*v*), Tense (*T*) and Comp heads (C). After Select operation, the AND-Copy operation applies for lexical items that do not have the feature [+cfocus] in the numeration, which is the verb *katta* 'bought' in this case. The resultant numeration contains two *katta*:

[35] For the moment, I assume that AND-Copy operates on lexical items, not on functional items without arguments. I will discuss more details in chapter 4.

(89) Numeration after AND-Copy application (preliminary version):

{ (sosite, 1), **(John-ga, 1)**, **(hon-o, 1)**, **(Mary-ga, 1)**, **(hana-o, 1)**,
and John-NOM book-ACC Mary-NOM, flower-ACC

(katta, 1), <katta, 1>, (*v*, 2), (T, 2), (Foc, 2), (C, 2) }
bought bought

Next, syntactic operations such as *Select, Merge, Move,* and *Delete* apply to build a syntactic object in the following order:

(90) First conjunct (=gapped conjunct):

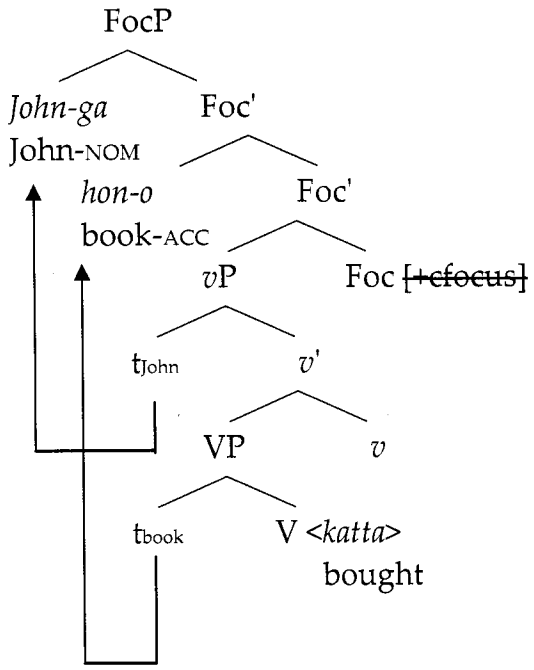
1. Select *hon-o* and <*katta*> from the numeration, and Merge them.[36]
2. Select *v*, and Merge it with [*hon-o* <*katta*>]
3. Select *John-ga*, and Merge it with [*v* [*hon-o* <*katta*>]]
4. *v*p = [*John-ga* [*v* [*hon-o* <*katta*>]]]

At step 4, the head Foc is selected from the numeration and merged with *v*P. Then, the feature [+cfocus] in Foc attracts focused phrases *John-ga* and *hon-o* to its multiple specifiers in order to have the feature checked off by the same feature carried by the focused phrases. At this stage, we have the following

[36] The AND-Copied item <*katta*> 'bought' is selected for the first conjuct here without arguments. I will discuss this in detail in chapter 4.

syntactic structure:[37]

(91)

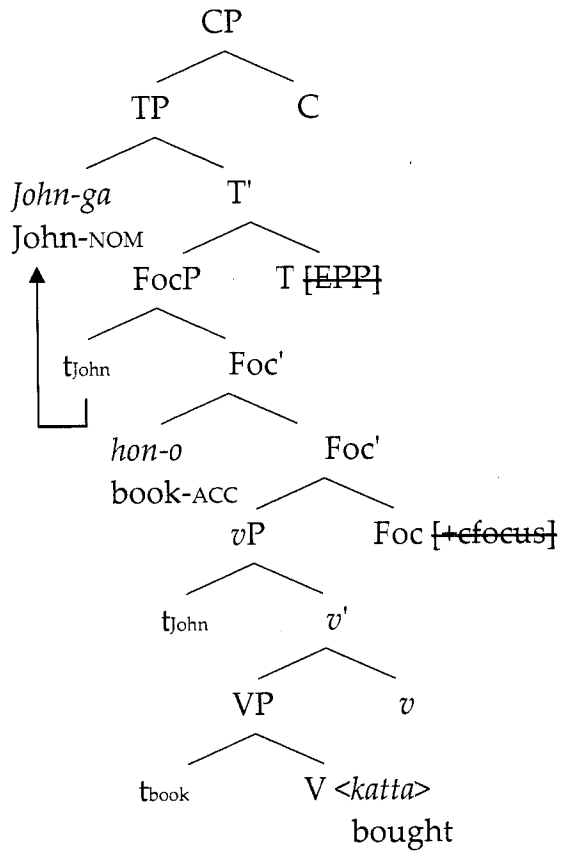


The subject NP *John-ga* is attracted by [EPP] of T and moves to Spec of TP to check off [EPP]. Finally C is selected to complete the clause:

---

[37] In Japanese, verbal inflection is neutral, without distinction for gender, number or person. Therefore, I assume that the functional head T in Japanese has nothing to induce overt verb raising, unlike in European languages (Cf. Kuroda 1988, Fukui 1986, 1995, Fukui and Sakai 2003). See Ura 1996, Koizumi 1995, 2000, and Miyagawa 2001 for arguments for overt verb raising.

(92) Completed first conjunct:



The second conjunct [TP Mary-ga hana-o katta] 'Mary bought flowers' is constructed in the same way as in (93) with different lexical items:

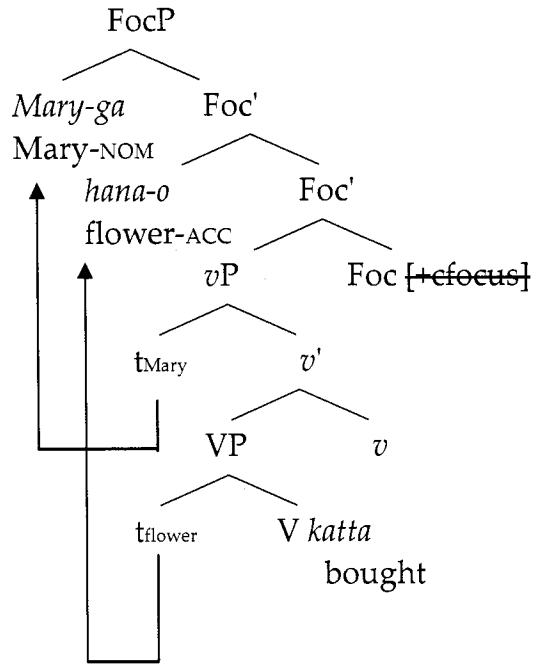
(93) Second conjunct (=full conjunct):

1. Select *hana-o* and *katta* from the numeration, and Merge them.
2. Select *v*, and Merge it with [*hana-o katta*]
3. Select *Mary-ga*, and Merge it with [*v* [*hana-o katta*]]

4. *v*p = [*Mary-ga* [*v* [*hana-o katta*]]]

At step 4, the head Foc is selected from the numeration and merged with *v*P. Then the feature [+cfocus] in Foc attracts focused phrases *Mary-ga* and *hana-o* to its multiple specifiers in order to have the feature checked off by the same feature carried by the focused phrases. At this stage, we have the following syntactic structure:

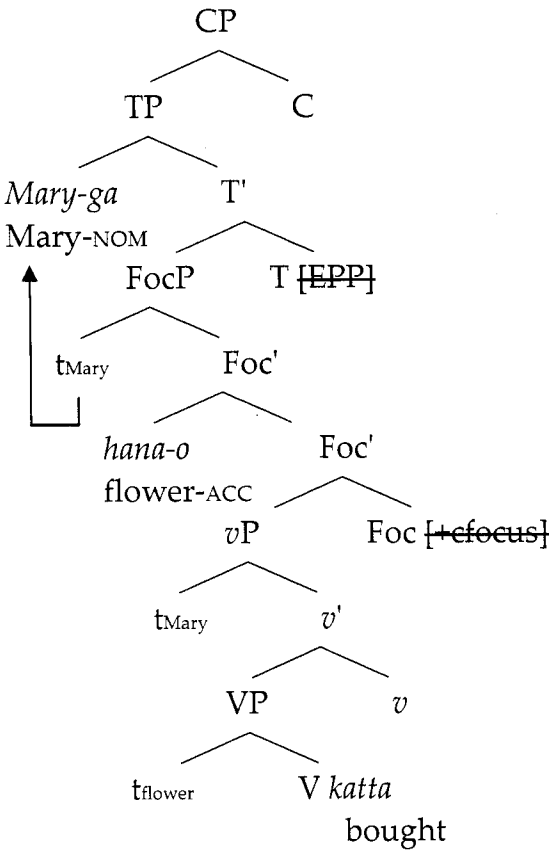
(94)



The subject NP *Mary-ga* is attracted by [+EPP] of T and moves to Spec of TP to

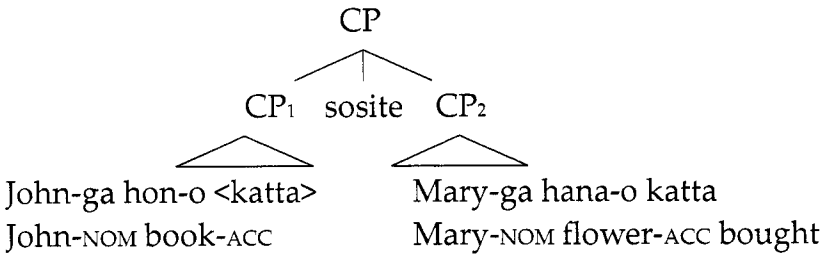
check off [+EPP]. Finally C is selected to complete the clause:

(95) Completed second conjunct:



Finally, the conjunction *sosite* is selected to merge the two clauses together:

(96) Temporary structure (which will be revised in chapter 4):



At this point, Gapping has not been completely accounted for yet in two respects: one is that the structure of clausal coordination has not been discussed, and the other is that it has not been accounted for how a copied item is selected for a particular conjunct. These points will be the topics of discussion in the next chapter. However, it is clear even at this point that the proposed analysis does not need Across-The-Board (ATB) movement or Right-Node Raising (RNR) movement, which mysteriously converts multiple elements into one.

3.9 Summary of Chapter 3

In this chapter, I have discussed my alternative approach to Japanese Gapping. I have claimed that the conjunction *sosite* has the capacity to produce a copy of items in the numeration due to its intrinsic properties, which I have embodied as the AND-Copy operation. I have argued that targets of AND-Copy are elements that do not carry contrastive focus feature. Also, I

have claimed that AND-Copy creates a silent copy for reasons of economy. The source of the gap is the silent copy, which also guarantees the identity between the gap and the overt element in the full conjunct. Thus, the proposed approach can account for the correlation between Gapping and coordinate structures with *sosite* and the identity between the gap and the overt element.

There are at least two issues that are left unexplained in the derivation of Gapping in this chapter: (i) the structure of clausal coordination and (ii) how the direction of the gap is determined. Those points will be discussed in the next chapter.

3.10 Appendices to Chapter 3

This section will deal with two interesting cases: (i) group predicates and (ii) postposition/particle omission in Gapping. I will discuss what challenges these cases pose to the analyses of Gapping including the proposed analysis.

3.10.1 Group Predicates

There are predicates that require multiple participants such as *bunretsu-suru* 'to split', *chiru* 'to dispense', *atsumaru* 'to gather', and so on. Let us refer to such predicates as *group predicates*. As shown in the sentences in (97),

atsumaru 'to gather (intransitive verb)' requires multiple agents:

(97) a. John-to Mary-to Sue-ga kafe-ni atsumatta
John-and Mary-and Sue-NOM café-at gathered

'John, Mary and Sue gathered at a café.'

b. * John-ga kafe-ni atsumatta
John-NOM café-at gathered

'John gathered at a café.'

The sentence in (97b) is not acceptable because there is only one agent to the predicate.

Interestingly, the gapped sentence with the predicate is acceptable in Japanese:

(98) John-ga sanji-ni ▲ ▲ sosite
John-NOM 3 o'clock-at (café-at) (gathered) and

Mary-ga yoji-ni kafe-ni atsumatta
Mary-NOM 4 o'clock-at café-at gathered

'(Lit.) John (gathered at a café) at 3 o'clock, and Mary gathered at a café at 4 o'clock.'

Under the AND-Copy approach, the elements *kafe-ni* 'café-at' and *atsumatta* 'gathered' are subject to the AND-Copy operation because they are shared items and are not assigned [+cfocus]. Before Spell-Out to LF, the intermediate derivation contains the following two conjuncts, each of which would not be interpretable because there is only one agent for the predicate as shown in (99):

(99)a. First conjunct:

John-ga	sanji-ni	<kafe-ni>	<atsumatta>
John-NOM	3 o'clock-at	(café-at)	(gathered)

sosite
and

b. Second conjunct:

Mary-ga	yoji-ni	kafe-ni	atsumatta
Mary-NOM	4 o'clock-at	café-at	gathered

As shown in the ungrammaticality of sentence (97b), each of these conjuncts would be ungrammatical if independently interpreted.

This phenomenon seems similar to movement copies (traces) before Spell-Out. According to the copy theory of movement in Chomsky 1993 and 1995, it is assumed that movement copies lose phonological information at Spell-Out. In a sense, the clause would not be grammatical yet before

Spell-Out strips away the phonological matrix from the trace:

(100)a. Before Spell-Out: John$_i$ was fired (John)$_i$

b. * After Spell-Out: * John$_i$ was fired John$_i$

c. After Spell-Out: John was fired

As in (100b), if the trace were pronounced after Spell-Out, the clause would be ungrammatical.

It is a common problem for all the approaches (movement, deletion or copy) how the correct interpretation of the gapped sentence with the group predicate can be generated. I argue that it is a problem for the process at LF, not at the overt derivation. I will not propose a solution to the issue, but I will present an idea for possible solutions.

Recall the English examples that I used in Section 3.5, which are repeated here:

(67) a. John laughed and laughed and laughed.

b. She said it over and over and over again.

I have pointed out that in these sentences, a particular meaning is produced by iterations of predicates. Similarly, we could hypothesize that each copy

represents only a part of the whole eventuality of the group predicate *atsumaru* 'to gather', and that the meaning of the predicate is obtained by accumulation of the parts (i.e. copies). At least this line of idea is consistent with the explanation regarding the reproductive property of the conjunction *sosite*.

3.10.2 Postposition/Particle Omission

As briefly introduced in Section 2.1.2.1 of chapter 2, a postposition or a particle (a Case marker) can be omitted in the gapped conjunct in Japanese Gapping. Sentence (101a) shows particle omission and sentence (101b) shows postposition omission:

(101)a. John-ga hon-▲ ▲ sosite
John-NOM book-(ACC) (bought) and

Mary-ga hana-o katta
Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

b. John-ga Mary-▲ ▲ sosite
John-NOM Mary-(about) (talked) and

Fred-ga Sue-nituite hanasita
Fred-NOM Sue-about talked

'(Lit.) John (talked about) Mary, and Fred talked about Sue.'

