

Coordination, Dependency, and Gapping in Japanese at the Interfaces *

1. Introduction

Ellipsis in natural language has received a significant attention in the linguistic literature since the proper analysis of this phenomenon provides us with an ideal important window into the way the various components of grammar mutually interact. Accordingly, various attempts have been made to identify and elucidate various types of ellipsis (e.g. VP ellipsis, DP/NP ellipsis, sluicing, stripping, gapping, swiping, left-peripheral deletion, pseudogapping, to mention a few) to advance our understanding of the nature of the syntax-semantics-phonology crossroad. In the generative tradition, deletion and copy theories have been major competitors in the area of ellipsis since they were first proposed by Ross (1967), Sag (1976) and Williams (1977). The debate between the two theories are still live until now, though theoretical advances since then have yielded a variety of new analytical alternatives that incorporate insight from both theories.

The purpose of this paper is to address issues raised by ellipsis concerning linguistic interfaces through a case study with gapping constructions in Japanese, as illustrated in (1).

* I am very grateful to Caroline Heycock and two anonymous *JL* reviewers for extremely valuable comments on both the content and structure of an earlier version of this paper. All remaining errors are my own responsibility.

- (1) Takesi-ga zassi-o \emptyset_V , sosite Kaori-ga hon-o katta.
 Takesi-Nom magazine-Acc and Kaori-Nom book-Acc bought
 ‘Lit. Takesi (bought) a magazine, and Kaori bought a book.’

I propose that gapping in Japanese is best analyzed as the product of the Coordinate and Dependent Ellipses within the anaphoric theory of deletion presented in Williams (1997) and further articulated in Ackema and Szendrői (2002). According to this theory, a coordinate structure arises from the projection of a bivalent lexical item of the form $[X, X] P \rightarrow XP \text{ and } XP$. William’s theory analyzes English gapping as an instance of the projection of the double-headed verb, one of whose heads is null, as shown in (2a), and anaphoric to the corresponding element in the full-fledged conjunct. This process, named *Coordinate Ellipsis/CE*, yields gapping as in (2b).

(2)a. $[V, 0] P \rightarrow VP \text{ and } 0P$

b. [give the book to Mary]_{VP} and [0V the record to Sue]_{VP} (Williams 1997: 621)

The CE head, in turn, licenses further ellipsis of its grammatical dependent(s) such as its complement. This process, dubbed *Dependent Ellipsis/DE* (Ackema and Szendrői 2002), is illustrated in (3a, b). ((3a, b) is from Williams 1997: 621; (3c) is from Williams 1997: 623.)

- (3)a. John gave Mary a book today and 0_V 0_{NP} a record yesterday.
- b. * John gave Mary a book today and gave 0_{NP} a record yesterday.
- c. John saw pictures of Mary on Tuesday and [0_V [0_N of Sue] _{NP} on Wednesday].

The contrast between (3a) and (3b) shows that the DE of the indirect object in the gapped conjunct is parasitic on the CE of the verb in the full-fledged conjunct. The grammaticality of (3c) shows that DE may target only the head of the dependent of the 0_V (i.e. *pictures*).

I demonstrate in this paper that the CE/DE theory briefly illustrated above provides a straightforward explanation of various core characteristics of gapping in Japanese (and other languages) related to the information structure/pitch accent of overt remnants in gapping, the role of parallel coordination, and the parallelism constraint. The present analysis also correctly predicts more subtle properties of gapping, some unique to Japanese and others more crosslinguistically robust (e.g. island-insensitivity, case particle/adposition-omission, strict identity readings in gapping with homonyms, left branch conditions, etc), that would remain mysterious under earlier analyses of this construction that resort to PF movement, LF copying, PF deletion, and combinations thereof.

This paper is organized as follows. The following section present a detailed exposition of William's (1997) anaphoric theory of deletion. Section 3 shows that this theory directly derives core properties of gapping in Japanese. Section 4 compare our analysis with several existing analyses for gapping and other elliptic phenomena in Japanese and other languages such as Korean and English.

The past analyses examined in this section include PF movement analyses (Maling 1972, Kuno 1978, Saito 1987, Koizumi 2000), LF Copy analyses (Abe and Hoshi 1997), PF Deletion analyses (Fukui and Sakai 2003; Mukai 2003; Hartmann 2000), Movement + PF Deletion analyses (Jayaseelan 1990, Sohn 1994; Kim 1997, 1998), and Argument Ellipsis analyses (Oku 1998, Kim 1999, Saito 2003, Takahashi 2006, 2008). It is shown that these analyses are faced with various empirical problems that can be successfully resolved under our present analysis of gapping. Section 5 explores the comparative syntax of gapping in English and Japanese. Section 6 discusses one potential challenge to the proposed analysis originally pointed out by Abe and Hoshi (1997) and shows that it can be resolved as a special case of the parallelism constraint at work in real-time processing of gapping constructions. Section 7 concludes the discussion of this paper.

2. Coordinate Ellipsis, Dependent Ellipsis, and the Disanaphora Law: Williams (1997)

As stated briefly in the introductory section, Williams (1997) proposes that a coordinate structure arises as the projection of a bivalent lexical item of form $[X, X] P \rightarrow XP \text{ and } XP$. CE is the process whereby one of the two heads of the lexical item remains null, as in (2a). The CE head, in turn, licenses ellipsis of (the head of) its grammatical dependent(s) such as the verb complement. As a general principle governing deletion and deaccenting, William further proposes the Disanaphora Law. This principle, informally defined in (4a, b) (see Williams 1997: 622 for the original definition and background), is essentially a Gricean-economy principle of

pronunciation, which requires that an unpronounced element in the incomplete conjunct be referentially dependent on the structurally parallel element in the full-fledged conjunct whereas its overt counterpart must not in the same context. This law is illustrated in (5a-c). ((5a, b) are from Ackema & Szendrői 2002: 7; cf. Williams 1997: 622).

(4)a. [0_V 0_{NP}] Normal (0_{NP} = anaphoric)

b. [0_V lexical $_{NP}$] Special (0_{NP} = disanaphoric)

(5)a. John gave Bill_i a book today and 0_V 0_{NP} a record yesterday.

b. * John gave Bill_i a book today and 0_V him_i a record yesterday.

c. John gave Bill_i a book today and gave him_i a record yesterday.

In (5a), 0_{NP} in the gapped conjunct must refer back to *Bill* in the first conjunct. In (5b), its overt counterpart *him* must be disjoint from *Bill*. Note the Disanaphora Law applies only when deletion applies, since the pronoun can refer back to *Bill* in (5c), where neither CE nor DE has applied.

Subsequent research on deletion has accumulated evidence that this anaphoric theory has considerable descriptive and explanatory payoffs. Thus, Ackema and Szendrői (2002) show that subject and object determiner-sharing constructions (McCawley 1993), Lin as illustrated in (6a, b), is an instance of the bivalent [T , 0] P and [V , 0] P heads, respectively.

- (6)a. Too many Irish setters are named Kelly, ~~too many~~ German shepherds ~~are named~~ Fritz,
and ~~too many~~ huskies ~~are named~~ Nanook.
- b. Bob gave ~~too many~~ magazines to Jessica and ~~too many~~ newspapers to Joanne.

(Ackema and Szendrői 2002: 4, 18)

(6a) arises when the CE of the T-head causes the DE of the head of the dependent in its specifier. Similarly, (6b) arises when the CE of the verb triggers the DE of the head of its object. Hernández (2007) argues that this analysis captures the fact that gapping satisfies characteristics commonly observed in grammatical dependencies (e.g., obligatoriness/locality/uniqueness of the antecedent, and the c-command requirement between the antecedent and dependent(s); see Koster 1987; Neeleman and van de Koot 2002). The same analysis, she notes, allows us to explain why languages like English allow only forward gapping in terms of Relativized Minimality (Rizzi 1990) (see section 5.2).

Against this background, it is important to see whether Williams' theory is applicable to typologically different languages such as Japanese and Korean.¹ This is the task in the next section.

3. Gapping in Japanese = Coordinate + Dependent Ellipsis

In this section, I demonstrate that our present theory directly explains general syntactic, semantic, and prosodic properties of gapping in Japanese and other languages. Though our database in this paper is

¹ Hernández (2007) leaves this issue open because no agreement has been reached as to whether (1a) is a case of backward gapping or right-node-raising. However, I show in section 4 that Japanese has true backward gapping/CE.

primarily from Japanese, I will introduce data from gapping in Korean (Sohn 1994; Kim 1997, 1998; Lee 2005) and English, where relevant, to confirm the crosslinguistic validity of the present analysis.

3.1. *Gapping in Japanese as VP/vP-Level Coordination*

What constituent is coordinated in Japanese gapping? As is well known, the left conjunct of *sosite* ‘and’ can never contain tense morphemes, as shown by the ungrammaticality of (7).

- (7) Takesi-ga zassi-o ***kai/*katta*** sosite Kaori-ga hon-o katta.
 Takesi-Nom magazine-Acc buy.cont/bought and Kaori-Nom book-Acc bought
 ‘Lit. Takesi (bought) a magazine, and Kaori bought a book.’

Given the independent constraint that the conjuncts of a coordinate structure share the same categorial status, (7) suggests that the gapped counterpart in (1) involves vP/VP-coordination. One might counter, based on (8), that gapping should rather involve TP-coordination because temporally conflicting adjuncts, *kinoo* ‘yesterday’ and *kyoo* ‘today’, occur in the conjuncts.

- (8) [_{VP} John-ga ***kinoo*** ringo-o] sosite [_{VP} Tom-ga kyoo banana-o tabe]-***ru***.
 John-Nom yesterday apple-Acc and Tom-Nom today banana-Acc eat-Present
 ‘Lit. John (ate) an apple yesterday, and Tom eats a banana today.’

As Hirata (2006: 87) points out, this reasoning is based on the assumption that T-like heads must license temporal modifiers. This assumption is questionable in light of examples as in (9), where the temporal modifier *kinoo* ‘yesterday’ can occur despite the lack of any T-like element in it.