This omission is allowed only for a postposition or particle immediately left of the gapped predicate. Therefore if the *ga*-particle of *John-ga* were omitted in the above sentences, then the sentences would be ungrammatical.

If we apply AND-Copy to the postposition or particle, then questions arise as to: (i) why not all but only certain postpositions or particles are copied and (ii) how the operation knows which postpositions or particles end up next to the copied predicate.[38] I do not have a syntactic solution to account for this phenomenon within the proposed approach.

If we observe the phonological characteristics of Gapping, it seems common cross-linguistically that the gapped sentence displays a different intonation contour on the element that precedes the gap, such as that the syllable preceding the gap is lengthened, and that some pause indicates the

[38] The question in (i) poses a further question whether or not a postposition/particle is attached to the head noun in the numeration.

gap.[39] This leads me to think that the postposition/particle omission might have something to do with these phonetic changes over the gapped sequence.[40] I will leave this issue open in this study.

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[39] See Cooper and Paccia-Cooper 1980 and Kawahara 2004 for more details on the phonological aspect of Gapping.

[40] Sohn (1999:383) conjectures that postposition omission is not a syntactic phenomenon but a PF phenomenon, stating "conjunction takes the whole contrasted part as one unit, optionally deleting the postposition on the last NP."

4 The Structure of Coordination for Gapping

4.1 Introduction

In the previous chapter, I have accounted for (i) why Gapping occurs only in coordinate structures with *sosite* and (ii) why the gapped sequence is interpreted as identical to the overt sequence in the full conjunct by proposing a new type of copy operation called AND-Copy performed by the conjunction *sosite*.

This chapter concerns how the direction of the gap is determined. First I discuss the structure of coordination for Japanese Gapping. Then I provide an account for the question.

The chapter is organized as follows. In section 4.2 I will discuss the structure of coordinate clauses in Gapping sentences. The proposed structure accounts for which conjunct should contain a gap in Japanese. Section 4.3 discusses how AND-Copied items are licensed as covert elements. Section 4.4 illustrates the entire derivation of Gapping with the proposed structure for coordination and its licensing condition.

4.2 The Structure of Coordination

As shown in chapter 1, Gapping is a phenomenon peculiar to coordinate structures with the conjunction *sosite* 'and'. It is crucial to account for the correlation of Gapping and the additive conjunction *sosite* in the analysis of Gapping. The goal of this section is to determine the structure of coordination for Gapping, which is not focused on or discussed at all in the previous analyses that we have reviewed in chapter 2. First I briefly discuss the structure of coordination for Gapping, what aspect of the structure is crucial to Gapping, and what is required in the coordinate structure for the construction. Then I briefly introduce and review two analyses of coordination with binary structures and introduce my proposal for the structure of coordination for Japanese Gapping.

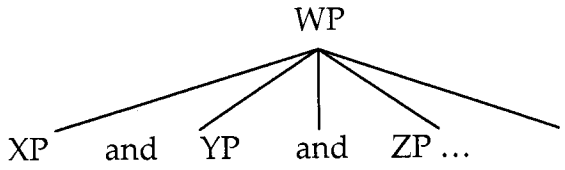
4.2.1 Requirements for the Structure of Coordination for Gapping

The structure of coordination for Gapping should comply with the requirements of minimalist syntax, provide syntactic accounts for the direction of gaps (i.e., which conjunct should contain a gap) and enable multiple coordination (since coordinating more than two conjuncts is possible).

I argue that the hierarchical structure among conjuncts plays a crucial role in determining the direction of gaps and enabling multiple coordination as

well as satisfying the theoretical requirements of the minimalist framework, namely binary branching.[41] Given that, a flat structure like the following would not be suitable as the structure of coordination:

(102)



The flat structure not only does not provide syntactic relationship among conjuncts in Gapping but also wrongly predicts that WP is allowed to have multiple heads.

A binary solution to the structure of coordination has been discussed in the literature (for example, Munn 1993, Zoerner 1995 and Johannessen 1998, Camacho 2003 and many others). Zoerner and Johannessen claim that a coordinating conjunction heads its own syntactic phrase and takes a complement and a specifier. In the following subsections, I will briefly introduce the structure that each of them proposes for Gapping as the

---

[41] Chomsky (1995:243-244) describes this requirement as follows:
(i) $K = \{\gamma, \{\alpha, \beta\}\}$, where α, β are objects and γ is the label of K.
(ii) The label γ must be constructed from the two constituents α and β.

foundation of my proposal.

4.2.2 Binary Structure for Coordination

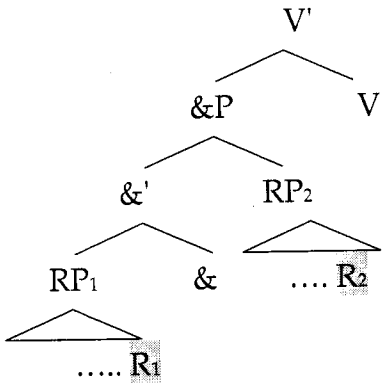
This section briefly reviews two analyses: Zoerner 1995 and Johannessen 1998, which explore the structure for Gapping in head-final languages. Based on the review I will make a proposal.

In 4.2.2.1, I review Zoerner's analysis to show why I do not adopt it. Then in 4.2.2.2, I review Johannessen's analysis, which I will adopt. I will not cover Camacho 2003 because he proposes a structure similar to Zoerner's and does not discuss the structure for Gapping for head-final languages. My proposed structure is discussed in 4.2.2.3.

4.2.2.1 Projection of Conjunction and Feature Percolation

Zoerner (1995) assumes that a conjunction is a syntactic head *&* and that it heads its own phrase called *&P* in coordination. According to Zoerner, &P lacks categorial status and it comprises various different lexical categories. In addition to &P, Zoerner claims that Gapping involves a new phrase called *Relation Phrase* (RP), whose head is a feature-deficient *R*. The head R amounts to an empty position that surfaces as the gap. The simplified structure is shown below:

(103)



As shown in the tree diagram, &P takes RP_1 and RP_2. The head R is the position where gaps occur, and there is only one V available.

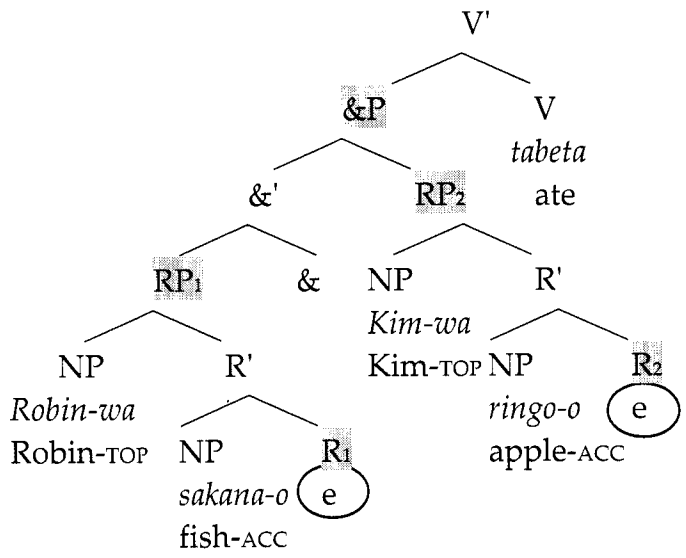
Now consider the following sentence, in which the verb *tabeta* 'ate' is gapped:

(104) Robin-wa sakana-o, Kim-wa ringo-o tabeta
Robin-TOP fish-ACC Kim-TOP apple-ACC ate

'Robin ate fish, and Kim apples.'

The underlying structure that Zoerner assumes for Japanese Gapping in (104) is shown in (105). The position generally occupied by a verb is occupied by R, which carries no feature:

(105) Zoerner's structure for Japanese Gapping in (104):



(Zoerner 1995:215-216)

According to Zoerner (1995:182), the head R has to be associated with another lexical head such as V, A, P or N because it is assumed to be a feature-deficient head. That &P has no inherent features makes it transparent to V. V is then able to percolate its own features through &P down to fill in features of the empty R.

The immediate problem with this approach is the introduction of empty elements such as R, which is the same issue pointed out in Abe and Hoshi's (1997, 1999) analysis: empty objects are not legitimate objects for the Merge operation in minimalist syntax. For that reason I do not adopt this structure of

coordination.

Next I will review Johannessen's (1998) analysis of coordination.

4.2.2.2 Projection of Conjunction and Feature Unification

Johannessen (1998:74-107) also proposes that a conjunction is a functional head that has its own projection and that takes a specifier and a complement. But unlike Zoerner 1995, her proposed structure does not contain any extra phrase such as Relation Phrase. The following tree diagram illustrates her proposed structure for head-final languages (in which *CoP* stands for *Coordinate Phrase*):[42]

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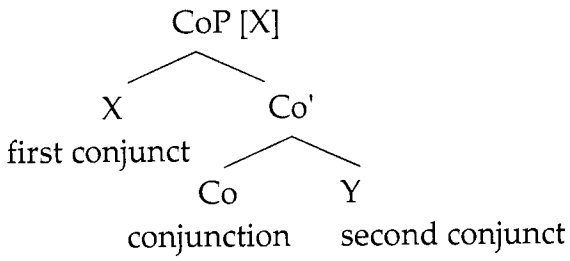
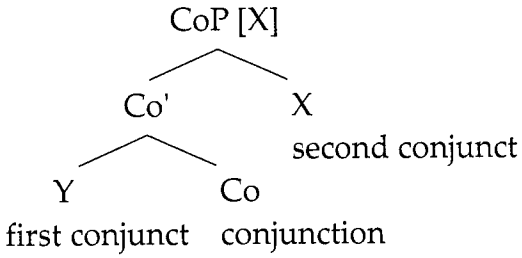
[42] The structure of coordination proposed by Johannessen (1998) for head-initial languages (e.g. English) is as follows:

(i)



(106) Head-final languages:



As shown in tree diagram (106), the conjunction *Co* takes a complement Y and a specifier X, and it projects to *CoP*. X and Y in the tree stand for any bar-level. Johannessen extends the Spec-head agreement mechanism to the Spec-head feature unification. According to Johannessen (1998:110), CoP inherits the syntactic category features from its specifier conjunct by unifying the features of the head and those of the specifier. Johannessen proposes the feature unification by taking coordination of different categories into consideration (such as *NP and AP*).[43] Johannessen does not discuss Gapping in detail, but at least for the structure of clausal coordination, she assumes that two (or more) CPs are coordinated.

In the next subsection, I will discuss my proposed structure based on Johannessen's analysis.

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[43] Cases in which XP_1 contains a feature that is contradictory to a feature that XP_2 has are not clearly discussed. For example, if it is assumed that NP contains [+N, -V] while AP contains [+N, +V], then it is not clear to me how [-V] and [+V] would be unified.

4.2.2.3 Proposal: TP Coordination for Gapping

We have briefly reviewed two analyses of coordination that argue that the conjunction as a head (*Co*) takes one conjunct as a complement and another as a specifier: Zoerner 1995 and Johannessen 1998.

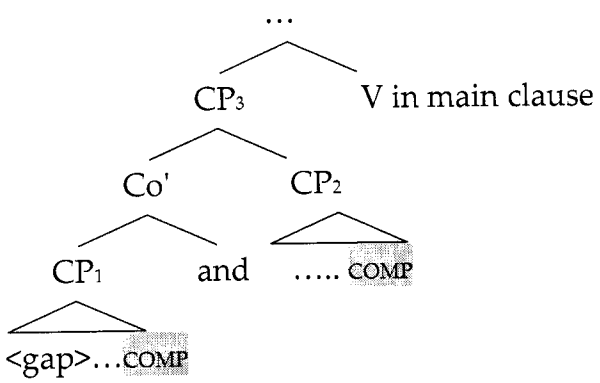
Basically I adopt the structure proposed by Johannessen (1998) because the head-complement relation strictly follows the fundamental head-final structure, as illustrated below:

(107)

However, differently from Johannessen 1998, I propose that Gapping involves coordination of TPs, not coordination of CPs.

Johannessen's CP coordination analysis predicts that a complementizer (*COMP*) could appear within both conjuncts as illustrated below:

(108) Prediction of CP coordination:



The tree diagram above shows that both CP_1 and CP_2 can contain COMP.

On the contrary, this is not possible to have the complementizers within these conjuncts. To illustrate this point, compare the following two sentences, focusing on the position where a complementizer *to* 'that' has been added (shown in grey):

(109)a.* Fred-ga [CP John-ga hon-o ▲ to] sosite
Fred-NOM John-NOM book-ACC COMP and

[CP Mary-ga hana-o katta to] itta
Mary-NOM flower-ACC bought COMP said

'Fred said that John bought books and that Mary flowers.'

b. Fred-ga [XP John-ga hon-o ▲] sosite
Fred-NOM John-NOM book-ACC and

[XP Mary-ga hana-o katta] to itta
Mary-NOM flower-ACC bought COMP said

'Fred said that John bought books and Mary flowers.'

The only difference between the two sentences is that (109a) contains the complementizer in the gapped conjunct. The sentence in (109a) is ungrammatical while the sentence in (109b) is grammatical. This indicates that a gapped conjunct cannot be a CP.

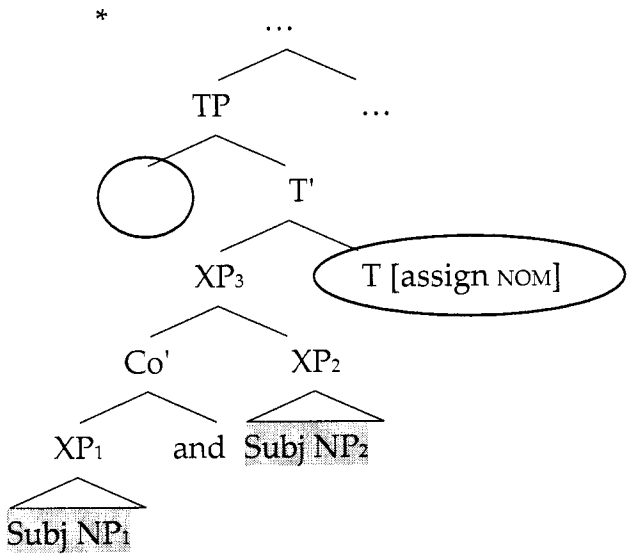
Thus, this observation leads us to the conclusion that coordinating conjuncts for Gapping must be done below CP.[44]

Then a question that arises is at what level conjuncts should be coordinated: should they be coordinated at TP or below TP? I claim that the coordination should not be below TP for the following reason. A subject NP in each conjunct needs to have its nominative Case assigned by the head T. If conjuncts were coordinated below TP, then there would be only one T and Spec position available for two subject NPs, as shown in the circle below:

---

[44] This is true of English Gapping, too (Radford 1988:294 (25a-b)):
(i) I wonder whether [S John likes fish] and [S Mary meat]
(ii) *I wonder [S' whether John likes fish] and [S' whether Mary meat]
(Note: S' corresponds to CP, S to IP/TP in the current framework.)