(9) *kinoo-no-sinbun*

yesterday-Gen-newspaper

‘yesterday’s newspaper’

(Hirata 2006: 87)

In fact, there is independent evidence for the ν P/VP-coordination analysis.² Oehrle (1987) (see also Siegel 1987) observe that this analysis is supported from the relative scope of negation in (10a).

(10)a. Mrs. J. can’t live in Boston and Mr. J in LA.

b. Mrs. J can’t live in Boston and Mr. J. can’t live in LA.

c. Mrs. J can’t live in Boston or Mr. J. can’t live in L.A. (Oehrle 1987: 205)

Suppose that (10a) involves TP-coordination. If (10a) were derived from (b) by gapping, (10a) would mean [not p & not q], the meaning of (10b). Oehrle observes that this is not what (10a) actually means; it means [not (p&q)], which is equivalent to [not p or not q], the meaning of (10c).

² I thank an anonymous reviewer for brining my attention to this line of argument for the ν P/VP-coordination analysis. What follows is modeled on Lee’s (2005) arguments for the same analysis of Korean gapping.

This wide-scope reading is hard to explain under the TP coordination analysis, which would necessarily give rise to the narrow-scope reading due to the TP-level coordination. The vP/VP-level analysis correctly derives this wide scope reading since under this analysis negation c-commands both conjuncts, yielding the not [p & q] interpretation.

A parallel argument is available in Japanese. (11a) allows wide scope readings of negation.

(11) John-ga ringo-o (sosite) Mary-ga banana-o kawa-nak-atta.

John-Nom apple-Acc and Mary-Nom banana-Acc buy-Neg-Past

‘Lit. John (didn’t) buy apples or Mary didn’t buy banana.’

= It is not the case that John bought apples and Mary bought bananas.’ [not (p & q)]

(modeled on the Korean example from Lee 2005: 548)

Facts concerning negative polarity licensing, as illustrated in (12a, b), further confirms our assumption that gapping in Japanese involves vP/VP-level coordination.

(12)a. John-ga ringo-o (sosite) Mary-ga nanimo tabe-nak-atta.

John-Nom apple-Acc and Mary-Nom nothing eat-Neg-Past

‘Lit. John (didn’t eat) apples or/and Mary didn’t eat anything.’

b. John-ga nanimo (sosite) Mary-ga ringo-o tabe-nak-atta.

John-Nom nothing and Mary-Nom apple-Acc eat-Neg-Past

‘Lit. John (didn’t eat) anything or/and Mary didn’t eat apples.’

(modeled on the Korean example from Lee 2005: 550)

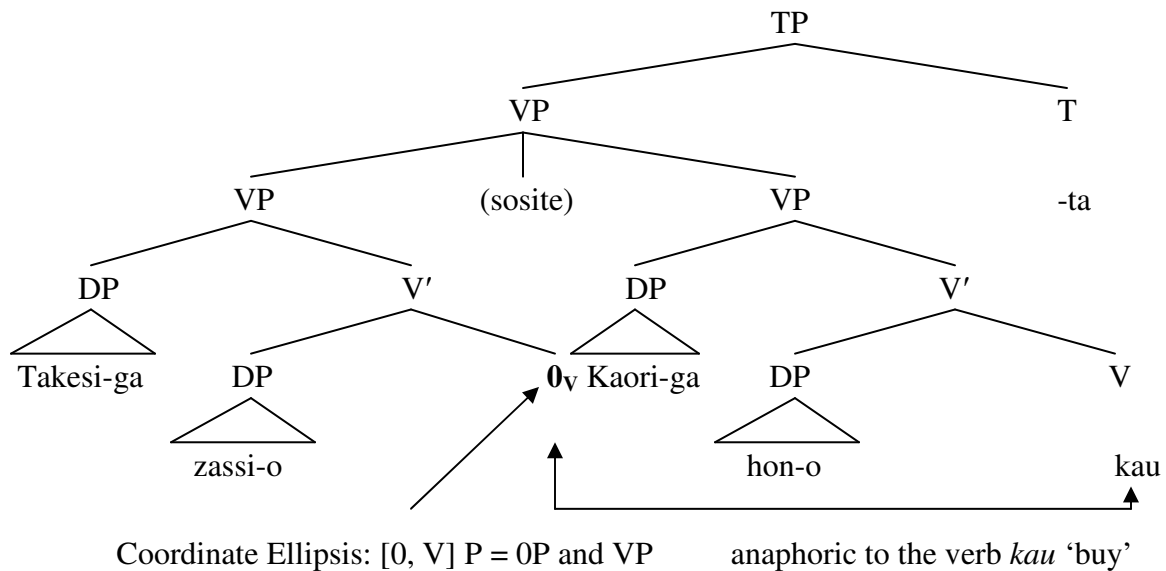
(12b) is the crucial case here. The TP coordination analysis incorrectly predicts that (12b) is bad, for the TP dominating the second conjunct should block the negation from c-commanding the negative polarity item in the first conjunct. This problem does not arise under the *v*P/VP-level analysis, according to which negation c-commands into the first and second conjuncts due to the lack of TP.³

3.2. *The Anaphoric Theory of Gapping in Japanese*

Let us now consider how the CE/DE analysis works with verb gapping in Japanese. The derivation for (1) is given in (13).

³ Lee (2005) makes an additional argument for the *v*P/VP-coordination analysis based on his observation that the honorific morpheme *si*, analyzed as the Agr head, never appears in the first conjunct. I won’t construct this argument in Japanese here since there is huge fluctuation of grammaticality concerning the crucial data he uses to support the relevant analysis.

(13) The Syntactic Derivation of the Gapping Sentence in (1)



In this derivation, the verb in the first conjunct remains null as 0_v . Due to the Disanaphora Law, this null verb must be obligatorily referential to the overt verb in the second conjunct.

The proposed analysis provides a natural explanation for core properties associated with gapping in Japanese (and other languages). First, it has been acknowledged (Sag 1976; Kuno 1976) that the application of gapping is dependent on semantics. Kuno (1976: 310) observes that “constituents deleted by Gapping must be contextually known. On the other hand, the two constituents left behind by Gapping necessarily represent new information and, therefore, must be paired with constituents in the first conjunct that represent new information.” According to Sag (1976: 192ff), this semantic contrast is realized in the form of focal stress. This observation is illustrated in (14a, b).

(14)a. Takesi-ga zassi-o, (sosite) (***Takesi-ga**) hon-o katta.

Takesi-Nom magazine-Acc and Takesi-Nom book-Acc bought

‘Lit. Takesi (bought) a magazine, and Takesi bought a book.’

b. Takesi-ga zassi-o, (sosite) Kaori-ga (***zassi-o**) katta.

Takesi-Nom magazine-Acc and Kaori-Nom magazine-Acc bought

‘Lit. Takesi (bought) a magazine, and Kaori bought a magazine.’

This observation can be explained as follows. Due to the Disanaphora Law, a lexical element in the incomplete conjunct must be disanaphoric to its antecedent in the complement conjunct. This means that the subject in (14a)/the object in (14b) are obligatorily disjoint from *Takesi* and *zassi* ‘magazine’, respectively. This disjointness requirement, thus, assigns an overt element in the gapped clause with the new information status.

Second, when conjuncts are not identical with respect to the number of remnants and correspondents or linear order, gapping yields ungrammatical results. This observation has been expressed in the literature as Parallelism Constraint. This constraint is illustrated in (15-16).

(15)a. Takesi-ga LGB-o kayoobi-ni 0_v, (sosite) Kaori-ga MP-o suiyoobini yonda.

Takesi-Nom LGB-Acc Tuesday-on and Kaori-Nom MP-Acc Wednesday-on read

‘Lit. Takesi (read) LGB on Tuesday, and Kaori read MP on Wednesday.’

b. * Takesi-ga LGB-o kayooni-ni 0_v, (sosite) Kaori-ga MP-o yonda.

Takesi-Nom LGB-Acc Tuesday-on and Kaori-Nom MP-Acc read

‘Lit. Takesi (read) LGB on Tuesday, and Kaori read MP.’

(16)a. Takesi-ga Hisako-ni LGB-o 0_v, (sosite) Kaori-ga Masa-ni MP-o kasita.

Takesi-Nom Hisako-Dat LGB-Acc and Kaori-Nom Masa-Dat MP-Acc rented

‘Lit. Takesi (rented) Hisako a copy of the LGB, and Kaori rented Masa a copy of MP.’

b. ?? Takesi-ga Hisako-ni LGB-o 0_v, (sosite) Kaori-ga MP-o Masa-ni kasita.

Takesi-Nom Hisako-Dat LGB-Acc and Kaori-Nom MP-Acc Masa-Dat rented

‘Lit. Takesi (rented) Hisako a copy of the LGB, and Kaori rented a copy of the MP to Masa.’

This constraint is also explained as a natural consequence of the Disanaphora Law. This law would not be met if two conjuncts were not parallel with respect to the number or linear order of remnants and their correspondents. Specifically, in (15b), the disjointness of the overt adjunct *kayooni* ‘on Tuesday’ in the CE clause must be checked against its structural correspondent in the non-CE clause. However, there is no such overt correspondent in the full conjunct in (15b), unlike *suiyoobini* ‘on Wednesday’ in (15a). The absence of this correspondent yields the ungrammaticality of (15b). (16b) is ungrammatical because the structural position for the two dative arguments does not match up in the two conjuncts in (16b). Thus, there is no way to check the disjointness requirement of the dative arguments, in violation of the Disanaphora Law.

Finally, the proposed analysis also provides a straightforward account for the observation first made by Abe and Hoshi (1997) about P-omission in Japanese gapping. As the contrast between (17a) and (17b) illustrates, Japanese gapping allows omission of postpositions such as *nituite* ‘about’ from the gapped conjunct, unlike English gapping. Sohn (1994) and Kim (1997) note that the same observation holds for Korean gapping, as shown in (17c).

(17)a. ?* John talked about Bill, and Mary Susan.

b. John-ga Bill-(**nituite**), (sosite) Mary-ga Susan-(***nituite**) hanasita.

John-Nom Bill-about and Mary-Nom Susan-about talked

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

(slightly modified from Abe and Hoshi 1997: 109, 111)

c. John-i Bill-(**eytayhay**) kuliko Mary-ka Susan-(***eytayhay**) malhayssta.

John-Nom Bill-about and Mary-Nom Susan-about talked

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

(slightly modified from Kim 1997: 161)

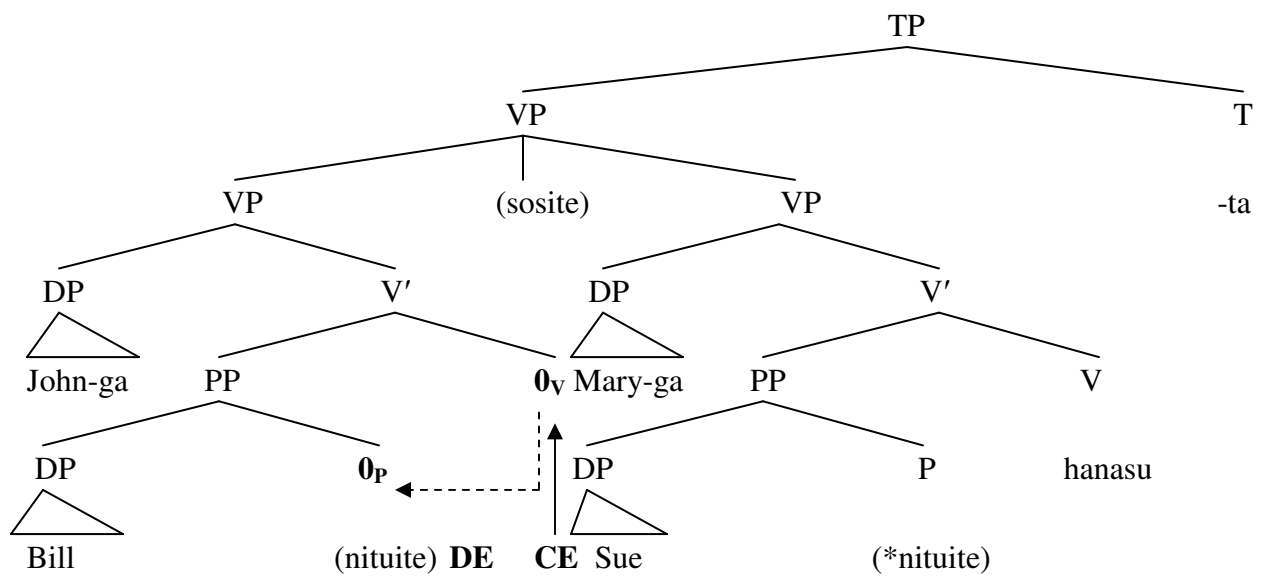
For the purposes of this paper, I adopt Jayaseelan’s (1990) analysis of gapping. Jayaseelan proposes that English gapping involves rightward movement/Heavy DP Shift of a focused DP

(*Susan* in (17a)) followed by VP ellipsis. This analysis explains the impossibility of P-drop in (17a) since the Heavy DP Shift is independently known to prohibit P-stranding, as shown in (18).

(18) * John depended t_i on yesterday [_{DP} the man who he had seen three days ago]_i.

The question, then, is why “P-stranding” is possible in Japanese/Korean gapping. Our analysis predicts precisely this pattern. It is the result of the DE. Consider the derivation of (17b) in (19).

(19) The Syntactic Derivation of the P-less Gapping Sentence in (17b)



In this derivation, the first head of the bivalent verb remains unpronounced as 0_v . This CE head licenses the head of its complement PP to be null as 0_p . Note that this pattern of DE is

independently observed in English gapping, as shown in 20), where the DE applies only to the head of the DP complement of the CE head 0_V .

(20) John saw pictures of Mary on Tuesday and [0_V [0_N of Sue] $_{NP}$ on Wednesday]. (Williams 1997: 623)

Note that the postposition *nituite/eytayhay* ‘about’ cannot be omitted within the non-gapped conjunct. Our analysis correctly derives this correlation between the verb gapping and P-omission since the DE is crucially parasitic on the application of the CE.

An anonymous reviewer asks whether the optionality of P-stranding can be accounted for and what triggers this operation given that the presence/absence of the DE operation has repercussions for semantic interpretations due to the Disanaphora Law. The coreference/disjointness requirement of this law holds for DPs since they have ability to refer. In contrast to DPs, postpositions (or case-particles as we see in section 6) lack reference but merely serve as functional categories that link DPs to their predicators in a given sentence. I maintain, therefore, that the Disanaphora Law vacuously applies to postpositions without any appreciable semantic consequences at LF, giving the appearance of a truly optional process. This does not mean that this functional category does not convey any new information in given sentences. As Kuno (1972: 272) observes, we have two concepts to distinguish here: one related to lexical items (anaphoricity) and the other related to discourse-semantic relations that lexical items bear

in sentences. Thus, examples as in (21) show that *made* ‘to’ in the gapped conjunct cannot be omitted since it forms a contrastive pair with *kara* ‘from’ in the full-fledged conjunct and thereby provides new/unpredictable information for the purposes of discourse structure.

- (21) Taro-wa Tokyo-eki-*(**made**) OV (sosite) Jiroo-wa Tokyo-eki-**kara** hasitta.
 Taro-Top Tokyo-station-to and Jiro-Top Tokyo-station-from ran
 ‘Lit. Taro (ran) to Tokyo station, and Jiro ran from Tokyo station.’

To summarize, I have shown that the anaphoric theory of deletion proposed provides a natural explanation for core properties associated with gapping in Japanese. In the next section, I show that this theory also correctly derives more subtle properties that would remain mysterious under earlier accounts of this construction. As an anonymous reviewer point out, gapping is an interface phenomenon, for it exhibits a diverse set of syntactic/semantic/phonological properties (section 4) as well as other characteristics suggestive of on-line processing constraints. The investigation below shows that our analysis is particularly suited to capture this multi-modular nature of gapping.

4. Other Alternative Analyses

The aim of this section is to compare the proposed analysis with several existing approaches gapping in Japanese/Korean. I show that these approaches are each faced with a different set of

and demonstrate that they are successfully resolved by the proposed analysis.

Following Kuno (1978) (see also Maling 1972), Saito (1987) argue that gapping as in (1) are analyzed as involving Right-Node-Raising, in the manner seen in (22) (cf. Saito 1987: 320).

TP

TP V₁

TP sosite TP

DP VP

Takesi-ga DP

zassi-o

t₁

DP VP

kaori-ga DP

hon-o

t₁

katta

Right Node

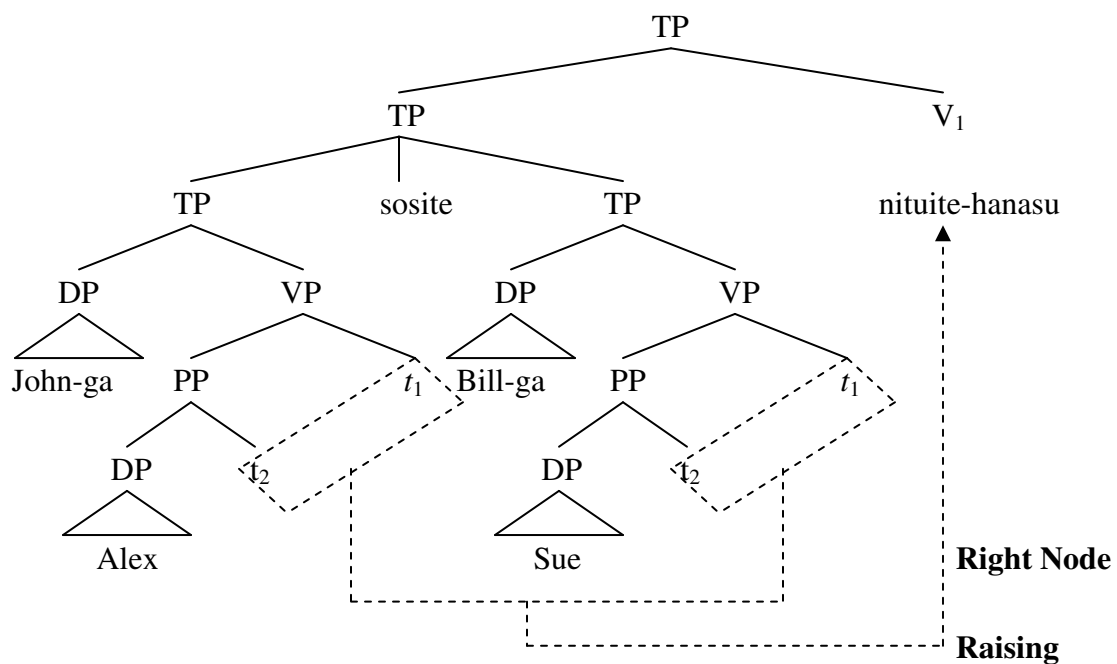
Raising

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First, it is not obvious whether the structure given in (22) is permissible because the TP (or S in Saito's 1987: 320 original representation) is not headed by T. Suppose it is headed by T. Then, gapping would involve standard TP-coordination. Thus, we would wrongly predict (7) to be grammatical with *katta* 'bought' in the first conjunct. This problem does not occur in the present analysis because it assumes that the construction under discussion involves vP-level coordination.

The second potential problem with Saito's analysis is that it cannot derive the P-drop pattern observed earlier in (17b, c), where the postposition *nituite/eytayhay* 'about' in the gapped conjunct is omitted under identity with its second occurrence in the full-fledged conjunct. The structure for the P-less gapping in (17b) would be as in (23) under Saito's account.

(23) The Syntactic Derivation of the P-Less Gapping Sentence in (17b)



In this representation, the shared elements, *nituite* ‘about’ and *hanasu* ‘talk’, are moved across the board to the TP-adjoined position. However, this movement is impossible under the commonly held assumption (see Bresnan 1974; Hankamer 1971; Reinhart 1991) that the Right Node Raising may only target a syntactic constituent, as shown in (24).