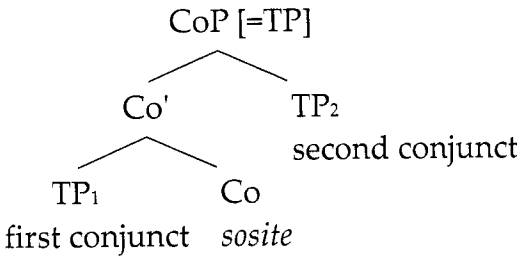
(110) Coordination below TP:



As a result, one of the subject NPs would have a nominative feature that is not in an Agree or checking relation with a finite Tense, and because of this the derivation would not converge.

Based on the observation above, I propose that Japanese Gapping involves coordination of conjuncts at TP level (*TP coordination*). The proposed structure is shown as follows:

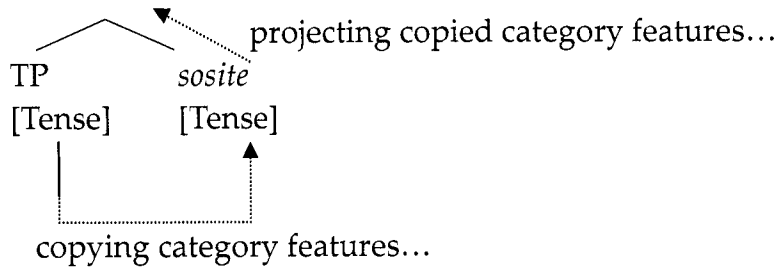
(111) Proposed structure of coordination for Japanese Gapping:



The conjunction *sosite* takes a TP_1 as a complement and a TP_2 as a specifier, and this structure can avoid the problem of leaving one nominative Case unassigned. As the tree above illustrates, the second conjunct TP_2 is hierarchically higher than the first conjunct TP_1. I claim that this hierarchical relation between conjuncts is crucial to accounting for the direction of gaps in the construction, which always occurs in the first conjunct when there are two coordinated conjuncts. More detail will be discussed in section 4.3.

As for how identical categories occur as the complement and specifier of *sosite*, this may be due to the categorial transparency of the additive conjunction, as Zoerner (1995) argues. In other words, conjunction phrases take on the category of their complement or specifier. Recall that in structures other than conjunction, the head, not the complement (or specifier), projects category features. It could be the case that the head *sosite* copies category features from its complement TP onto itself and then projects them as shown below:

(112)



If this were the case, then it would account for the fact that a compound TP is produced once the head merges with a specifier TP, resulting in the derivation of identical categories between the complement and specifier.

To summarize the discussion in section 4.2, I have reviewed two analyses by Zoerner (1995) and Johannessen (1998) and then proposed the structure of coordination for Japanese Gapping based on Johannessen's (1998) structure: the conjunction *sosite* as a head coordinates two conjuncts by taking one as its complement on its left and the other as its specifier on its right. I have also argued that conjuncts should be coordinated at TP level instead of CP level, based on the empirical data with a complementizer *to* 'that'. Also, I have briefly discussed how the occurrence of identical categories as the complement and specifier of *sosite* are derived.

Next I will discuss how the direction of gaps is guaranteed in the

proposed structure.

4.3 Formal Licensing of AND-Copied Items

Now we have the structure for Japanese Gapping: TP coordination with the conjunction *sosite* as the head. The next step is to account for which conjunct contains the gap. In this section, I will account for the direction of Gapping based on the licensing of AND-Copied items.

It has been argued in the literature that phonologically null elements such as traces, PRO, pro and so on (so-called *empty categories*) require some kind of licensing in order to be legitimate elements.[45] Using the notion of *government*, Rizzi (1990:87) proposes the *Empty Category Principle* (ECP), which empty categories must satisfy.[46] However, minimalist syntax has dispensed with the concept of *government* and the ECP.[47]

Recall that AND-Copied items are phonologically null elements, created by a copy operation called AND-Copy. For reasons of economy, this operation applies only to syntactic features, not phonological features. A question is

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[45] The principles of Full Interpretation (FI) and Licensing were introduced in Chomsky 1986b:98-102. FI basically requires that every element of PF and LF must be appropriately licensed.

[46] The *Empty Category Prin*ciple (Rizzi 1990:87):

> *ECP*: A nonpronominal empty category must be properly head-governed.

[47] See Chomsky 1995:176-181 for more details on *government*.

what device minimalist theory provides to account for the identification of such covert elements without relying on government or the ECP. For instance, movement copies are also considered covert or become covert at PF (Cf. Nunes 1999). They are made legitimate in a chain linked to the original lexical elements.

One might wonder whether an AND-Copied item and its original lexical item would form a chain which would license the AND-Copied item in a similar way as chains for movement copies do.[48] Would a chain be a suitable device to make AND-Copied items legitimate? The answer seems to be "No" because of the following reasons. First, the central challenge for a chain-licensing account is that the positions occupied by the verb are not in the same local domain, and therefore could not be related via chain-formation: Neither verb c-commands the other in a gapped sentence. Although various formal devices could be proposed to overcome this, it seems to be the wrong move, since such proposals then leave unanswered why extraction from conjoined structures is otherwise impossible. Secondly, there are a few fundamental differences between AND-Copied items and movement copies: (i)

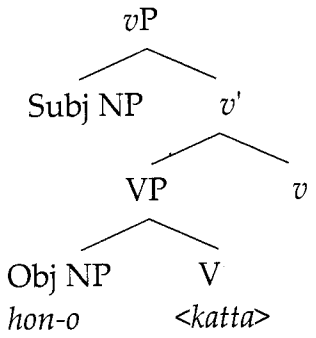
---

[48] A chain is formed between the moved element and its copy that is left at the original position as shown below:

(i) *what* did John buy *(what)*?
(ii) Chain CH = (what, (what))

AND-Copied items are mainly verbs while movement copies (traces) are not, (ii) movement copies do not move further or take arguments while AND-Copied items do both, lacking only phonological features. As we have seen in chapter 3, the AND-Copied verb <*katta*> 'bought' takes arguments such as the object NP *hon-o* 'book-ACC', assigns Case to *hon-o* and so on:

(113)

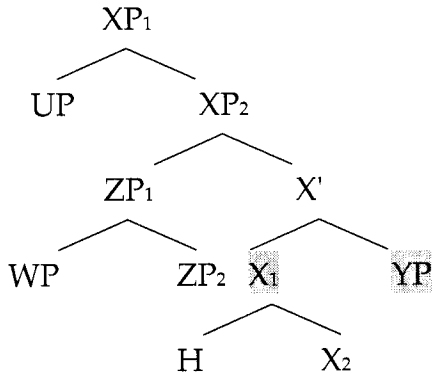


Given these reasons, I conclude that the concept of forming a chain is not appropriate to apply to the output of the AND-Copy operation.

Using the concepts of domain and local relation of elements defined in minimalist syntax, I propose that AND-Copied items must be formally licensed by the conjunction in the *complement domain* of the conjunction. First, the definition of complement domain in Chomsky 1995 is provided as follows:

(114) Complement domain (Chomsky 1995:177-178):

The *domain* of X is {UP, ZP, WP, YP, H}, and the *complement domain* of X is YP and everything it dominates:



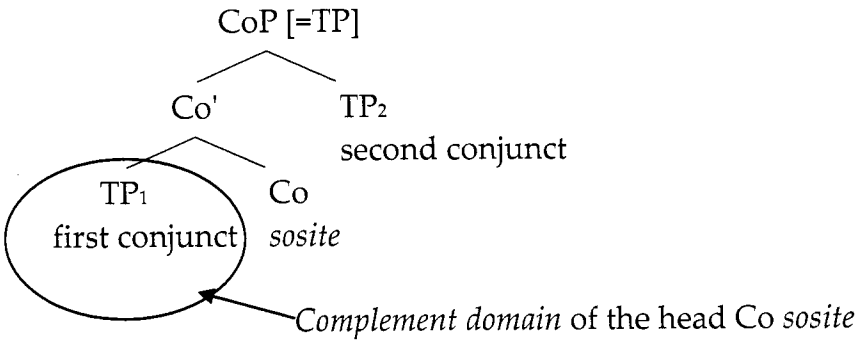
Given the definition of the licensing domain as above, I define the formal licensing of AND-Copied items as follows:

(115) Formal licensing of AND-Copied items:

AND-Copied items must appear in the *complement domain* of the conjunction.

In structure (111), which is repeated below, the complement domain of *sosite* is the first conjunct TP_1:

(111) Proposed structure of coordination for Japanese Gapping:



AND-Copied items should appear in the first conjunct TP_1 in order to be properly licensed. This requirement accounts for the fact that the AND-Copied item needs to be selected from the numeration for the first conjunct, and the original lexical item for the second conjunct in order for the entire derivation of the sentence to converge. For example, the following sentence is ungrammatical because it does not satisfy the licensing requirement:

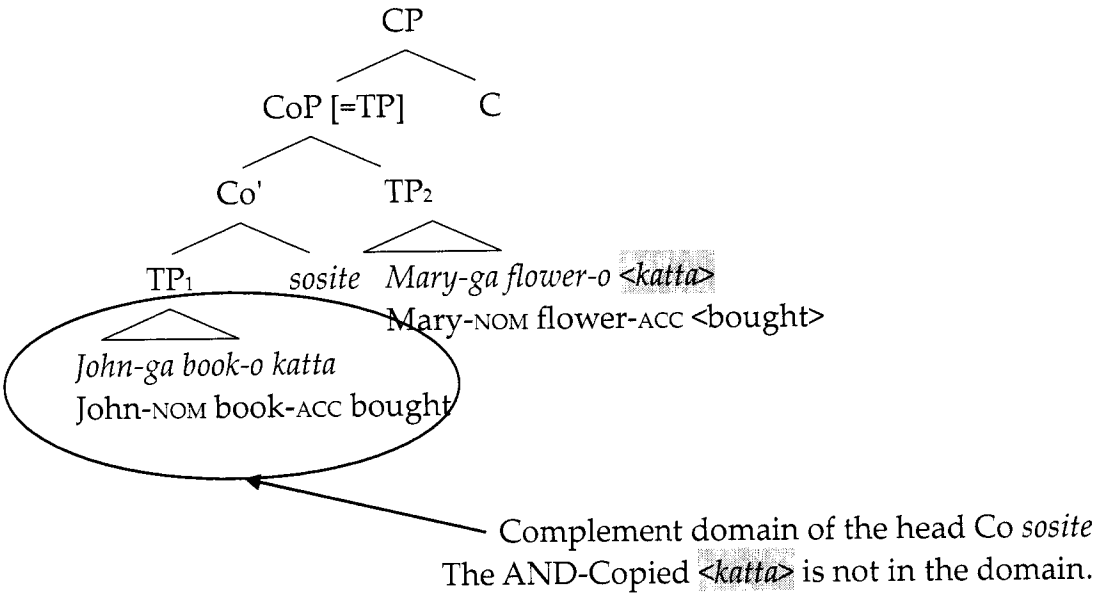
(116) * John-ga hon-o katta sosite Mary-ga hana-o <katta>
John-NOM book-ACC bought and Mary-NOM flower-ACC (bought)

'(Lit.) John bought books, and Mary (bought) flowers.'

'John books, and Mary bought flowers.'

The tree diagram for the sentence is as follows:

(117)



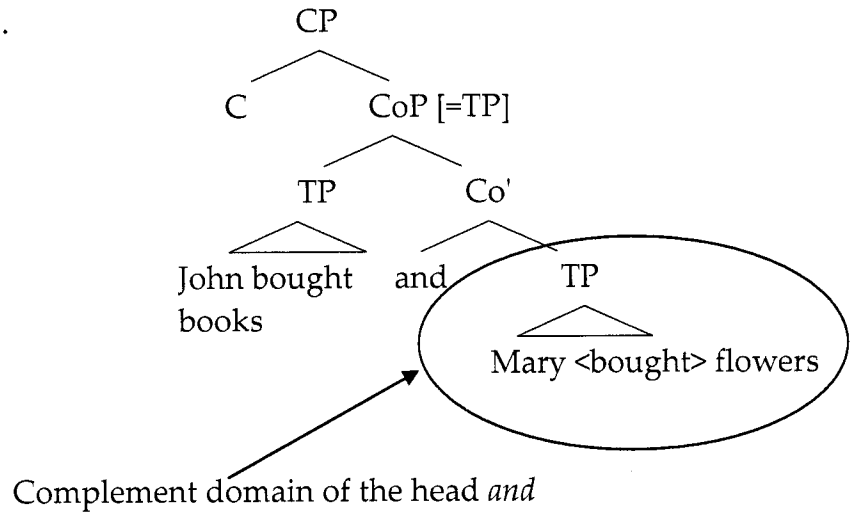
As illustrated in the tree above, the AND-Copied item <*katta*> is selected and merged in the second conjunct where it cannot be formally licensed. As a result, <*katta*> is left unlicensed and the derivation does not succeed.

We could ask whether there is independent motivation that Principle (115) is correct. It is supported by the fact that the directionality of Gapping is the opposite in English as shown below:

(118) English Gapping:

a. John bought books, and Mary flowers.

b.



As shown in this tree diagram, the AND-Copied <bought> appears in the complement domain of the conjunction. What English and Japanese share is the generalization that the gapped verb occurs in the complement of the conjunction *and/sosite*.

I claim that Principle (115) is better motivated if we consider AND-Copy as a specialized alternative to Select -- the operation of taking an item from the numeration. Recall that syntactic movement is composed of Copy and Merge, in which these two operations are tied together. Let us assume the same for AND-Copy: AND-Copy can take place only if Merge immediately follows. This then changes our assumption that AND-Copy operates within the numeration to the revised assumption that AND-Copy takes place upon Select

immediately followed by Merge. Let us illustrate the process with the revised AND-Copy application. The target sentence is repeated below:

(1) John-ga hon-o ▲ sosite Mary-ga hana-o katta
John-NOM book-ACC (bought) and Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

'John bought books, and Mary flowers.'