(24) * He tried to persuade, but he couldn’t convince, them that he was right. (Bresnan 1974: 615)

As an anonymous reviewer notes, this assumption has been challenged by Wilder (1997) for based on examples as in (25); see also Hartmann (2000: 57) for examples from German.

(25) Alan looked a word with ten _____ and Adriana looked a word with twenty letters up in the dictionary. (Wilder 1997: 86)

However, it is not clear whether the underlined phrases do not really form a syntactic constituent. For example, it is not technically impossible to imagine a derivation where the phrases in question are a constituent in (24-25) at a certain stage of syntactic derivation under Larson’s (1988)/Kayne’s (1994) framework, according to which the more leftward an element appears in linear order, the higher position it occupies. Indeed, Phillips’ (2003) top-down derivational approach to constituency destruction predicts that they should form a unitary constituent. This analysis, of course, begs the

question of why (24) is bad. I adopt Abbott's (1976) claim in this paper that the unacceptability of (24) has its source in syntax-external processing difficulties or stylistic considerations, though I leave the exact nature of such extra-grammatical constraints for future investigation.

One might attempt to save Saito's analysis by reanalysis. Specifically, *hanasu* 'talk' and *nituite* 'about' are reanalyzed as a derived transitive verb; this verb then undergoes the across-the-board movement. This attempt fails. If reanalysis were involved in the derivation of the P-less gapping, the P-drop pattern should not be available with postpositions that cannot undergo reanalysis with a verb. As Abe and Hoshi note, this prediction is falsified by examples like (26).⁴

(26) John-ga kono riyuu, sosite Mary-ga ano riyuu-de kubininatta.

John-Nom this reason and Mary-Nom that reason was-fired

'Lit. John (was fired) this reason, and Mary was fired for that reason.'

(slightly modified from Abe and Hoshi 1997: 112)

As we saw in section 3.2, our proposed naturally accounts for the P-drop option. The CE head of the bivalent lexical item licenses DE of the head of its dependent, as shown in (19), on a par with a case of "non-constituent" gapping in English given in (20).

⁴ Abe and Hoshi (1997: 111, 112) does not provide an explicit definition of reanalysis in this context. Provided that they take it that *nituite* 'about' and *hanasu* 'talk' can be reanalyzed while *de* 'for (reason)' and *kubininaru* 'fire' cannot, I take the liberty of assuming that only a pair of a verb and the prepositional head of its complement can undergo reanalysis. See Hornstein and Weinberg (1981) for much relevant discussion.

As an anonymous reviewer notes, the core argument Saito makes for the Right-Node-Raising analysis for gapping in Japanese concerns the distribution of null complementizers. Thus, it is worthwhile to see how the relevant pattern is explained without invoking this operation. Saito (p. 312) observes that “in some western dialects of Japan, some verbs allow their S' [=CP] complements to appear without an overt complementizer, as illustrated in (27a). The complementizer deletion becomes impossible if we scramble the CP headed by the null complementizer, as shown in (27b). This behavior is reminiscent of the parallel distribution of null complementizers in English, as shown in (28a, b).

(27)a. John-ga [CP Koobe-ni iku (te)] yuuta.

John-Nom Kobe-to go C said

‘John said that he was going to Kobe.’

b. [CP Koobe-ni iku *(te)] John-ga yuuta.

Kobe-to go C John-Nom said

‘John said that he was going to Kobe.’ (Saito 1987: 312)

(28)a. Ben knew [CP (that) the teaching was lying].

b. [CP *(that) the teaching was lying] Ben already knew. (Saito 1987: 313)

Saito adopts Stowell's (1981) ECP-based account, which states that empty categories including null Cs must be governed by an overt verb. (27a)/(28a) are fine because the null C is governed by the verb. (27b)/(28b) are bad because the null C is not governed by the verb. Saito then argues, based on the different behavior of null Cs in English and Japanese, that gapping in Japanese is the product of Right-Node-Raising rather than V-gapping. Consider (29a-d) and (30a-d) (Saito 1987: 317, 318).

(29)a. John said that we should go to London, and Bill [_V *e*] that we should go to Paris.

b. John said we should go to London, and Bill [_V *e*] that we should go to Paris.

c. * John said that we should go to London, and Bill [_V *e*] we should go to Paris.

d. * John said we should go to London, and Bill [_V *e*] we should go to Paris.

(30)a. John-ga Koobe-ni iku te, soide Mary-ga Tookyo-ni iku te, yuuta.

John-Nom Kobe-to go C and Mary-Nom Tokyo-to go C said

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

b. * John-ga Koobe-ni iku te, soide Mary-ga Tookyo-ni iku [_C *e*], yuuta.

John-Nom Kobe-to go C and Mary-Nom Tokyo-to go said

c. * John-ga Koobe-ni iku [_C *e*], soide Mary-ga Tookyo-ni iku te, yuuta.

John-Nom Kobe-to go and Mary-Nom Tokyo-to go C said

d. * John-ga Koobe-ni iku [_C *e*], soide Mary-ga Tookyo-ni iku [_C *e*], yuuta.

John-Nom Kobe-to go and Mary-Nom Tokyo-to go said

The paradigm in (29) illustrates that gapping blocks C-deletion only in the conjunct that it has applied to though the C in the first conjunct may or may not be deleted. This pattern is naturally accounted for under the V-gapping analysis if empty verbs are not proper governors (Torrego 1984). Now, if Japanese backward gapping were simply V-gapping as in English, (30b) would remain mysterious because the null C in the second conjunct is properly governed by the verb *yuuta* ‘said’ on a par with (29a) and (30a). Saito argues that this example is naturally accounted for if the identical verb in both conjuncts undergoes Right-Node-Raising into the TP-adjoined position.

The paradigm in (30a-d), however, receives a principled explanation without evoking Right Node Raising. Drawing on Pesetsky’s (1992) analysis of the null C as an affix, Bošković and Lasnik (2003) develop a comprehensive account of the distribution of null Cs in English, according to which null Cs must undergo *Morphological/PF Merger* (Halle and Marantz 1993; Bobaljik 1995) to structurally higher [+V] elements to circumvent the Stranded Affix Filter (Lasnik 1981). (30c, d) are bad because there is no [+V] host for the null C in the gapped conjunct. How about (30b)? As first observed by Kuno (1973: 10), gapping in Japanese is acceptable when there is an intonational boundary between the verb in the second conjunct and the dependent that immediately precedes it. Thus, (1) is acceptable when it is read as in (31a), but not as in (31b).

(31)a. [Takesi-ga zassio, sosite Karoi-ga hon-o] katta

b. * [Takesi-ga zassio], sosite [Karoi-ga hon-o katta]

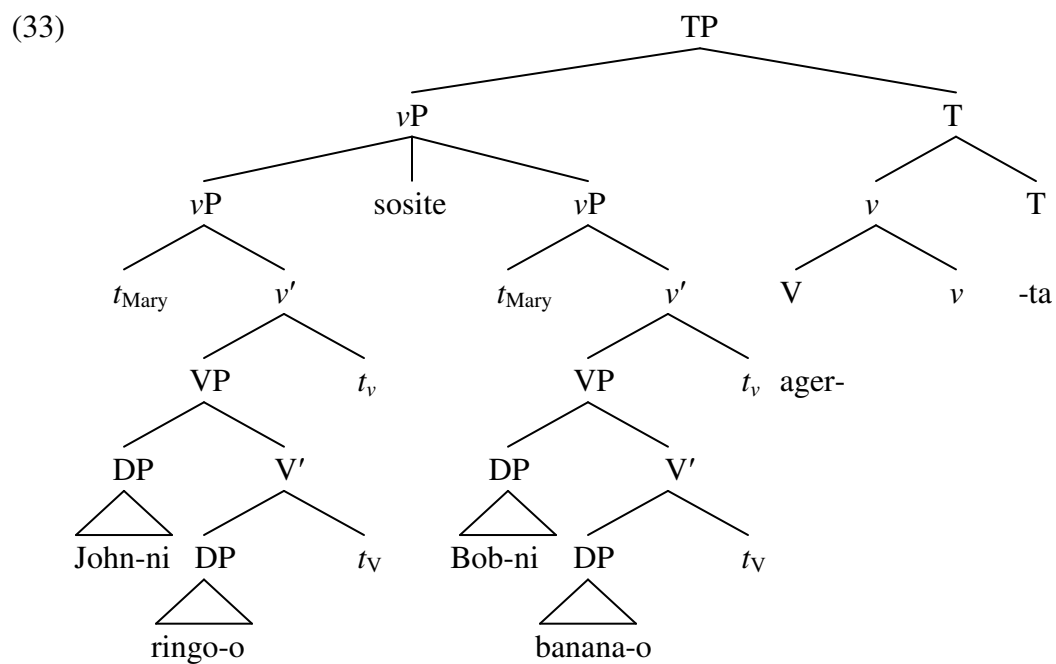
Bošković (2001) provides independent evidence that intonational boundaries block affixation. Thus, (30b) is ruled out due to the Stranded Affix Filter because the pause between the null C and the verb blocks the *Morphological/PF* Merger of the former to the latter. To the extent that this analysis is correct, (30a-b) do not necessarily support the Right Node Raising analysis.

Koizumi (2000) proposes another variant of the movement-based analysis of gapping in Japanese that draws on the string-vacuous overt verb raising. He analyzes (32) as shown in (33) (slightly modified from Koizumi 2000: 229).

(32) Mary-ga [[John-ni ringo-o]] sosite [Bob-ni banana-o]] ageta.

Mary-Nom John-to apple-Acc and Bob-to banana-Acc gave

‘Mary gave two apples to John, and three bananas to Bob.’



In this derivation, the identical subject *Mary* undergoes the across-the-board movement into [Spec, TP]. The identical verb moves overtly through *v* to T in the across-the-board manner. Elegant though it may be, Koizumi's analysis immediately faces the problem of P-stranding in gapping, as illustrated in (17b); see also Fukui and Sakai (2003) for additional problems with Koizumi's analysis. Under his analysis, the P-less gapped conjunct would arguably involve overt scrambling of the complement of the preposition *nituite* 'about' (*Alex* and *Sue*), but this option is unavailable in Japanese because scrambling does not tolerate scrambling, as shown in (34).

(34) * Susan₁, Mary-ga *t*₁-nituite hanasita.

Susan Mary-Nom -about talked

'Susan₁, Mary talked about *t*₁.'

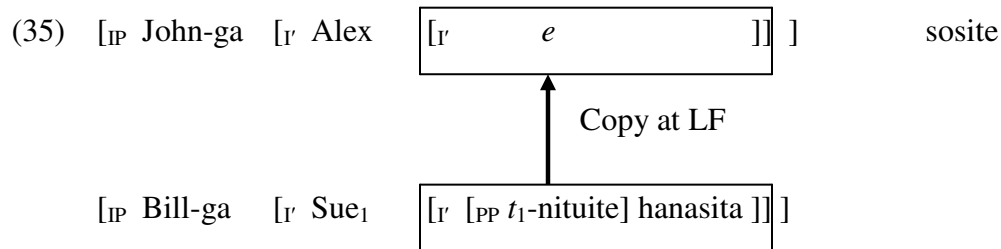
(Abe and Hoshi 1997: 111)

The reanalysis option would also not do since, as we saw above, the P-drop option is available even with prepositions that are unlikely to be reanalyzed with a verb, as we saw in (26).

4.2. *LF Copy Analyses: Abe and Hoshi (1997)*

Drawing on the data and analysis presented by Jayaseelan (1990), Abe and Hoshi (1997) propose an alternative LF Copy account of gapping in Japanese that builds on the LF leftward movement

of the remnants in a gapped conjunct and their correspondents in a full-fledged conjunct. Under their analysis, the P-less gapping construction in (17b) is analyzed as in (35).



In (35), *Sue* undergoes leftward LF movement, leaving *nituite* ‘about’ behind, and adjoins to the *I'*. The lower *I'* in the second conjunct is then copied at LF onto that of the first conjunct designated here by *e*. Their analysis adopts the crucial assumption (Huang 1982; Aoun 1985) that P-stranding is allowed universally at LF for leftward movement, but not for rightward movement. The P-less gapping in English is ungrammatical, as in (17a), because rightward movement (specifically, Heavy DP Shift) cannot tolerate P-stranding, as shown in (18). Abe and Hoshi’s analysis, thus, correctly predicts the availability of P-stranding in Japanese gapping and the lack thereof in English gapping.

Abe and Hoshi’s analysis, however, is difficult to sustain for the following reason.⁵ Assuming that not only overt movement but also covert/LF movement obeys subadjacency conditions (Nishigauchi 1986, 1990, Choe 1987, Pesetsky 1987, Reinhart 1991), Abe and Hoshi (p.115) observes that gapping in Japanese exhibits island effects, as shown in (36a, b).

⁵ See section 6 for another problem with Abe and Hoshi (1997) posed by multiple P/case-omission in Japanese gapping.

(36)a. ?? Harry-ga imiron, sosite Alfonse-ga toogoron-o (relative clause island)

Harry-Nom semantics and Alfonse-Nom syntax-Acc

kenkyuusiteiru gengogakusha-ni atta.

is studying linguist-to met

‘Harry met a linguist who studies *semantics* and Alfonse *syntax*.’

b. ?? John-ga suugaku, sosite Mary-ga eego-o (adjunct clause island)

John-Nom math and Mary-Nom English-Acc

benkyoosuru mae-ni syokuzisita.

study before ate

‘John had a meal before he studied *math*, and Mary *English*.’ (Abe and Hoshi 1997:115)

This pattern is exactly what is predicted under the LF Copy Analysis. The contrasted elements in the full conjunct undergo LF movement to create an I'-structure to be copied onto the gapped conjunct. Consider the LF representations for (36a, b), shown in (37a, b), respectively.

(37)a. ?? [_{IP} Harry-ga [_{I'} imiron [_{I'} e]]], sosite

[_{IP} Alfonse-ga [_{I'} toogoron₁ [_{I'} [_{NP} [_{IP} t₂t₁-o kenkyuusiteiru] gengogakusya₂]-ni atta]]]

b. ?? [_{IP} John-ga [_{I'} suugaku [_{I'} e]]], sosite

[_{IP} Mary-ga [_{I'} eego₁ [_{I'} [_{AdvP} pro t₁-o benkyoosuru mae-ni] syokuzisita]]]

The LF movement of the NP *toogoron* ‘syntax’ in (37a) and that of the NP *eego* ‘English’ in (37b) violates the relative clause island and the adjunct clause island, respectively. However, the grammaticality judgments reported by Abe and Hoshi are controversial. Mukai (2003) designs a carefully constructed grammaticality judgment task concerning (38), structurally akin to (36a), and makes two important discoveries suggesting that subjacency violations are not involved in (36a).

(38) *Mike-ga raion(-ni), Tom-ga kuma-ni osowareta otoko-o tasuketa.*

Mike-Nom lion-Dat Tom-Nom bear-Dat was attached man-Acc saved

‘*Mike* saved the man who was being attached by *a lion*, and *Tom* *a bear*.’

(slightly modified from Mukai 2003: 210)

First, her result of the survey reveals that 37 out of 43 subjects accepted (38). Second and more importantly, there was no subject who rejected (38) but accepted (39) (Mukai 2003: 216).

(39) *Tom-ga Lakers-ni, Mike-ga Nets-ni Bulls-ga katsu to omotteita.*

Tom-Nom Lakers-Dat Mike-Nom Nets-Dat Bulls-Nom defeat C thought

‘Lit. Tom (thought that Bulls would defeat Lakers), and Mike thought Bulls would defeat Nets.’

If the subjacency were at stake in (38) for those subjects who found it unacceptable, then the LF copy theory would predict that those speakers would judge (39) (without the complex NP constraint) as grammatical. The total absence of subjects who report this pattern of judgment suggests that subjacency is irrelevant to (36a)/(38), contrary to Abe and Hoshi's claim.

Furthermore, Kato (2006) observes that the reduced acceptability of (36a, b) is not due to movement-induced locality but rather to the omission of case particles. Thus, she (p.50) points out that "the grammaticality of the sentences improves when the accusative Case-marker of the object NP is not omitted." The relevant examples are given in (40a, b) (Kato 2006: 51, 52).

(40)a.? Harry-ga imiron-*o*, sosite Alfronse-ga toogoron-o
 Harry-Nom semantics-Acc and Alfronse-Nom syntax-Acc
 kenkyuusiteiru gengogakusya-ni atta.
 is studying linguist-to met
 'Harry met a linguist who studies *semantics* and Alfonse *syntax*.'

b.? John-ga suugaku-*o* sosite Mary-ga eego-o
 John-Nom math-Acc and Mary-Nom English-Acc
 benkyoosuru mae-ni syokuzisita.
 study before ate
 'John had a meal before he studied *math*, and Mary *English*.'

Therefore, Mukai and Kato's findings indicate that the LF movement analysis is difficult to sustain.⁶ Our analysis, however, provides correctly predicts the lack of subjacency violations in (36a, b)/(38a, b) because focused overt elements in the gapping clause do not need to move at all either in syntax or at LF to be licensed as focused remnants of a gapping construction.

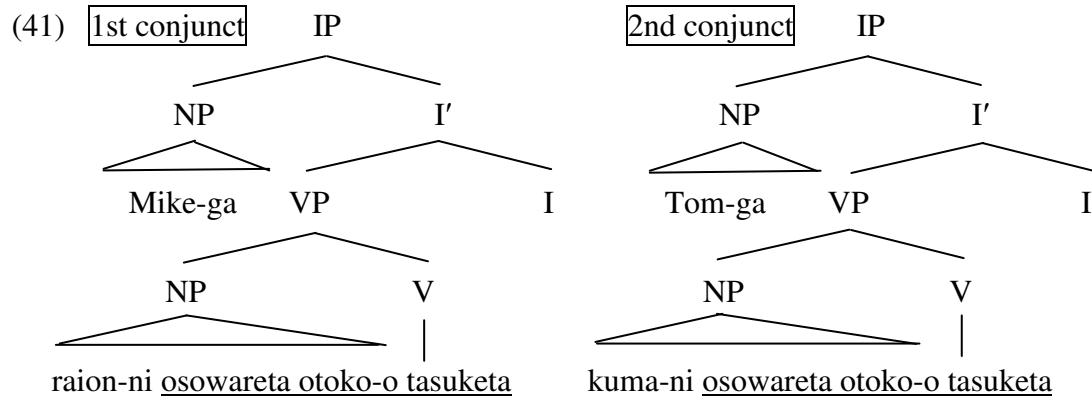
4.3. *PF Deletion Analyses: Fukui and Sakai (2003), Mukai (2003), Hartmann (2000)*

Mukai (2003) proposes that verb gapping is derived by the PF operation she dubs *String Deletion* that applies to a phonetic string, regardless of its syntactic constituency. See also Fukui and Sakai (2003) for a PF-based approach to gapping. Mukai assumes (p. 211) that “the only structural condition on String Deletion is that the target is continuous and contains a verb.” Under this analysis, the example in (38) is derived as in (41) (adopted from Mukai 2003: 211).

⁶ As Mukai (2003) shows, the lack of subjacency effects also argues against Saito's (1987). Consider (i).

- (i) [_{TP} raion-ni Mike-ga [_{VP} [_{DP} t_i osowareta otoko-o] tasuketa]]] (sosite)
 [_{TP} kuma-ni Tom-ga [_{VP} [_{DP} t_i osowareta otoko-o tasuketa]]]

This example is derived by scrambling *raion-ni* ‘lion-Dat’/*kuma-ni* ‘bear-Dat’ to the conjunct-initial position, as shown in (i), followed by right-node-raising the shared VP to the adjoined position of TP. Saito's analysis would predict (i) as ungrammatical since the scrambling violates the Complex NP Constraint.



In this structure, the underlined portion of the first conjunct, which is continuous and contains a verb, is identical to the underlined portion of the second conjunct. Thus, String Deletion applies to the underlined portion of the first conjunct. This analysis correctly predicts the absence of island effects in gapping since the (LF) movement of the correlate (*raion* ‘lion’) is not necessary in this string-based deletion approach). It also accounts for the P-drop pattern since *ni-osowareta otoko-o* in the first conjunct in (41) has the identical PF string in the second conjunct.