When the first conjunct is built, AND-Copy takes place as follows:

(119) First conjunct (= complement TP of *sosite*):

1. Select *hon-o* 'book-ACC'.
2. When selecting a verb to merge with the object NP *hon-o, sosite* creates a copy from the original verb *katta* 'bought', and this AND-Copied <*katta*> is merged with *hon-o* to build VP.

If the original verb *katta* in the numeration were selected to merge with *hon-o* at this point, then there would be no original verb which AND-Copy could create a copy from. As a result, the second conjunct would not be provided with any verb, and the derivation would fail. Thus the complement clause should

always contain AND-Copied items in order to have a successful derivation.

4.4 Derivation (Part 2)

In sections 4.2 and 4.3, I have made two major proposals: one is the structure of TP coordination, and the other is the formal licensing condition for AND-Copied items. In this section, I illustrate how the derivation proceeds from the point where two TP conjuncts have been built as shown in section 3.8 of chapter 3.

Recall that our target sentence is (1), which is repeated here:

(1) John-ga hon-o ▲ sosite Mary-ga hana-o katta
John-NOM book-ACC (bought) and Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, and Mary bought flowers.'

'John bought books, and Mary flowers.'

The numeration in (89) in section 3.8 is repeated below:

(89) Numeration after AND-Copy application (preliminary version):

{ (sosite, 1), (**John-ga, 1**), (**hon-o, 1**), (**Mary-ga, 1**), (**hana-o, 1**),
and John-NOM book-ACC Mary-NOM, flower-ACC

(katta, 1), <katta, 1>, (*v*, 2), (T, 2), (Foc, 2), (C, 2) }
bought bought

We can now revise the numeration, taking into account that (i) the phrases that are conjoined are TPs and that (ii) we have a new requirement that AND-Copy must be followed by Merge. Under the proposed TP coordination, a numeration that contains only one C will lead the derivation to converge since the coordinate structure for Gapping needs only one C. Also, AND-Copy operates only when followed by Merge, so the AND-Copied item <*katta*> is not yet available in the numeration until syntactic operations start. Thus, the revised version of the numeration looks like the following:

(120) Numeration after AND-Copy application (revised version):

{ (sosite, 1), (**John-ga, 1**), (**hon-o, 1**), (**Mary-ga, 1**), (**hana-o, 1**),
and John-NOM book-ACC Mary-NOM, flower-ACC

(katta, 1), ~~<katta, 1>~~, (*v*, 2), (T, 2), (Foc, 2), (C, 1) }
bought

Let us review the derivation of two TPs again, which have been built

already in chapter 3.[49] To recapitulate the process of the derivation up to this point after formation of the numeration, the following operations take place for each TP conjunct:

(121) Operations up to TP (revised version):

1a. [1st conjunct only] AND-Copy a verb, and merge the copied verb with an object NP to create a VP.

1b. [2nd conjunct only] Select the original verb, and merge it with an object NP to create a VP.

2. Select a subject NP, and merge it with VP.

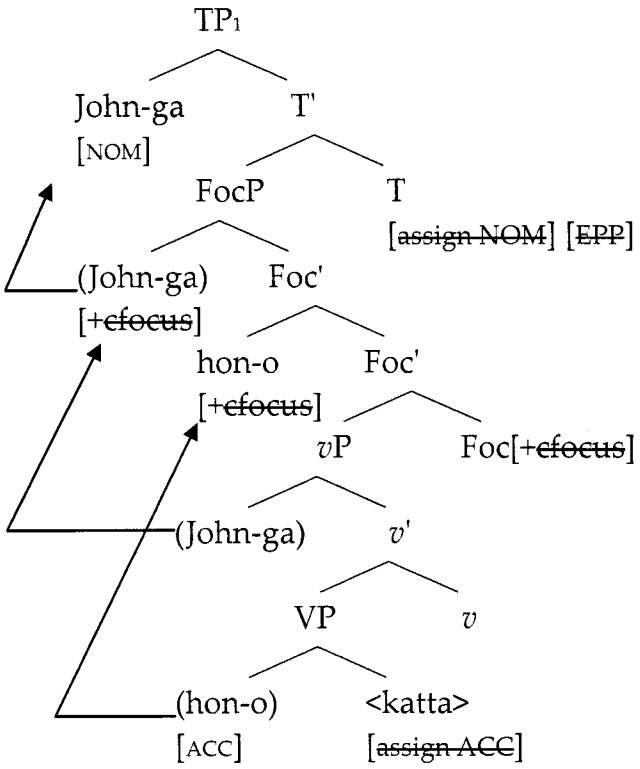
3. Move elements with [+cfocus] to Spec of FocP for focus feature checking.

4. Move the subject NP to Spec of TP for Case and feature checking.

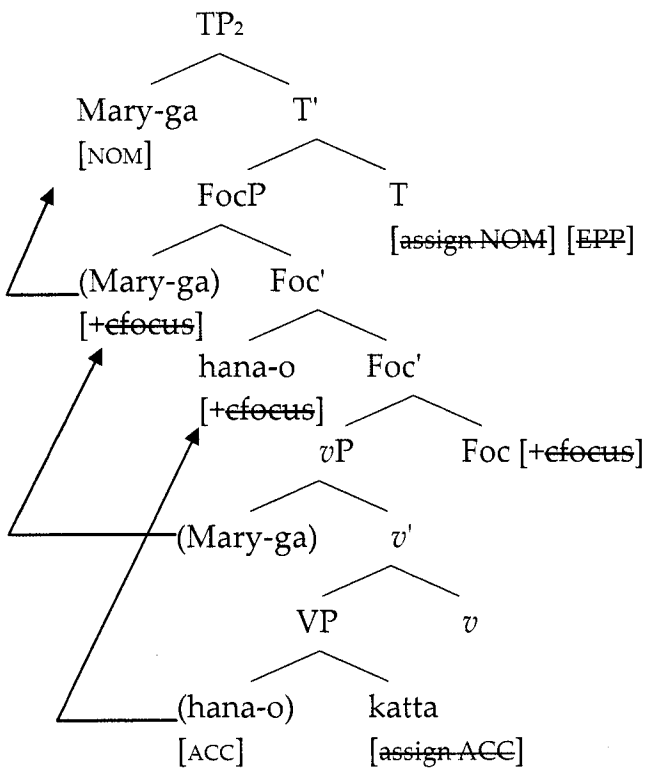
At TP, we have the following structure:

[49] In the tree diagram, angle brackets indicate the AND-Copied item while parentheses indicate the movement copy.

(122)a. The first TP conjunct in overt syntax:

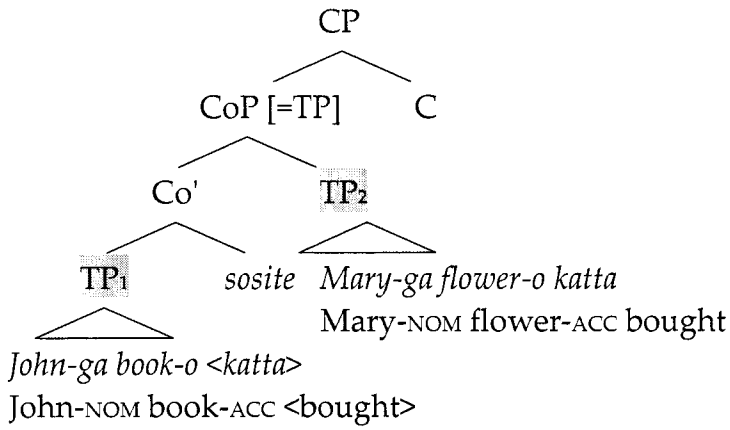


b. The second TP conjunct in overt syntax:



Once these two TPs are built, they are coordinated in such a way that the conjunction *sosite* takes TP_1 as a complement and TP_2 as a specifier. Recall that the AND-Copied item needs to be formally licensed by the conjunction *sosite* in the complement domain. This requirement renders the structure in which TP_1 contains the copy to be selected a successful derivation. The largest TP then merges with C to result in the following structure:

(123)



This CP is Spelled-Out. At PF, the AND-Copied item <*katta*> in the first conjunct results in the unpronounced item while the original item *katta* in the second conjunct is pronounced. The unpronounced one becomes a gap in the sentence.

4.5 Summary of Chapter 4

I have presented two problems that this chapter needs to provide solutions for: (i) the structure of coordination for Japanese Gapping and (ii) how the direction of the gap is determined.

I have argued that Gapping involves coordination of TPs, based on the empirical data in which a complementizer is not allowed in a gapped conjunct. Building on the structure proposed by Johannessen (1998), I have claimed that

the conjunction *sosite* as a head coordinates two TP conjuncts by taking one as its complement and the other as its specifier. In addition, I have discussed how identical categories between the complement and specifier of the head *sosite* are derived by assuming category feature copying of the head from its complement.

I have then argued that AND-Copied items must be formally licensed, following the licensing and full interpretation conditions suggested in the literature. The AND-Copied items must be merged in the complement conjunct in order to be licensed by the head. I have shown that this requirement correctly determines the direction of gaps, which occur in the complement conjunct in Japanese Gapping. Also, I have argued that the formal licensing principle is independently motivated by claiming that AND-Copy follows from the same requirement as syntactic movement that Copy and Merge are tied together: AND-Copy must be followed by Merge.

In the next chapter, I will discuss application of the proposed mechanism to additional cases of Gapping. Also I will explore the possible application of the proposal to other ellipsis.

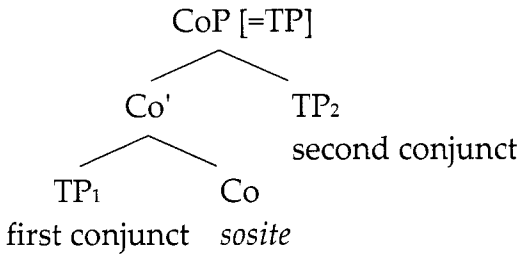
4.6 Appendix to Chapter 4

In section 4.2.2.3, I have proposed the structure for coordination. One

might ask whether the c-commanding relation between the conjuncts would pose a challenge to the proposed structure since the second conjunct is located structurally higher than the first conjunct although it comes after the first clause in linear order. In this section, I will show that this is not the case by discussing the relation between the proposed structure of coordination and the interpretation of pronouns.

In this chapter, I have proposed the structure for Japanese Gapping, which is motivated by the head-final structure:

(111) Proposed structure of coordination for Japanese Gapping:



In this structure, the second conjunct is located higher than the first conjunct and the second conjunct c-commands the first conjunct. Does this mean that pronouns should appear only in the first conjunct in Japanese Gapping? The answer is no. Observe the following examples:[50]

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[50] These cases have been brought to my attention by Pascual J. Masullo (personal communication).

(124)a.* John-ga kanojyo$_i$-o kyanpasu-de ▲ sosite
John-NOM her campus-on (saw) and

Fred-ga Mary$_i$-o basutei-de mikaketa
Fred-NOM Mary-ACC bus-stop-at saw

'(Lit.) John (saw) her$_i$ on campus, and Fred saw Mary$_i$ at a bus stop.'

b. John-ga Mary$_i$-o kyanpasu-de ▲ sosite
John-NOM Mary-ACC campus-on (saw) and

Fred-ga kanojyo$_i$-o basutei-de mikaketa
Fred-NOM her bus-stop-at saw

'(Lit.) John (saw) Mary$_i$ on campus, and Fred saw her$_i$ at a bus stop.'

Sentence (124a) contains the pronoun *kanojyo-o* 'her' in the first conjunct and is ungrammatical, while sentence (124b) contains the pronoun in the second conjunct and is grammatical.

The fact that the pronoun has to appear in the second conjunct as in sentence (124b) does not mean that the proposed structure in (111) cannot deal with it. As a matter of fact, the issue is not about the hierarchical relation between the first and second conjuncts in the proposed structure, but is about types of anaphora of pronouns: when the interpretation of the pronoun,

depends on something that does not c-command the pronoun as in (124b), the pronoun is considered as *conferential* anaphora, not *bound-variable* anaphora (Heim and Kratzer 1998).

This predicts that the antecedent of the pronoun cannot be a quantifier such as *subete-no hito* 'everyone' because quantifiers require syntactic binding of variables that involves c-commanding.[51] Observe the following sentence with a quantifier and a pronoun to illustrate this point:

(125) * [subete-no hito]$_i$-ga Mary-o ▲ sosite
everyone-NOM Mary-ACC (searched) and

kare$_i$-ga Sue-o sagasita
he-NOM Sue-ACC searched

'(Lit.) Everyone$_i$ (searched) Mary, and he$_i$ searched Sue.'

As predicted, this sentence is not acceptable for the reading of coreference of *subete-no hito* 'everyone' and *kare* 'he'. However, observe the following English sentence in (126), which is equivalent to Japanese sentence (125). This sentence

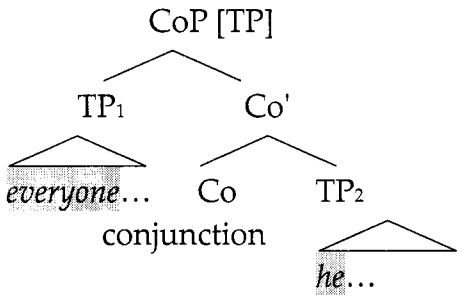
---

[51] C-command (Reinhart 1983):
A node α c-commands a node β if and only if
(i) neither node dominates the other, and
(ii) the first branching node dominating α dominates β.

shows that the ungrammaticality is not even caused by the hierarchical relation between the quantifier and the pronoun as shown in the structure of coordination for English in (127):

(126) * Everyone$_i$ searched Mary, and he$_i$ ▲ Sue.

(127) English:



The quantifier *everyone* is hierarchically higher than the pronoun *he* and yet the sentence is ungrammatical.

From these observations, I conclude that the issue with the interpretation of pronouns does not depend on the hierarchical relation between the first and second conjuncts in the proposed structure and that it is beyond the syntactic relation.

Furthermore, the issue is not limited to gapped sentences. The following example shows this point:

(128) ?? Everyone$_i$ bought a book, and he$_i$ read it.

The sentence is not a gapped sentence, and yet it shows marginal acceptance for the reading of coreference. Thus, it is an open and more general question why coreference is allowed in coordinate structures, which I will leave unsolved.

5 Additional Cases

In chapters 3 and 4, I have established a mechanism that accounts for Japanese Gapping from the selection of lexical items from lexicon to PF output.

In this chapter, I will show how the proposed approach accounts for additional cases of Gapping: (i) Gapping in multiple coordination of conjuncts and (ii) cases with Scrambling and Gapping. I will also discuss a case of multiple conjuncts with multiple different predicates. In addition, I will explore the possibility of extending the proposed operations to other cases of ellipsis found in ordinary additive coordination.

5.1 Derivation of Gapping in Multiple Coordination

Gapping can occur in a sentence with more than two conjuncts. Let us call such structures *multiple coordination*. The previous analyses of Japanese Gapping that we have reviewed in chapter 2 do not discuss Gapping in multiple coordination, implicitly assuming a temporary ternary-branching structure for two-conjunct Gapping examples.[52] In this section, I describe how

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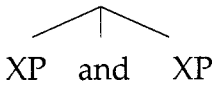
[52] Ternary-branching structure:

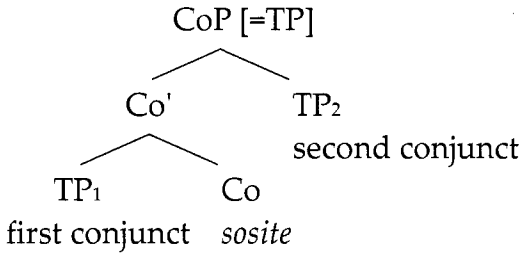
(i)



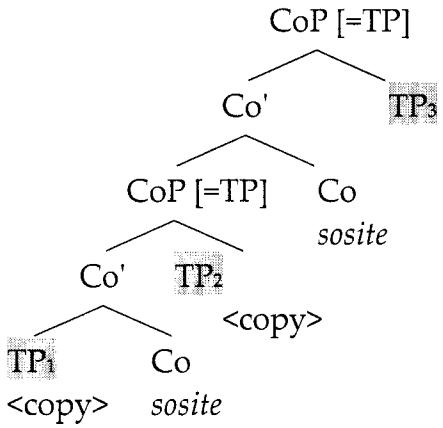
the proposed analysis can account for Gapping in multiple coordination.

Let us take a sentence composed of three conjuncts for example. Based on the basic coordinate structure for Japanese Gapping in (111), which is repeated here, the structure of multiple coordination results in (129):

(111) Proposed structure of coordination for Japanese Gapping:



(129) Gapping in multiple coordination:



This indicates that gaps are allowed to occur in TP_1 and TP_2, but not in TP_3 because TP_3 is not a domain for the formal licensing of AND-Copied items. This prediction is correct as the grammaticality of the following sentence

indicates:

(130) [TP1 John-ga hon-o ▲] sosite [TP2 Mary-ga hana-o ▲]
John-NOM book-ACC and Mary-NOM flower-ACC

sosite [TP3 Sue-ga ringo-o katta]
and Sue-NOM apple-ACC bought

'(Lit.) John (bought) books, and Mary (bought) flowers, and Sue bought apples.'

In this example, the following three conjuncts are coordinated in the sentence; (i) [TP1 John-ga hon-o ▲], (ii) [TP2 Mary-ga hana-o ▲] and (iii) [TP3 Sue-ga ringo-o katta]. The gap (▲) is located in TP_1 and TP_2, but not in TP_3, and as a result the sentence is grammatical. If the gap occurred in TP_3 instead of TP_2, for instance, the sentence would be ungrammatical, as predicted:

(131) * [TP1 John-ga hon-o ▲] sosite [TP2 Mary-ga hana-o katta]
John-NOM book-ACC and Mary-NOM flower-ACC bought

sosite [TP3 Sue-ga ringo-o ▲]
and Sue-NOM apple-ACC

'(Lit.) John (bought) books, and Mary bought flowers, and Sue (no verb) apples.'

The sentence is ruled out due to the violation of the formal licensing condition by the unlicensed AND-Copied item left in TP_3. Thus I have illustrated that the proposed structure and the formal licensing condition are able to account for Gapping in multiple coordination.

5.2 Derivation of Gapping with Scrambling

It is common that Gapping and Scrambling co-occur in a single sentence. The previous analyses reviewed in chapter 2, however, do not discuss such cases. This section illustrates that the analysis proposed here is able to account for a gapped sentence with a Scrambled element.

In the following sentence, the verb *ageta* 'gave' is gapped and *Sue-ni* 'Sue-DAT', is Scrambled to the initial position of the sentence (where it is Scrambled from will be discussed shortly):

(132) Sue-ni [John-ga hon-o ▲] sosite [Mary-ga hana-o
Sue-DAT John-NOM book-ACC (gave) and Mary-NOM flower-ACC

ageta]
gave

'(Lit.) To Sue, John (gave) books and Mary gave flowers.'

In the above sentence, the verb *ageta* and the indirect object *NP Sue-ni* are

shared between the conjuncts. Therefore, they are not assigned [+cfocus] and are subject to AND-Copy. So, the numeration for the example looks like the following:

(133) Numeration for Sentence (132):

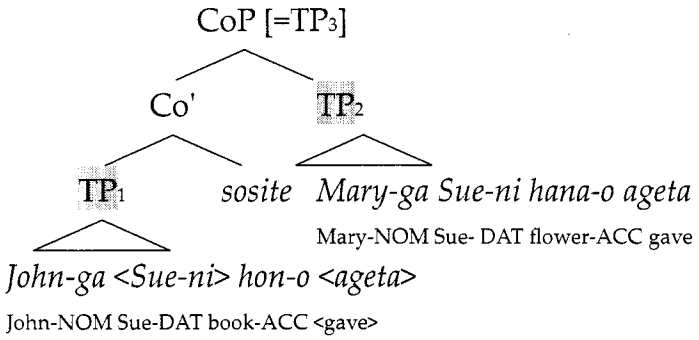
{(sosite, 1), (John-ga, 1), (hon-o, 1), (Mary-ga, 1), (hana-o, 1)
and John-NOM book-ACC Mary-NOM flower-ACC

(Sue-ni, 1), <Sue-ni, 1>, (ageta, 1), <ageta, 1>,
Sue-DAT gave

(*v*, 2), (T, 2), (Foc, 2), (C, 1)}

The AND-Copied items are merged in the first conjunct TP_1 while the original items are merged in the second conjunct TP_2, and TP_3 is built as follows:

(134)



Next, *Sue-ni* 'Sue-DAT' has to undergo Scrambling to adjoin to TP_3.[53] In this operation, *Sue-ni* in the higher conjunct (=TP_2) must move up in order to satisfy the *Minimal Link Condition* (MLC). The MLC is a part of the definition of Move, defined as follows in Chomsky (1995: 296, (82)):

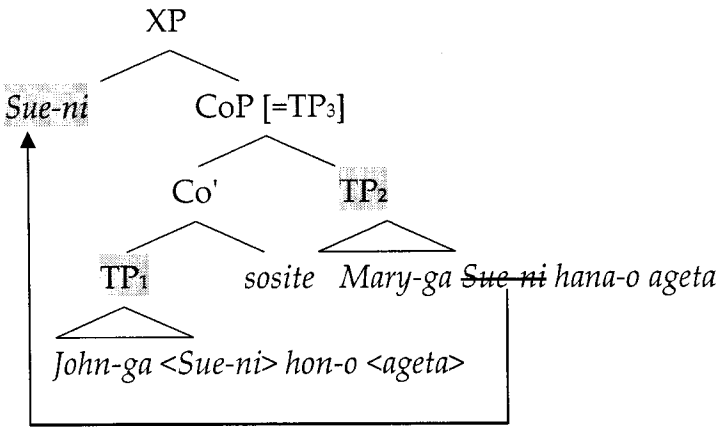
(135) Definition of Move (including the MLC):

α can raise to target K only if there is no legitimate operation Move β targeting K, where β is closer to K.

After Scrambling *Sue-ni* from the higher conjunct, the structure becomes as follows:

[53] I will not discuss details of the Scrambling operation since it is out of the scope of this research. I simply treat the operation as some feature-driven movement.

(136)



Scrambling <*Sue-ni*> in the lower conjunct (=TP_1) would violate (135).

After the Scrambling movement, the syntactic object XP merges with C to complete the derivation. The AND-Copied items <*Sue-ni*> and <*ageta*> merged in TP_1 are properly licensed by the conjunction. Thus, the proposed operations can generate Gapping with Scrambling.[54] [55]

---

[54] As for cases like the following example, in which both conjuncts have a Scrambled phrase that is not shared, the phrases undergo Scrambling within each conjunct:

(i) [$_{XP}$ Sue-ni$_i$ [$_{TP}$ John-ga t_i hon-o ▲]] sosite
Sue-DAT John-NOM book-ACC and

[$_{XP}$ Mary-ni$_j$ [$_{TP}$ Fred-ga t_j hana-o ageta]
Mary-DAT Fred-NOM flower-ACC gave

'(Lit.) To Sue, John (gave) books, and to Mary, Fred gave flowers.'

[55] The current analysis is not able to block the generation of the following

5.3 On Multiple Conjuncts with Multiple Predicates

I illustrate how a gapped sentence with multiple conjuncts with multiple different verbs is constructed in the proposed analysis and identify a theoretical challenge that the proposed analysis faces for such a case.[56]

Suppose that the target sentence is composed of three conjuncts with two different verbs:[57]

---

ungrammatical case of Scrambling, in which the shared phrase *Sue-ni* undergoes local Scrambling:

(i) * [XP ▲i [TP John-ga ti hon-o ▲]] sosite
(Sue-DAT) John-NOM book-ACC and

[XP Sue-nij [TP Mary-ga tj hana-o ageta]
Sue-DAT Mary-NOM flower-ACC gave

'(Lit.) John (gave) books, and to Sue, Mary gave flowers.'

[56] These cases have been brought to my attention by Hideo Makihara (personal communication).

[57] If the final form of the verb *kaita* in the past tense were used in the second conjunct in place of the gerund form *kaite*, then the sentence would end there and the third conjunct would be just another complete sentence. In order to have the single sentence with three conjuncts, the gerund form of the verb should be used in Japanese.

(137) [TP1 John-ga tegami-o ▲] sosite
John-NOM letter-ACC (write.GERUND) and

[TP2 Mary-ga hagaki-o kaite] sosite
Mary-NOM postcard-ACC write.GERUND and

[TP3 Fred-ga hon-o yonda]
Fred-NOM book-ACC read.PAST

'John wrote a letter, and Mary a postcard, and Fred read a book.'

The numeration for the verbs is as follows (in which all the rest is omitted for simplicity):

(138) { (kaite, 1), (yonda, 1) }
write.GERUND read.PAST

For generating the first conjunct, AND-Copy creates a copy of the verb *kaite* 'write.GERUND'. The copy <*kaite*> is merged in the first conjunct. For generating the second conjunct, if *yonda* 'read.PAST' were selected, the sentence would be ungrammatical because the non-final form of the verb *kaite* 'write.GERUND' is left for the third and final conjunct. Therefore *kaite* should be selected for the second conjunct, and *yonda* for the third conjunct for the derivation to converge.

The proposed analysis is able to account for cases such as the above. However, we face a problem when it comes to cases in which there are more than two verbs in gerund form for Merge. Take an example in which there are three different verbs for four conjuncts:[58]

(139) [TP1 John-ga tegami-o ▲] sosite
John-NOM letter-ACC (write.GERUND) and

[TP2 Mary-ga hagaki-o kaite] (sosite)
Mary-NOM postcard-ACC write.GERUND and

[TP3 Fred-ga hon-o katte] (sosite)
Fred-NOM book-ACC buy.GERUND and

[TP4 Tom-ga zassi-o yonda]
Tom-NOM magazine-ACC read.PAST

'(Lit.) John (wrote) a letter, Mary wrote a postcard, Fred bought a book, and Fred read a magazine.'

This sentence requires three different verbs; *kaite* 'write.GERUND', *katte* 'buy.GERUND' and *yonda* 'read.PAST'. Therefore, the numeration for the sentence contains the following three different verbs:

---

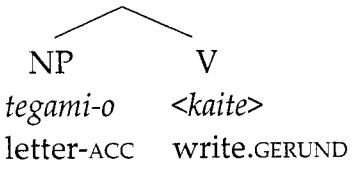
[58] When the gerund form of a verb is used, the use of *sosite* after the verb is redundant and the conjunction is often not pronounced.

(140) { (kaite, 1), (katte, 1), (yonda, 1) }

write.GERUND buy.GERUND read.PAST

Under the proposed analysis, first the verb *kaite* is AND-Copied and immediately Merged in order to construct the first conjunct [*John-ga tegami-o <kaite>*]:

(141)



Second, in order to construct the second conjunct, there are actually two options for the selection of the verb, because there are two gerund forms of overt verbs available in the numeration: *kaite* 'write.GERUND' and katte 'buy.GERUND'. If *katte* 'buy.GERUND' were selected instead of *kaite* 'write.GERUND' for the second conjunct, the third conjunct would have *kaite* 'write.GERUND'. The derivation would still converge and nothing would prevent such a selection. As a result, the following sentence would be generated:

(142) [TP1 John-ga tegami-o <kaite>] sosite
John-NOM letter-ACC (write.GERUND) and

[TP2 Mary-ga hagaki-o katte] (sosite)
Mary-NOM postcard-ACC buy.GERUND and

[TP3 Fred-ga hon-o kaite] (sosite)
Fred-NOM book-ACC write.GERUND and

[TP4 Tom-ga zassi-o yonda]
Tom-NOM magazine-ACC read.PAST

'(Lit.) John (wrote) a letter, Mary bought a postcard, Fred wrote a book, and Fred read a magazine.'

The second conjunct has *katte* 'buy.GERUND' while the third conjunct has *kaite* 'write.GERUND'.

A possible account to prevent the optionality of such a selection would be to assume that once the operation AND-Copy takes place and the copied verb is immediately Merged, then the original verb must be Selected and Merged for the immediately following conjunct. In other words, the copy must have its source element in the structurally closest position. This assumption is at least compatible with the idea that the copy and the original element need to form a unit to express the eventuality of the verb, as seen in examples of emphatic use of repeated verbs (section 3.5) and group predicates (section

3.10.1). Thus, the structural proximity between the copy and the original element seems relevant. Even if a derivation such as (142) might converge in overt syntax, interpretation of the eventuality of the predicate may fail at some other point. Therefore, it seems to me that this problem is not something that overt syntax will have to solve. I will leave the problem open.

5.4 Extending the Proposed Analysis to Other Cases of Ellipsis

In this section, I explore the possibility of extending the proposed operations (AND-Copy, focus movement and the licensing condition) to other cases of ellipsis in ordinary additive coordination and point out problems with the current approach.[59]

Subsection 5.4.1 discusses features that are shared between conjuncts in ordinary additive coordination. Based on these observations I claim that there is another key role that the conjunction *sosite* plays in the construction.