Mukai provides independent evidence from honorification that gapping is sensitive to the string identity at PF. In Japanese, *mesiagaru* is the honorific suppletive form for the plain verb *taberu* ‘eat’ that a speaker uses to show respect to the socially superior person denoted by the subject, as shown in (42a). (42b) is unacceptable with *mesiagaru* since it is awkward to show respect to oneself (cf. Mukai 2003: 212).

(42)a. Kootyoosensei-ga tempura-o *mesiagatta*/**tabeta*.

principal-Nom tempura-Acc ate-Hon/ate

‘The principle ate tempura.’

b. Boku-ga tempura-o **mesiagatta*/*tabeta*.

I-Nom tempura-Acc ate-Hon/ate

‘I ate tempura.’

Mukai shows that String Deletion is sensitive to the surface verb form because *mesiagaru* and *taberu* are distinct for the application of this operation. This point is illustrated by (43).

(43) * Boku-ga tempura-o, kootyoosensei-ga osusi-o mesiagatta.

I-Nom tempura-Acc principal-Nom sushi-Nom ate-Hon

‘I ate tempura, and the principal ate sushi.’ (Mukai 2003: 212)

The ungrammaticality of this example shows that String Deletion is sensitive to the PF identity condition. Specifically, this example has the derivation in (44). Thus, the first conjunct includes the unacceptable honorific form, just as the first conjunct in (42a) (with *mesiagaru*) does.

(44) PF: I-Nom tempura-Acc ~~ate(HON)~~ Principal-Nom susi-Acc ate(HON)

There are two problems with the String Deletion analysis. Firstly, just because the application of String Deletion is sensitive to surface verb forms does not mean that this is the sole condition on String Deletion. If the PF identity were a sufficient identity condition for gapping, this analysis would make a wrong prediction concerning gapping examples involving homonyms.⁷ Specifically, examples like (45) involving the homonymic *kumo* ‘spider, cloud’ would allow four possible interpretations given here, contrary to facts. The ungrammaticality of (46a, b), where the gapped verb is homophonous, makes the same point.

(45) John-ga Mary-ni, Bill-ga Susan-ni kumo-o miseta.

John-Nom Mary-Dat Bill-Nom Susan-Dat cloud/spider-Acc showed

‘John showed Mary a cloud/a spider, and Bill showed Susan a cloud/spider.’

→ John showed Mary a cloud, and Bill showed Susan a cloud.

→ John showed Mary a spider, and Bill showed Susan a spider.

→ * John showed Mary a cloud, and Bill showed Susan a spider.

→ * John showed Mary a spider, and Bill showed Susan a cloud. (adopted from Mukai 2003: 213)

(46)a. John-ga kono kikaku-o (sosite) Bill-ga ano mokuhyoo-o tateta.

John-Nom this plan-Acc and Bill-Nom that goal-Acc make/set up

‘Intended: John (made) this plan, and Bill set up that goal.’

⁷ This issue was raised by Hajime Hoji, according to Mukai (2003: 213).

- b. * John *went* to Chicago, and Mary ~~*went*~~ crazy. (Kim 1997: 160)

This semantic constraint would remain totally unexplained if the only structural condition on String Deletion were that the target is continuous and contains a verb.” (p. 211). Mukai (p. 213) does conclude in light of (45) that “LF identity, as well as PF identity, is relevant in the case of verbless conjunction,” but she does not clarify the nature of the relevant LF identity requirement or why such a requirement is imposed on gapping in the first place. Our proposed analysis can accommodate this constraint if we take the notion of “anaphoricity” in the Disanaphora Law seriously. Let us suppose that the elided element in the first conjunct (i.e. *kumo*) be strictly identical in its sense to the overt element in the second conjunct. Thus, if *kumo* is interpreted as ‘cloud’ in the second conjunct, then its first occurrence in the gapped clause must be also interpreted as ‘cloud’.

The necessity of some LF identity requirement on ellipsis is not the exclusive property of gapping but also of ellipsis in general. To take one example, Chung et al (1995: 248) observe that the sprouting operation for implicit complements within their LF Copy analysis of sluicing is sensitive to whether the verb in the sluiced TP is identical to its antecedent verb in the preceding TP in terms of argument structure. Consider the ditransitive verb *serve*. This verb has two distinct argument structures shown in (47a, b), which generate the examples in (48a, b), respectively. The sluicing examples relevant for our purposes are given in (49a, b).

- (47)a. server <meal (diner)>
- b. server <diner (meal)> (Chung et al. 1998: 248)
- (48)a. I served leek soup (to my guests).
- b. I served my guests (leek soup). (Chung et al. 1998: 248)
- (49)a. She served the soup, but I don't know to whom.
- b. * She served the soup, but I don't know who. (Chung et al. 1998: 248)

The contrast between (49a) and (49b) shows that licensing of an implicit argument in the sluiced TP is sensitive to the particular argument structure of the verb *serve*. (49a) is fine because the sprouting of the implicit Goal argument *to whom* is licensed by the argument structure in (47a). (49b) is bad because this argument structure frame does not include the DP realization of the Goal argument. Chung et al.'s findings here, therefore, provide independent evidence that the elided element in an incomplete clause must be identical to its correspondent not only in terms of PF identity (string-identity) but also at LF (sense, argument structure).⁸

Another problem with Mukai's analysis is that String Deletion overgenerates. Specifically, since the only condition is that the target is continuous and contains a verb, it would incorrectly

⁸ As a reviewer points out, Takahashi and Fox (2005) argue that the parallelism constraint is also relevant to another instance of ellipsis, VP-ellipsis in re-binding configurations where the variable within the elided clause is bound by an element outside of that clause. Takahashi (2008) argues that the interpretation of quantificational null arguments in Japanese is sensitive to the scope parallelism. One implication of these arguments is that LF parallelism is a necessary condition for deletion in general.

predict that this operation should apply not only in coordinate structures but also subordinate structures. However, as is widely known since Jackendoff (1970: 22), “gapping occurs only when the clauses are connected by the coordinating conjunctions *and*, *or*, and *nor*. “ This observation also holds in Japanese, as shown by the ungrammaticality of (50a, b).⁹

- (50)a.* John-ga zassi-o 0_v atode, Mary-ga hon-o katta.
 John-Nom magazine-Acc after Mary-Nom book-Acc bought
 ‘Intended Interpretation: After John bought a magazine, and Mary bought a book.’
- b.* John-ga zassi-o 0_v kara, Mary-ga hon-o katta.
 John-Nom magazine-Acc because Mary-Nom book-Acc bought
 ‘Intended Interpretation: Because John bought a magazine, Mary bought a book.’

This overgeneration is sufficiently constrained under the present theory, for gapping results only when one of the bivalent heads is V₀ and this head occurs only in coordinate structures.

Hartmann’s (2000) analysis is similar in spirit to Mukai’s in that it analyzes gapping as the product of the PF string-based deletion process not subject to syntactic constituency. However, she argues that the relevant operation is constrained so as to conform with the Major Constituency Condition (Hartmann 2000: 144), originally due to Hankamer (1973), that

⁹ This problem arises with Abe and Hoshi’s (1997) analysis as well since their postulated LF movement should not be prohibited from creating the I’ constituent to be copied into the gapped conjunct in non-coordinate structures.

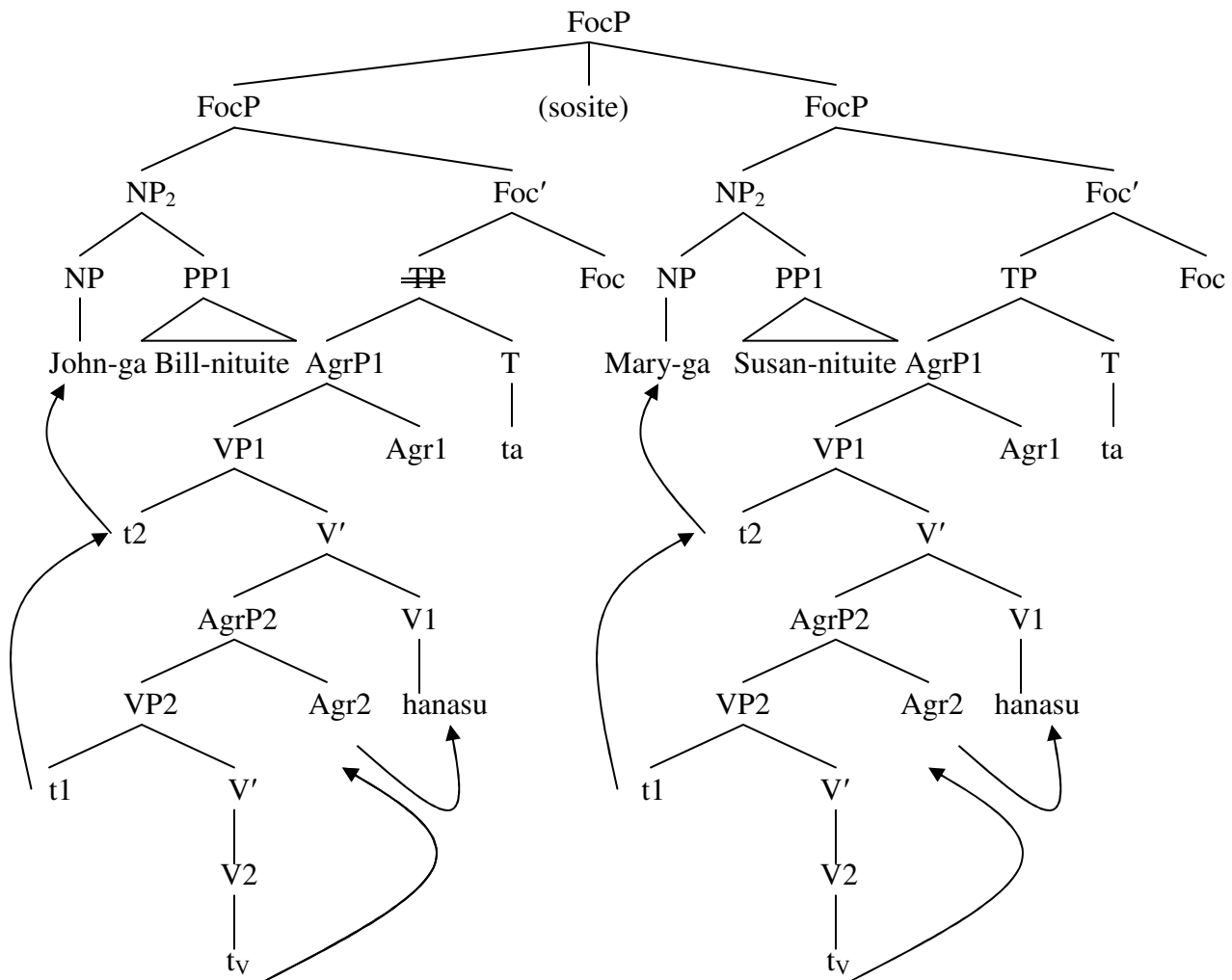
remnants of this process must be major constituents, “a constituent either immediately dominated by S_0 or immediately dominated by VP, which is immediately dominated by S_0 ” (Hankamer 1973: fn.2). Although her analysis works for (17a), where *Susan* is not a major constituency in Hankamer’s sense, it incorrectly predicts the P-less variant of (17b, c) to be ungrammatical on a par with (17a). This analysis also predicts that (20) should be ungrammatical. The PF deletion should not be able to target *pictures* alone since this nominal is not the major constituent in Hankamer’s sense. As we have seen earlier, these examples are naturally explained under our proposed analysis due to the DE process. Therefore, I conclude that our analysis is superior to purely string-based deletion accounts such as Mukai and Hartmann.