Subsection 5.4.2 explores the possibility of extending the application of the current approach to other cases of ellipsis found in ordinary additive coordination. Examining derivational processes, I point out potential problems with the proposed operations and seek solutions.

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[59] By *ordinary additive coordination*, I refer to *like-category* coordination with the *and* conjunction (e.g. VP and VP), excluding unlike-category coordination (e.g. AP and VP).

5.4.1 Functional Features

I have argued that identity of gapped elements is guaranteed by the AND-Copy operation. However, when we look at other cases of ellipsis (i.e. omission of non-predicates only) in ordinary additive coordination, there seem to be other features that need to be identical in addition to lexical items and their features: functional features. In what follows, I closely examine functional features such as clause type, tense, negation and mode to find out which feature is required to be identical in ordinary additive coordination.

I introduced data in chapter 1 that show that Gapping occurs only in *sosite* coordinate structures. Let us repeat the examples that support this point:

(11) a. * John-ga hon-o ▲ **demo/keredomo/sikasi**
John-NOM book-ACC (bought) **but/but/however**

Mary-ga hana-o katta
Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, but/however Mary bought flowers.'

b. * John-ga hon-o ▲ **matawa/aruiwa/mosikuwa**
John-NOM book-ACC (bought) **or/or/or**

Mary-ga hana-o katta
Mary-NOM flower-ACC bought

'(Lit.) John (bought) books, or Mary bought flowers.'

In ordinary coordination, *sikasi* 'but' can combine different clause types of conjuncts as shown below:

(143) Coordination with *sikasi* 'but':[60]

[John-ga inugoya-o tsukutta-ga] sikasi [dare-ga ki-o
John-NOM kennel-ACC built-but but who-NOM tree-ACC

ueta-no?]
planted-Q

'John built a kennel, but who planted a tree?'

Notice that the first conjunct is declarative while the second one is interrogative. It shows that the conjunction *sikasi* 'but' can coordinate different

[60] The sentence may sound a little awkward to some speakers because of the sequence of *katta-ga sikasi* 'bought-but, but". I have attached *-ga* 'but' to the verb *tsukutta* 'built' to indicate that the first conjunct is not a completed independent clause before the conjunction.

sentence types of conjuncts. The conjoined clauses must have the same force.

However, this is not the case for *sosite* 'and' conjunction. It is much less acceptable when conjuncts with different clause types are coordinated with *sosite*:

(144) Coordination with *sosite* 'and':

??	[John-ga	inugoya-o	tsukuri]	sosite	[dare-ga	ki-o
	John-NOM	kennel-ACC	build.GERUND	and	who-NOM	tree-ACC

ueta-no?]
planted-Q

'John built a kennel, and who planted a tree?'

For additive coordination, the clause types should be identical. This indicates that conjuncts in additive coordination share only one C while each conjunct in other types of coordination has its own C.

Also, notice that the verb in the first conjunct is in the gerund form (*tsukuri* 'build.GERUND') in the *sosite* coordination (144), while it is in the tensed form (*tsukutta* 'built') in the *sikasi* coordination (143). This fact indicates that in additive coordination, the predicate in the first conjunct relies on the tense value that the predicate in the second conjunct carries.

Next, let us look at more functional features such as tense, negation and mode. When we check these points for Gapping, we find that all of them should be identical in Gapping. Observe the following sentence:

(145) John-ga sara-o ▲ sosite Mary-ga koppu-o
John-NOM dish-ACC (V-gap) and Mary-NOM glass-ACC

kawakasa-nakat-ta kamosirenai
dry-not-PAST might

'(Lit.) John (might not have dried) dishes, and Mary might not have dried glasses.'

The gapped verb is interpreted as carrying the same tense, negation and mode as the second conjunct.

On the other hand, this is not the case for other ordinary additive coordination, which we will see below.

For tense, other ordinary additive coordination requires identical tense features among coordinate conjuncts:

(146) John-ga sara-o arai sosite Mary-ga koppu-o
John-NOM dish-ACC wash.GERUND and Mary-NOM glass-ACC

kawakasita
dried

'John washed dishes, and Mary dried glasses.'

The verb *arai* 'wash.GERUND' in the first conjunct should be interpreted in the past tense as *aratta* 'washed', following the same past tense that the verb *kawakasita* 'dried' carries in the second conjunct.

Second, negation should not be shared between conjuncts. In the following sentence, the first conjunct is interpreted as affirmative even though the second conjunct contains negation:

(147) John-ga sara-o arai sosite Mary-ga koppu-o
John-NOM dish-ACC wash.GERUND and Mary-NOM glass-ACC

kawakasa-nakat-ta
dry-not-PAST (did not dry)

'John washed dishes, and Mary did not dry glasses.'

The sentence is interpreted as "John washed dishes, and Mary did not dry glasses", not "John did not wash dishes, and Mary did not dry glasses".

If the first conjunct contained a negative polarity item (NPI), the sentence would become ungrammatical. NPIs must be in the c-command domain of negation to be licensed (Cf. Klima 1964).[61] This prediction is borne out as the following sentence containing the NPI *-sika* 'only' shows:

(148) * John-ga sara-sika arai sosite Mary-ga koppu-o
John-NOM dish-ONLY wash.GERUND and Mary-NOM glass-ACC

kawakasa-nakat-ta
dry-not-past (did not dry)

'John washed only dishes, and Mary did not dry glasses.'

The sentence fails because there is no negation in the first conjunct that properly licenses the NPI *sika* 'only' in *sara-sika* 'dish-only'.

Lastly, mode is shared between conjuncts. The verb in the first conjunct is interpreted to carry the same modal verb as the second predicate as shown in (149):

[61] For recent analyses of Japanese NPIs, please refer to Y. Kato (1994) and Tanaka (1997) and many others.

(149) John-ga sara-o arai sosite Mary-ga koppu-o
John-NOM dish-ACC wash.GERUND and Mary-NOM glass-ACC

kawakasa-nakat-ta kamosirenai
dry-not-past might

'John might have washed dishes, and Mary might not have dried glasses.'

As shown in the English translation, the predicate in the first conjunct is interpreted to carry the modal *kamosirenai* 'might'.

To summarize the discussion, I have described the facts that in ordinary additive coordination, (i) sentence type should be identical between conjuncts, and (ii) tense and mode are shared while negation is not.

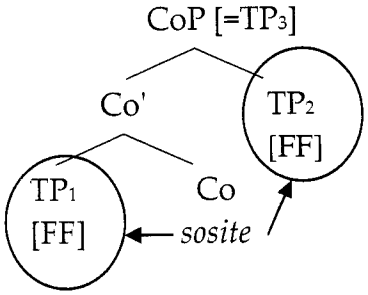
As shown by these facts, even if a predicate is not the AND-Copied item, there are more features that are shared among conjuncts in ordinary additive coordination. There are at least two ways to ensure the identity of these functional features: one way would be to assume that the AND-Copy operation copies certain functional items such as T, Neg and so on, as well as lexical items; another way would be to select appropriate functional items for each conjunct from a lexicon to a numeration, and then later to check the identity of certain functional features between conjuncts in syntax.

I reject the first solution because the fundamental motivation for

AND-Copy other than guaranteeing identity of lexical items between conjuncts is due to economy considerations, as is mentioned in section 3.5 of chapter 3: using a silent copy is more economical than using a full item. Given that, there is no motivation for copying functional items, which are already silent items.[62]

I adopt the second solution and claim that the additive conjunction naturally plays a key role in assuring identical items and features. Since identical items are already taken care of by the AND-Copy function, I propose that the additive conjunction performs as a checker of feature agreement between conjuncts. Let us refer to the function of the additive conjunction as *Spec-complement feature agreement*. This is schematically illustrated as follows (where [FF] represents features):

(150) Spec-Complement Feature Agreement:



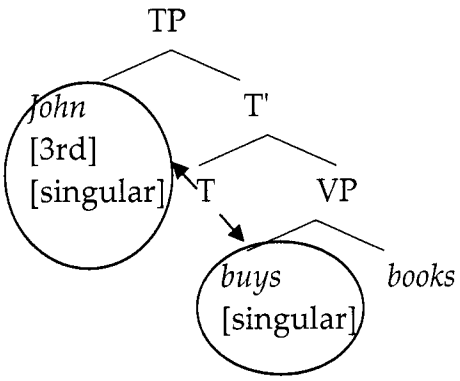
The additive conjunction *sosite* is responsible for assuring agreement of certain

[62] Besides, the AND-Copy operation targets [-cfocus], a feature that functional heads do not carry.

features between conjuncts (i.e. complement and specifier). In the case of ordinary additive coordination, tense and mode should be identical while negation need not be. For Gapping, all of tense, mode and negation should be identical between complement and specifier.

The mechanism that I have proposed is very similar to the mechanism of checking ϕ-feature agreement between a subject NP and a verb in English. The following tree diagram describes ϕ-feature agreement:

(151):



In the sentence *John buys books*, the number feature [singular] of the subject NP *John* needs to be in agreement with that of the verb *buys*. The head T is the mediator of checking agreement between the specifier *John* and the complement *buys*. Recall that I introduced Johannessen's (1998) proposal of Spec-head feature unification in coordination (section 4.2.2.2). I argue that we need Spec-complement feature agreement for additive coordination instead of

Johannessen's Spec-head feature unification because the former solves the issue of shared features of like-category coordination while the latter does not. Recall that according to Johannessen's analysis, the conjunction unifies potentially different features of the complement and specifier categories. This process cannot account for ordinary additive coordination with *sosite*, which requires that the complement and specifier categories be identical.

In this section, I have examined which features are shared in additive coordination including Gapping and identified that tense and mode should be shared in the construction while negation should not. Then I have proposed the conjunction's new function that assures feature agreement between its complement and specifier, based on this observation. In the next section, I will discuss the extended application of the proposed operations and potential problems with them.

5.4.2 Other Cases of Ellipsis in Ordinary Additive Coordination

In this section, I discuss other non-predicative ellipsis in ordinary additive coordination. Examples show an asymmetric pattern of direction of ellipsis. I show that my proposal may be extended to other cases of ellipsis but that there are a few technical issues with the proposed analysis that will require some modification.

In what follows, I examine the following constructions with shared element(s) (indicated in gray):

(152) Other cases of ellipsis in ordinary additive coordination in Japanese

a. Shared subject NP and verb (SOV + SOV)

b. Shared subject NP (SOV + SOV)

c. Shared object NP (SOV + SOV)

d. (Cf.) Shared object NP and verb (SOV + SOV) (Gapping)

After discussing these cases and potential problems with applying the proposal to them, I briefly touch upon possible solutions to the identified problems.

The proposed operations to account for Gapping include the AND-Copy operation, contrastive focus feature, focus movement, the licensing condition for AND-Copied items and Spec-complement feature agreement.

Let us take as an example the construction in (152a), in which a subject NP and a verb are omitted. In the literature this has been called the *Left Peripheral Deletion* (*LPD*) construction based on English examples: the left peripheral items *my mother* and *met with* in the second conjunct are omitted as illustrated in the following sentence:

(153) LPD: Identical subject NP and verb (English):

My mother met with the principal on Thursday, and ▲ ▲ the dean on Friday.

A Japanese example equivalent to the English LPD example is the following:

(154) Identical subject NP and verb (Japanese):

[John-ga mokuyoubi-ni inugoya-o ▲]
John-NOM Thursday-on kennel-ACC (built)

sosite [▲ kinyoubi-ni teeburu-o tsukutta]
and (John-NOM) Friday-on table-ACC built

'(Lit.) John (built) a kennel on Thursday, and (John) built a table on Friday.'

'John built a kennel on Thursday, and a table on Friday.'

Interestingly, the elided part in the Japanese sentence is not the left peripheral elements: the verb in the first conjunct and the subject NP in the second conjunct are omitted.

The derivation of Japanese sentence (154) under the current approach is described as follows. First, the subject NP *John-ga* 'John-NOM' and the verb

tsukutta 'built' are identified as targets of the AND-Copy operation due to the lack of the [+cfocus] feature. As a result, the numeration for the sentence is formed as in (155): [63]

(155) Numeration for (154):

{ (sosite, 1), (John-ga, 1), <John-ga, 1>, **(mokuyoubi-ni, 1)**,
and John-NOM Thursday-on

(inugoya-o, 1), **(kinyoubi-ni, 1)**, **(teeburu-o, 1)**, (tsukutta, 1),
kennel-ACC Friday-ni table-ACC built

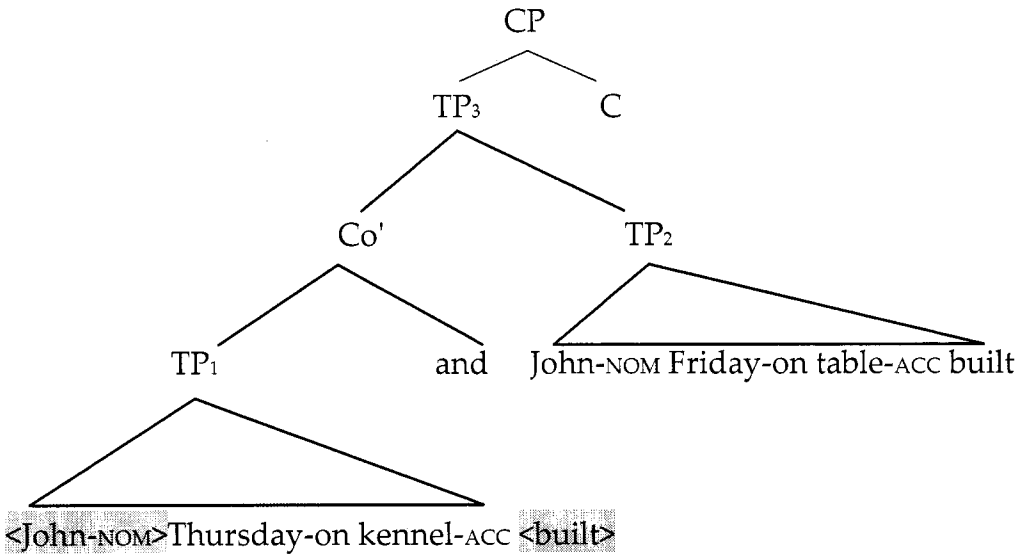
<tsukutta, 1>, (*v*, 2), (T, 2), (Foc, 2), (C, 1) }

Second, two TPs are built and combined by the conjunction. The complement conjunct of the conjunction *sosite* contains AND-Copied *John-ga* and *tsukutta,* where the silent copies are formally licensed by the conjunction as shown in the simplified tree diagram below:

---

[63] We have revised AND-Copy in such a way that shared elements are AND-Copied at the time when they are selected for the immediately following Merge operation. But for the sake of simple illustration of the process, I show the copied items in the numeration.