4.4. *Movement + PF Deletion Analyses: Sohn (1994), Kim (1997, 1998)*

Kim (1997, 1998) and Sohn (1994) propose that gapping results from the overt syntactic movement of a focused remnant followed by PF deletion. Since the analyses proposed by Kim and Sohn essentially make the same point, I restrict my discussion here on Kim’s (1997, 1998) analysis. Kim proposes that gapping is the result of overt focus movement of remnants and correspondents followed by TP deletion at PF. Consider the derivation of (17b) in (51) (cf. Kim 1997: 175).¹⁰

¹⁰ Kim assumes that the [+EPP] feature is weak in Korean and Japanese. Thus, subjects do not undergo overt syntactic movement out of VP in (51).

(51) The Syntactic Derivation of the Example in (17b)



Adopting the idea of *Checking-through-Adjunction* (Saito 1994; Sohn 1994), Kim assumes that a contrastive phrase can adjoin iteratively to another contrastive phrase and the highest one, containing all contrastive phrases, can move to the specifier of FocP. In (51), the lower focused phrase (*Bill-nituite* in the first conjunct and *Susan-nituite* in the second conjunct) adjoins to the higher focused phrase (*John-ga* in the first conjunct and *Mary-ga* in the last conjunct) to check

its strong [+focus] feature against the strong [+focus] feature of the latter. (17b) results when TP deletion applies to the first conjunct under PF identity, after the remnants have all undergone focus-driven movement out of the TP.

There are two problems with this hybrid movement + deletion account. The first problem lies in Kim's assumption that gapping in Japanese/Korean involves TP deletion. Recall that gapping involves ν P/VP-coordination. Kim argues (p.176) that gapping is TP deletion precisely for this reason; "Since Tense never appears in the gapped conjunct, Gapping is PF deletion of TP." However, this reasoning not only begs the question of why non-gapped examples as in (7) would still prohibit the past tense morpheme from appearing in the first conjunct but leaves unexplained the wide scope reading of negation and negative polarity licensing discussed in section 3.1. Note that Kim's analysis cannot be saved by assuming that the focus-driven movement of contrastive phrases into the specifier of the ν P-internal Foc head, followed by ν P deletion since it is well known since Kuno (1978) that Japanese lacks this process entirely, as shown by the ill-formedness of (52).

(52) * Taroo-ga ~~[ν P — hon-o — kau]~~ kara, Hanako-mo hon-o kau.

Taroo-Nom book-Acc bought because Hanako-also book-Acc buy

'Intended Interpretation: Since Taroo buys a book, Hanako also buys a book.'

The second problem concerns the Left Branch Condition effect, an issue Kim (1997: 215) himself has noted as a residual problem for future research. I reproduce his discussion in Japanese; see Kim (1997: 215) for Korean data. Japanese observes the Left Branch Condition, as shown in (53a-c). Kim's analysis, however, predicts that (54) should be bad since it involves extraction of the leftmost possessor constituent out of a larger NP.

(53)a. John-wa dare-no imooto-o aisiteiru no?

John-Top who-Gen sister-ACC love Q

'Whose sister does John love?'

b. ?*Dare-no John-wa t imooto-o aisiteiru no?

who-Gen John-Top sister-Acc love Q

'Whose sister does John love?'

c. Dare-no imooto-o John-wa t aisiteiru no?

who-Gen sister-Acc John-Top love Q

'Whose sister does John love?'

(54) John-ga [_{NP} Mary-(no) imooto]-o aisiteiru sosite Bill-ga [_{NP} Sue-(no) imooto]-o aisiteiru.

John-Nom Mary-Gen sister-Acc love and Bill-Nom Sue-Gen sister-Acc love

'Lit. John (loves) Mary's (sister) and Bill loves Sue's sister.'

Under Kim's analysis, (54) is derived by first extracting the possessor *Mary/Sue* out of the larger NP into [Spec, FocP], followed by deletion of the TP in the first conjunct. This derivation, however, is impermissible in Japanese due to the Left Branch Condition. Note that one could not resort to the so-called "repair-by-deletion" (Merchant 2001). Since Japanese gapping involves *v*P/VP-level coordination but lacks *v*P/VP deletion, there is no constituent whose deletion simultaneously eliminates the offending structure from which extraction has taken place (i.e. NP) and *aisiteiru* 'love' in (54). On the other hand, the example in question is exactly what the present analysis predicts. The verb in the first conjunct undergoes CE. This CE, in turn, licenses DE of the head of its DP complement, as in the English non-constituent gapping seen in (20).¹¹

4.5. *Argument Ellipsis Analyses: Oku (1998), Kim (1999), Saito (2003), Takahashi (2006, 2008)*

Various researchers on Korean and Japanese, including Oku (1998), Kim (1999), Saito (2004), and Takahashi (2006, 2008), have recently proposed that certain cases of null arguments in these languages are analyzed as NP/DP ellipsis rather than empty pronouns (Kuroda 1965). For reasons of space, I repeat only one argument in favor of this analysis made in Takahashi (2008) based on what he calls *quantificational null objects*; see the above-mentioned works for various arguments based on the sloppy reading (Oku 1998), inalienable possession constructions (Kim 1999), and "parasitic gap-like" constructions (Takahashi 2006). Consider examples in (55a, b) and (56a, b).

¹¹ Obviously, Kim's (1997) analysis cannot explain why gapping is restricted to coordinate structures since the two components of his analysis for gapping, scrambling and PF deletion, are known to apply elsewhere.

(55)a. Hanako-ga taitei-no sensei-o sonkeisiteiru.

Hanako-Nom most-Gen teacher-Acc respect

‘Hanako respects most teachers.’

b. Taroo-mo *e* sonkeisiteiru.

Taroo-also respect

‘(Lit.) Taroo respects, too.’

(Takahashi 2008: 310)

(56)a. Hanako-ga taitei-no sensei-o sonkeisiteiru.

Hanako-Nom most-Gen teacher-Acc respect

‘Hanako respects most teachers.’

b. Taroo-mo karera-o sonkeisiteiru.

Taroo-also them-Acc respect

‘Taroo respects them, too.’

(Takahashi 2008: 310)

Both the null argument *e* in (55b) and the lexical pronoun *karera* in (56b) are intended to take the object quantifier *taiteino sensei* ‘most teachers’ in (55a)/(56a). Takahashi (p. 310) observes that the lexical pronoun in (56b) functions as an E-type pronoun in the sense of Evans (1980); (56b) ‘means only that Taroo respects those teachers that Hanako respects.’ Importantly, however, (55b) with the null object not only allows this E-type pronoun reading but also ‘the interpretation that Taroo respects most teachers, where the null object serves as a full-fledged quantifier meaning most

teachers (thus, the set of teachers that Taroo respects can be different from the set of teachers that Hanako respects). If the empty null object in (55b) were analyzed as a case of null pronominal (as argued on various grounds in Hoji 1985, Kuroda 1965, and Saito 1985), this reading would not be accounted for. On the other hand, the argument ellipsis account provides a natural analysis for this reading, as shown in (57a, b), where the null object is a genuine quantifier, not an empty pronoun, that undergoes ellipsis in the PF component under identity with the object.

- (57)a. Hanako-ga taitei-no sensei-o sonkeisiteiru.
 Hanako-Nom most-Gen teacher-Acc respect
- b. Taroo-mo ~~taitei-no~~ ~~sensei-o~~ sonkeisiteiru.
 Taroo-also most-Gen teacher-Acc respect (Takahashi 2008: 310)

Given the wide range of cases of null arguments in Japanese/Korean that supports the Argument Ellipsis account, it would be important to see whether this analysis could also extend to gapping in Japanese. The answer is in the negative because, as suggested by an anonymous reviewer, there seem to be significant differences between gapping and argument ellipsis. Among others, argument ellipsis can take place across sentential boundaries, as shown in (58a, b). This does not hold for gapping, which can take place only in coordinate structures, as illustrated in (59a, b).¹²

¹² Admittedly, there are cases of gapping as in (ia, b) that seem at first sight to span sentence boundaries.

(58)a. Speaker A: John-ga zibun-no gakusei-o hometa.

John-Nom self-Gen student-Acc praised

‘John praised his student.’

b. Speaker B: Bill-mo *e* hometa.

Bill-also praised

‘(Lit.) Bill praised, too. = Bill praised his student, too.’