(156)



The derivation of the sentence is expected to be successful. On the contrary, it incorrectly produces an ungrammatical sentence. The output of PF for this syntactic object, which is (157), is not the same as our target sentence (154):

(157) * [▲ mokuyoubi-ni inugoya-o ▲]
(John-NOM) Thursday-on kennel-ACC (built)

sosite [John-ga kinyoubi-ni teeburu-o tsukutta]
and (John-NOM) Friday-on table-ACC built

'(Lit.) (John) (built) a kennel on Thursday, and John built a table on Friday.'

'John built a kennel on Thursday, and a table on Friday.'

What is different is that the copy of the subject NP *John-ga* appears in the second conjunct in target sentence (154), while it appears in the first conjunct in the derived sentence in (157).

This asymmetric direction of ellipsis raises a problem for the current approach if I try to apply the proposed analysis to this construction. It implies that the current structure for the formal licensing needs to be modified. Before seeking solutions to the problem, we need to look at other cases of omission in additive coordination to capture a pattern of direction of ellipsis.

Consider the following cases of omitting non-predicative elements in ordinary additive coordination. Both the subject and object NPs are omitted in the second conjunct as in (158) and (159):

(158) Identical subject NP *John-ga* 'John-NOM':

[John-ga	inugoya-o	tsukuri]	sosite	[▲	ki-o	ueta]
John-NOM	kennel-ACC	build.GERUND	and		tree-ACC	planted

'John built a kennel and (John) planted a tree.'

(159) Identical object NP *sara-o* 'dish-ACC':

[John-ga sara-o arai] sosite [Mary-ga ▲ kawakasita]
John-NOM dish-ACC wash.GERUND and Mary-NOM dried

'John washed dishes and Mary dried (dishes).'

Interestingly, the object NP is elided in the first conjunct if the verb is omitted as well (i.e. in Gapping):

(160) Gapping (identical *teeburu-o* 'table-ACC' and *tsukutta* 'built'):

[John-ga mokuyoubi-ni ▲ ▲]
John-NOM Thursday-on (table-ACC) (built)

sosite [Mary-ga kinyoubi-ni teeburu-o tsukutta]
and Mary-NOM Friday-on table-ACC built

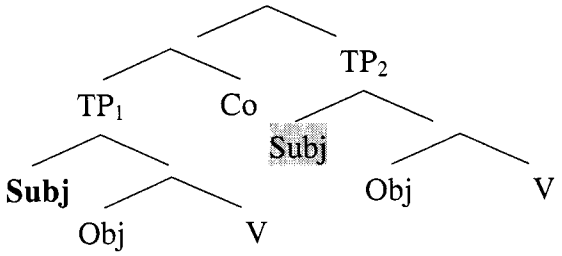
'(Lit.) John (built) (a table) on Thursday, and Mary built a table on Friday.'

The asymmetric direction of ellipsis that we have seen above is summarized below.[64] In the tree diagrams, the gray shows the omitted element:

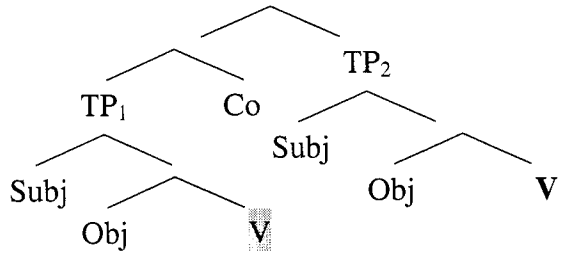
[64] Van Oirsouw (1987: section 2.2) describes examples of asymmetry in the ellipsis site for Dutch, English and German.

(161) Summary of asymmetric direction of ellipsis in Japanese:

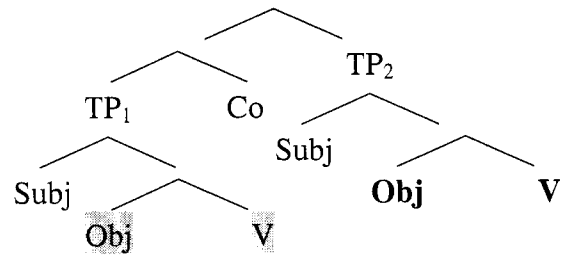
a. **Subject NPs** are always elided in the specifier conjunct (e.g. (158), (154)).



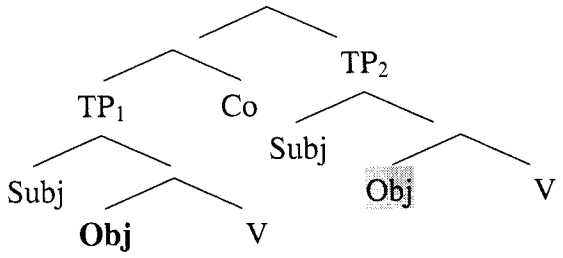
b. **Verbs** are always elided in the complement conjunct (= Gapping).



c. **Object NPs** are elided in the complement conjunct in Gapping (e.g. (160)).



d. **Object NPs** are elided in the specifier conjunct in non-Gapping (e.g. (159)).

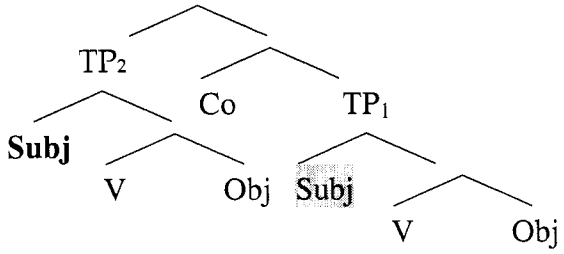


What is observed in these patterns is that (i) left-branching elements (subject and object NPs) should be overt within the left-branching TP (which is the complement conjunct), (ii) right-branching elements (verbs) should be overt within the right-branching TP (which is the specifier conjunct), and (iii) identical object NPs in Gapping do not follow the pattern of branching direction. This generalization seems to be true of English as well. Observe the following English examples and tree diagrams:

(162) Summary of direction of ellipsis in English:

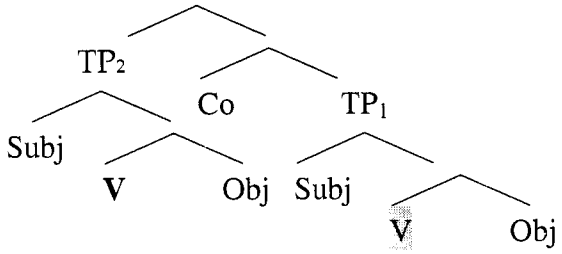
a. **Identical subject NPs:**

John built a kennel and ▲ planted a tree.



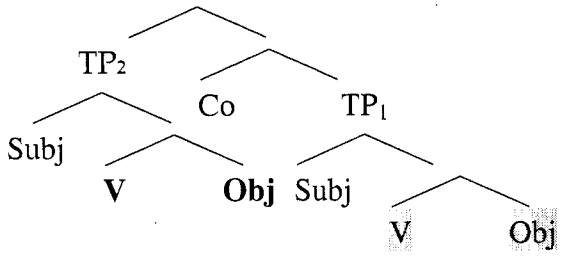
b. **Identical verbs (= Gapping):**

John **bought** books, and Mary ▲ flowers.



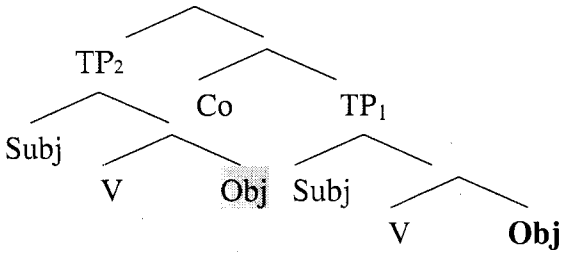
c. **Identical object NPs in Gapping:**

John **planted a tree** on Thursday, and Mary ▲ ▲ on Friday.



d. **Identical object NPs in non-Gapping**:

John washed ▲, and Mary dried **dishes.**



How can we account for the asymmetric direction of ellipsis? In what follows, I will discuss possible solutions to this issue for Japanese.

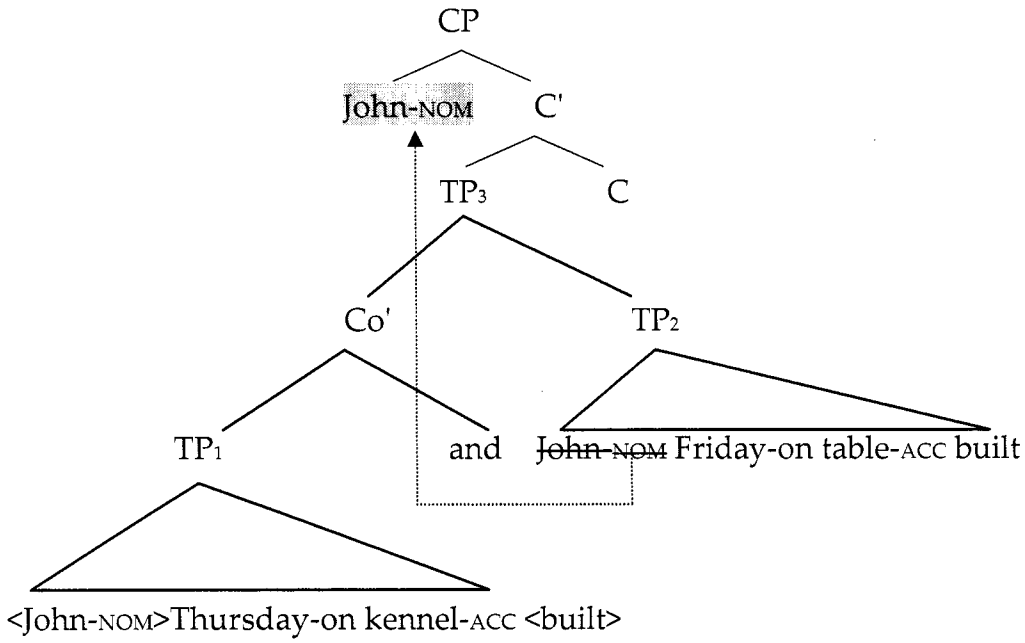
One possible way to account for (161a) might be to assume that a subject NP further moves up from Spec-TP to Spec-CP. Under the *Minimal Link Condition* (MLC), a subject NP that is closer to the target needs to move up.[65] If we apply this idea to revise the LPD derivation in (156) to obtain a successful derivation, it will look like the following:

---

[65] The definition of MLC in section 5.2 is repeated here:

(135) Definition of Move (including the MLC):
α can raise to target K only if there is no legitimate operation Move β targeting K, where β is closer to K.

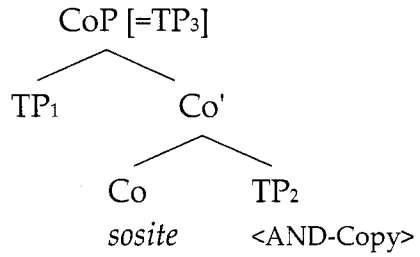
(156')



John-ga in TP_2 moves to Spec-CP so that it will be pronounced first when this object is Spelled-Out to PF.

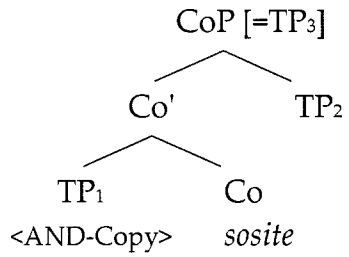
For case (161d) versus Gapping (161b, c), we may need two distinct structures to account for each case. For example, the following structure might deal with directionality of non-predicative ellipsis:

(163) Coordination for non-predicative ellipsis:



In this configuration, the head takes its complement on its right (=TP_2). The structure is different from the configuration for Gapping, in which the complement is located on the left of the head (repeated below):

(111) Coordination for predicative ellipsis (=Gapping):



In (111), the AND-Copied item in TP_1 is formally licensed by the head *sosite*, while in (163) the AND-Copied item in TP_2 is licensed by the head. Structure (163) also covers the fact in (161a) that subject NPs are always elided in the second conjunct, but it still cannot account for the LPD case in which the subject NP and the verb are elided in different conjuncts.

Even if this flexibility in the structure of coordination is correct, it is still

an open question what could cause such flexibility. It may be due to the fact that the additive conjunction is not specified with features that fix head direction. The possible solutions to the issues here are preliminary and not well formulated. I leave these issues for future investigation.

5.5 Summary of Chapter 5

In this chapter, I have accounted for the derivation of (i) Gapping in multiple coordination, (ii) Gapping with Scrambling and (iii) cases of multiple conjuncts with multiple different predicates, by applying the proposed mechanism to these cases. In addition, I have explored possibilities of extending the proposal to other cases of non-predicative ellipsis found in ordinary additive coordination. I have identified issues of asymmetric direction of ellipsis, which the current approach is not able to explain sufficiently. I have also discussed preliminary solutions to these issues.

6 Concluding Remarks

6.1 Summary

In this study I have investigated Japanese Gapping, one of several elliptical constructions, from the viewpoint of its correlation with additive coordination, in the framework of minimalist syntax (Chomsky 1995). I have addressed the following major questions regarding Gapping: (i) What is the source of the phonologically empty element (the gap)?, (ii) Why is the gapped element interpreted as identical to the overt one?, and (iii) Why does the gap occur in a non-final conjunct or conjuncts in Japanese?

I have argued that the conjunction *sosite* has the capacity to produce a copy of items, an operation which I have called AND-Copy. I have shown that this capacity is able to provide explanations for every question listed above. Under the proposed approach, the source of the gap is a silent copy and the silent copy is a result of the economy requirement. This can account for why Gapping is restricted to the conjunction *sosite*: it is because only this conjunction is able to provide a silent copy through the AND-Copy operation.

Also, creating a copy of the shared element, which is a non-contrastive item, can guarantee identity between the gapped element and the overt

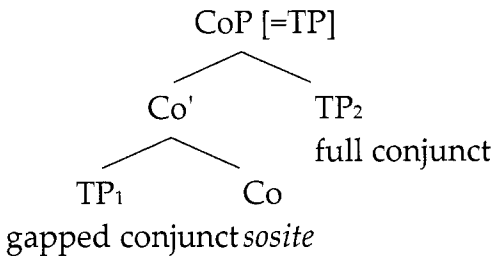
element. Furthermore, AND-Copy correctly determines which conjunct should contain the silent copy, when it is coupled with the proposed structure for coordination.

The following describes how I have formulated the proposal. First I have argued that coordinated conjuncts in Gapping contain contrastive elements, which should be represented in terms of a feature, [+cfocus]. Then I have proposed that the conjunction *sosite* 'and' has a copy operation called *AND-Copy*. AND-Copy creates a copy of lexical items that do not carry [+cfocus] (i.e. lexical items that are shared between conjuncts) in the numeration when Select applies. I have argued that the operation copies all information but the phonological matrix in the targeted lexical item (a silent copy operation), following the concept of economy that a silent item is less costly than a pronounced item for syntactic operations to follow. For feature checking of [+cfocus], remnants in the gapped conjunct and correspondents in the full conjunct are assumed to undergo overt focus movement to specifiers of *Focus Phrase* (*FocP*) in each respective conjunct.

In accounting for how and where gaps occur, I have proposed a hierarchical structure of coordination for Japanese Gapping, in which the conjunction projects to *CoP* and takes a complement and a specifier, following Johannessen 1998. Showing that a complementizer is not allowed to appear in

a gapped conjunct, I have argued that conjuncts for Gapping should be coordinated at TP level, not at CP level. The proposed structure is as follows:

(164) Proposed structure of coordination for Japanese Gapping:



Next, I have claimed that AND-Copied items as phonologically empty elements should be formally licensed in order to be legitimate objects. Following Chomsky (1995), I have proposed that AND-Copied items must be formally licensed by the conjunction (i.e. the head of *CoP*) in its *complement domain*. The complement domain in the above tree diagram is the lower TP. I have argued that the formal licensing principle is independently motivated by adopting the existing requirement that Copy must be followed by Merge. AND-Copy creates a copy only when followed by Merge. In other words, copied items need to be merged in creating a complement phrase. Otherwise, AND-Copy would lose the source to copy from. Thus, AND-Copied items are required to appear in the complement phrase for a successful derivation.

As an extension of the proposal (AND-Copy, coordinate phrase

projection and conjunction licensing), I have demonstrated that the proposed approach can account for two common constructions, (i) Gapping in multiple coordination and (ii) Gapping with Scrambled elements. In addition, I have identified shared functional features in ordinary additive coordination and proposed that the additive conjunction should function to check Spec-head feature agreement on functional features that require identity between conjuncts. Finally I have extended my analysis to non-predicative ellipsis found in ordinary additive coordination and examined whether the current approach is able to deal with it. I have identified potential issues with the proposal and discussed possible solutions.

The proposed approach has been made possible by the assumptions of the Minimalist Program. Minimalist syntax has provided operations such as Select, Copy and Merge, and the notion of economy requirements, which traditional grammars do not provide. All of these minimalist assumptions have played a crucial role in the proposed approach.

6.2 Reinterpretation of Proposal in Model of Chomsky 2000, 2001

As I stated in chapter 1, this study has been pursued within the framework of the *Minimalist Program* (*MP*) developed by Chomsky (1995). For areas of future research, I briefly describe how the proposed analysis would be

interpreted in a newer theoretical model built in *Minimalist Inquiries* (*MI*) by Chomsky (2000) and in *Derivation by Phase* (*DbP*) by Chomsky (2001).

There are at least five major differences in MI/DbP from MP, which are relevant to the following discussion. First, the concept of the *phase* (which is CP and *v*P) is introduced in the MI/DbP model. Second, lexical items selected from the lexicon are placed in a *lexical array* first and then placed in a working memory space called a *subarray* by the *phase*. Third, feature checking is dissociated from movement. Fourth, movement is indirectly driven by uninterpretable features. Fifth, only an item in the Spec of CP or *v*P is visible and allowed to move out of the phase to a higher position.

Let us have a brief look at the proposed mechanism once again:

(165) Proposed Mechanism:

a. The AND-Copy operation by the additive conjunction *sosite*

b. Feature checking of the comparative focus feature [+cfocus] by overt focus movement

c. TP coordination structure

d. The formal licensing condition for AND-Copied items by *sosite* in the complement domain of the conjunction

In what follows, I reevaluate each of these by discussing the relevant part of the assumptions made in Chomsky 2000 and 2001.

For (165a), the AND-Copy operation should apply to lexical items in a *lexical array*, not in a *subarray* in the new model, because lexical items for the smaller *phase* *v*P do not contain the conjunction *sosite* and the copy operation would not take place if it were assumed to operate in the subarray.

Feature checking of [+cfocus] by moving a focused item to Spec of FocP in the proposal (165b) would receive a different interpretation under the new assumption of dissociating feature checking from movement. Feature checking is now called *Agree* in the new model, and it is defined to operate under the same type of features between a *probe* and a *goal*. In order for Agree to apply, both the probe and the goal must have some uninterpretable feature that renders them *active*. If the identical feature is unvalued for the goal and valued for the probe, the probe and the goal *Match*, and the unvalued feature is assigned a value.[66] Let us illustrate the process using the following example:

---

[66] In DbP, Chomsky newly introduces the *valued/unvalued* feature mechanism and proposes that uninterpretable features on a head enter the derivation unvalued.

(166) Agree in MI/DbP:

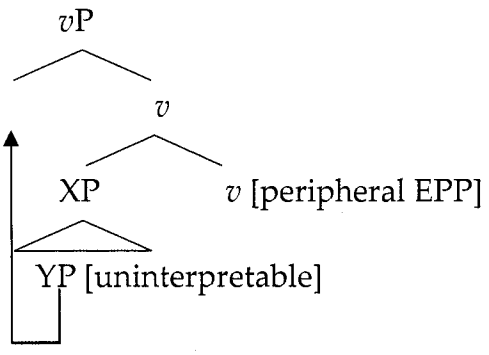
probe	goal		probe	goal
		Agree ➔		
T	*students*		*T*	*students*
person[]	person[3]		person[3]	person[3]
number[]	number[pl]		number[pl]	number[pl]
	Case[]			Case[nom]

In this example, the probe is *T*, which contains unvalued ϕ-features (as shown in *person[]* and *number[]*). The goal is *students*, which contains unvalued Case feature (as in *Case[]*). For the agreement operation to take place, both the probe and the goal must be *active*, which unvalued uninterpretable features in each make happen. After agreement, ϕ-features of the probe T and the Case feature of the goal *students* are assigned the respective values as shown in gray.

Let us now consider the application of this agreement operation to our contrastive focus feature. If a feature were defined as uninterpretable, then that feature on the head would enter the derivation unvalued (such as *cfocus[]*) and a Match relation would be established between the head Foc (= the probe with valued *cfocus[+]*) and a focused element (= the goal with unvalued *cfocus[]*). The Agree operation assigns the feature of the goal a value [+]. On the other hand, if it were defined as interpretable, then no agreement operation would take place.

For movement, it depends on interpretability of the feature whether or not a focused element moves under the new definition of movement in MI/DbP. According to Chomsky 2000:108, elements that can move out of the phase (CP or *v*P) are a head and an element located in the Spec of the phase. In order for the element to move to the Spec of the phase, the phase must contain an uninterpretable feature, which makes assignment of the peripheral EPP feature to the head of the phase possible. Once the head obtains the peripheral EPP feature, it causes the element to move to its Spec position.[67] Let us illustrate the process below:

(167) Movement:



For focus movement, if the feature [cfocus] were uninterpretable, then a focused element would move to the Spec of *v*P to satisfy the peripheral EPP feature of the head *v*. But nothing would cause further movement of the

[67] This is called *indirect feature-driven movement* (*IFM*) (Chomsky 2000:108).

focused element from the Spec of *v*P. If the feature were interpretable, no assignment of the EPP feature would be rendered, hence no movement.

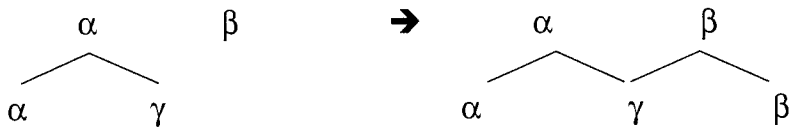
The proposal in (165c), TP coordination structure, is more straightforward in the new model. As already mentioned above, Chomsky proposes the concept of the phase (CP or *v*P). When the phase is completed, it is sent to Spell-Out. Under such definition, TP is not defined as phase; therefore TP will not be Spelled-Out. This is expected because TP_1 in Japanese Gapping is not a complete phrase yet and it should not be sent to Spell-Out.

The formal licensing of AND-Copied items in (165d) seems tenable in the new model as long as AND-Copied items appear in the complement domain of the conjunction. However, more details will need to be thoroughly investigated.

The *Merge* operation in Chomsky 1995 is now called *Internal Merge* and the *Move* operation is called *External Merge* in Chomsky 2001. Based on the properties of these two types of Merge, Citko (2005) proposes a new type of Merge called *Parallel Merge* to account for across-the-board (ATB) *wh*-questions in coordinate structures. I review this approach to see if it can apply to Gapping as well.

According to Citko, Parallel Merge generates symmetric and multidominant structures as shown below:

(168) Parallel Merge:



(Citko 2005:476)

When γ is shared between α and β, Parallel Merge combines α and β by merging β with γ, a subpart of α.

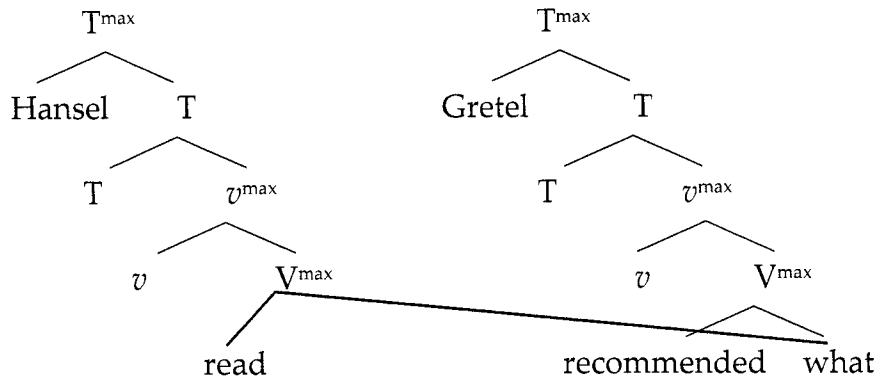
The shared element must undergo overt movement to raise to a higher position in order for the Parallel-Merged structure to become asymmetric. Otherwise, the structure would remain symmetric and would not be successfully linearized upon Spell-Out. Citko (2005:478 n. 7) assumes that movement is driven by uninterpretable formal features. The combination of Parallel Merge and overt movement of a shared element works very well with the ATB wh-questions. Sentence (169) is an example of an ATB wh-question:

(169) I wonder what Gretel recommended and Hansel read.

(Citko 2005:479 (7))

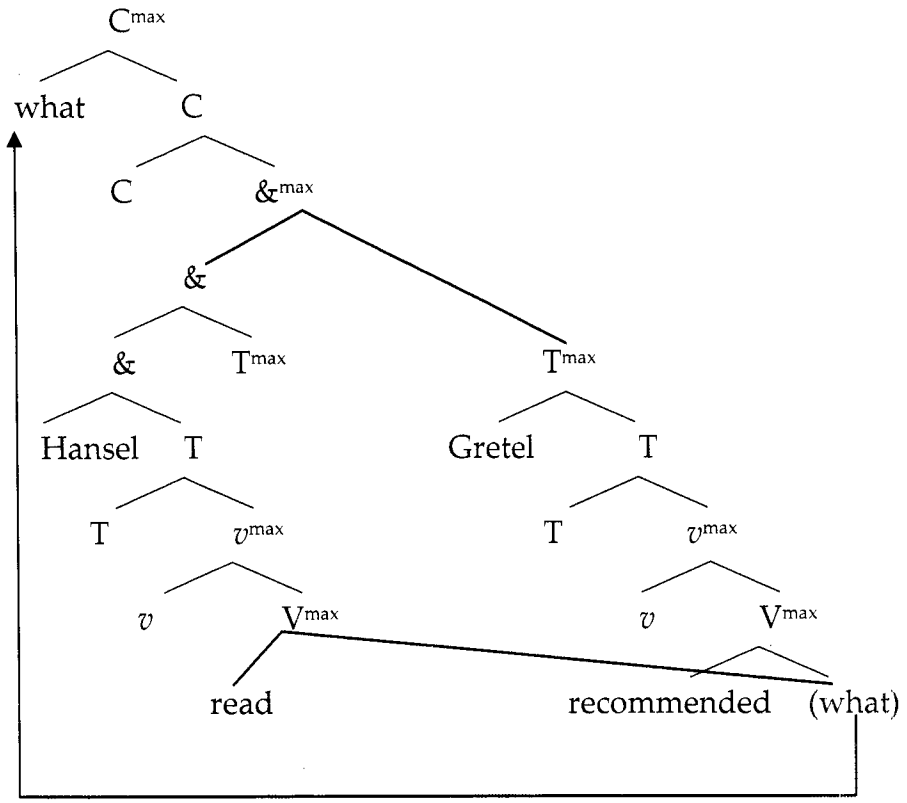
In this sentence, the wh-word *what* is shared between the two clauses. Therefore, Parallel Merge applies to it as follows:

(170) Parallel Merge of *what*:



Next, *what* moves up to Spec of C to satisfy an uninterpretable EPP wh-feature that the head C carries:

(171) Overt Internal Merge of *what* to Spec of C:



Now the structure has become asymmetric by having the shared element *what* in Spec of C, and it can be Spelled-Out to be linearized successfully.

If we apply this approach to Gapping, at least the following two aspects of Gapping would pose challenges to the approach: (i) shared elements in Gapping may not always carry uninterpretable features and (ii) Gapping may contain more than one shared element. The first point is a central challenge to this approach: It causes the Parallel-Merged structure to remain symmetric because nothing may trigger the shared element to move up to a higher

position in Gapping. The second point is less problematic than the first one but it poses a question of whether Parallel Merge would be able to deal with multiple shared elements.

Given these observations, I conclude that the Parallel Merge account would not apply to Gapping without further modification because of the requirement of overt Internal Merge of the shared element.

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VITA

Kumiko Kato was born in Seto, Aichi, Japan. She grew up in Seto and currently lives in Redmond, Washington. At Nanzan University in Nagoya, Japan, she earned a Bachelor of Arts degree in English Linguistics, and later earned a Master of Arts in Linguistics from the University of Reading, UK. In 2006 she completed a Doctor of Philosophy in Linguistics at the University of Washington.