(59)a. * Speaker A: John-ga zibun-no gakusei-o *e*

John-Nom self-Gen student-Acc

‘(Lit.) John his student. = John praised his student’

b. Speaker B: sosite Bill-ga zibun-no TA-o hometa.

and Bill-Nom self-Gen TA-Acc praised

‘(Lit.) and Bill his TA. = Bill praised his TA.’

According to the Argument Ellipsis analysis, the object in (58b) is elided at PF under identity with the object in (58a). The ungrammaticality of (59a) shows that this analysis cannot be extended to gapping.

(i) a. Peter can sing.

b. *(and) Mary Ø dance. (Hernández 2007: 2110)

However, following Neijt (1979) and Hernández (2007), these cases may be analyzed as collaboration of two people in what amounts to a single sentence. Note that (ib), without the coordinator *and*, is ungrammatical, a signature property of gapping in English. I will not discuss this type of gapping further for reasons of space in this paper.

5. The Comparative Syntax of Gapping: Japanese vs. English

In this section, I examine differences between Japanese and English with respect to the number of remnants in the gapped clause and the directionality of gapping. I show that these differences are derived from independent parametric differences concerning coordination and movement.

5.1. *The Number of Remnants in Gapping: Rightward Movement + Deletion vs. CE/DE Ellipsis*

Jackendoff (1971), Kuno (1976) and subsequent work note that there is a restriction on the number of remnants in English gapping. Most typically, a gapping construction has two remnants in the gapped clause. Thus, gapping with three remnants is poor, as in (60a, b). However, gapping with three remnants is perfect in Japanese, as in (61a, b). See Kim (1997: 161-162) for relevant data from Korean.

(60)a. ?* Willy put the flowers in a vase, and Charlie the book on the table.

b. ?* Charlie entered the bedroom at 5:30, and Vera the kitchen at 6:00. (Jackendoff 1971: 24)

(61)a. Willy-ga hana-o kabin-ni (sosite) Charlie-ga hon-o tsukue-ni oita.

Willy-Nom flower-Acc vase-Loc and Charlie-Nom book-Acc table-Loc put

‘Lit. Willy (put) the flowers in a vase, and Charlie put the book on the table.’

b. Charlie-ga gozi-han-ni sinsitu-ni (sosite) Vera-ga daidokoro-ni rokuji-ni haitta.

Charlie-Nom five-half-at bedroom-to and Vera-Nom kitchen-to six-at entered

‘Lit. Charlie (entered) the bedroom at 5:30, and Vera entered the kitchen at 6:00.’

There do exist cases as in (62) (from Schwartz 1999: 316, as cited in Winkler 2005: 193 with accents added) where three remnants are possible in English gapping.

(62) SOME talked with YOU about POLITICS and OTHERS ~~talked~~ with ME about MUSIC.

However, this pattern requires quite a bit of topic-focus articulation not required in Japanese/Korean gapping; see Winkler (2005) for relevant discussion. Thus, let us follow the consensus in the literature that English allows up to two remnants in the gapped conjunct. Our proposed analysis predicts that by default, there should be no upper limit on the number of remnants permitted by the CE as long as they meet syntactic and semantic constraints that that we have seen thus far to characterize gapping. This is what we see in Japanese/Korean gapping. Thus, the question is why English has a particular limit. Let us assume, following Jayaseelan (1991), that English gapping is the product of the Heavy DP Shift to the right periphery of the ν P, followed by the deletion of the ν P at PF. Then, the “two remnant” restriction directly follows as the combination of two independently motivated facts: a) the subject in English moves to [Spec, TP] to vacate the ν P and b) the Heavy DP Shift can apply only once. The latter observation is illustrated by (63a, b) (Abe and Hoshi 1997: 103).

(63)a. * John built t_1 t_2 yesterday [with a hammer]₂ [the house that he will live in]₁.

b. * John built t_1 t_2 yesterday [the house that he will live in]₁ [with a hammer]₂.

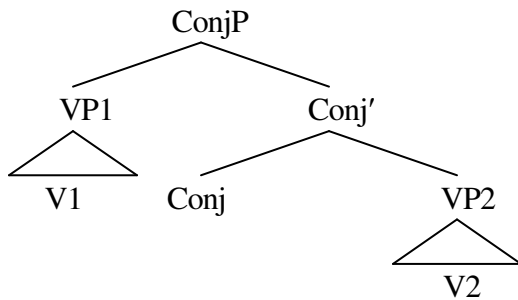
5.2. *The Directionality of Gapping: Forward vs. Backward Deletion*¹³

Ross (1970) proposes that there is a strong correlation between the directionality of gapping and the underlying word order of a language. Specifically, gapping operates forward in right-branching languages (like English) and backward in left-branching languages (like Japanese). The robustness of this correlation has been subject to critique by subsequent research: see Junaido (1991/1992) for Hausa, Rosenbaum (1977) for Zapotec, and Hernández (2007) for Persian. Most recently, Hernández (2007) attempts to derive the directionality of gapping from the interaction of the category-specific nature of coordinators with the Relativized Minimality (Rizzi 1990). Under the asymmetric view of coordination (Munn 1993; Kayne 1994), she proposes that, in languages like English, which use the single coordinator *and* to combine all types of constituents alike, the dependency/c-command relation between the verb in the first conjunct and the CE head in the second conjunct for the purposes of Full Interpretation is established. In languages like Japanese, which uses different coordinators for different types of phrases, the relation in question is blocked by coordinators with the [+V, -N] feature that intervenes between the two verbs. Hence, forward gapping is impossible in Japanese. However, this analysis obviously cannot explain why backward gapping is possible in Japanese in the first place because the verb in the second conjunct should not be able to c-command into the CE verb in the first conjunct, hence the gapped verb should violate the Principle of Full Interpretation. For this reason, I pursue a different analysis for the

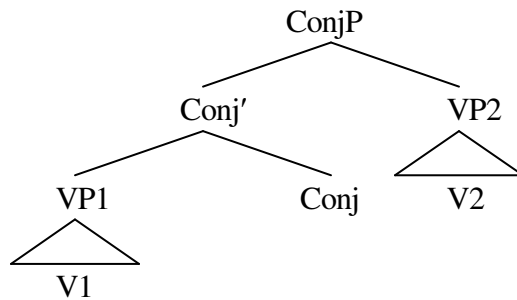
¹³ Thanks to an anonymous reviewer for encouraging me to think about the question discussed in this subsection.

directionality of gapping, though I adopt certain basic assumptions from her work. Following Johannesen (1998), suppose that coordinate structures in English and Japanese are as in (64a) and (64b), respectively.

(64)a. English



b. Japanese



Assuming with Hernández that the c-commanding relation between the two Vs can be mediated by their dominating VPs, VP1 asymmetrically c-commands VP2. English allows only forward gapping because the feature transfer would not be successful if gapping/CE went backwards. Conversely, Japanese only allows backward gapping/CE because in (64b), V2 asymmetrically c-commands V1. This analysis thus ties the directionality of gapping to the difference from independently motivated parametric differences concerning coordination. Johannesen's (1998) study provides independent confirmation for this coordination-based approach to the directionality of gapping. Based on her impressive survey of 32 languages, Johannesen (p. 55, 56) shows that there is a quite robust correlation between the direction of verb and object and the position of what she calls unbalanced coordination, where one of the conjuncts shows deviant grammatical properties with respect to case, number, etc. Specifically, SVO languages

(Italian, Norwegian, Old Hebrew, Palestinian Arabic, etc.) have the second conjunct as the deviant conjunct whereas SOV languages (Amharic, Burushaski, Hopi, etc.) have the first conjunct as the deviant conjunct. This correlation is naturally explained by (64a, b) since what is selected by the Conj head is the second conjunct in (64a) but the first conjunct in (64b). Note that gapping is one special case of unbalanced coordination in that the verb in only one of the conjuncts is affected. Thus, the directionality of the gapping can be predicted straightforwardly from the parametric difference concerning coordination.

6. Multiple P-Stranding in Japanese

In this section, I discuss one potential challenge to our present analysis and suggest a solution to this challenge in terms of the parallelism constraint on on-line processing.

Abe and Hoshi (p.133) note, as one issue for future research, that P-/case-drop from a non-final remnant within the gapped conjunct results in ungrammaticality. This point is illustrated in (65a), together with its LF representation in (65b) (Abe and Hoshi 1997:133).

(65)a.* *Mary-ga nokogiri gareezi-o, (sosite)John-ga hammaa-de ie-o tsukutta.*

Mary-Nom saw garage-Acc and John-Nom hammer-with house-Acc made

‘Mary built the garage with a saw and John the house a hammer.’

b. * [_{IP} Mary-ga [_{I'} nokogiri [_{I'} gareezi-o [_{I'} e]]]] *sosite*

[_{IP} John-ga [_{I'} hammaa₁ [_{I'} ie-o₂ [_{I'} [_{PP} t₁-de] t₂ tukutta]]]]

Abe and Hoshi (p. 133) note that their analysis would incorrectly rule (65a) in because “nothing prevents P-stranding of *de* because it is created by left movement” and leave this problem for future research. This problem, in fact, has remained as an unresolved issue in subsequent research on gapping in Japanese and Korean. Noting that a similar P-stranding prohibition characterizes Korean gapping, Sohn (1994, 1999) and Kim (1997, 1998) make the observation in (66), stating that P-stranding in Korean gapping does not follow from anything deeper other than that. (67a, b) confirms that this observation also characterizes environments for P-omission in Japanese gapping.

(66) The postposition or Case-marker in Korean Gapping may drop only if the host remnant is immediately followed by the conjunction *kuliko* ‘and’. (Kim 1998: 183)

(67)a. Mary-ga nokogiri-*(**de**) gareezi-(**o**) (sosite) John-ga hammaa-de ie-o tukutta.

Mary-Nom saw-with garage-Acc and John-Nom hammer-with house-Acc built

‘Lit. Mary (built) the garage with a saw and John the house a hammer.’

b. * Mary-ga gareez-*(**o**) nokogiri (-**de**) (sosite) John-ga hammaa-de ie-o tukutta.

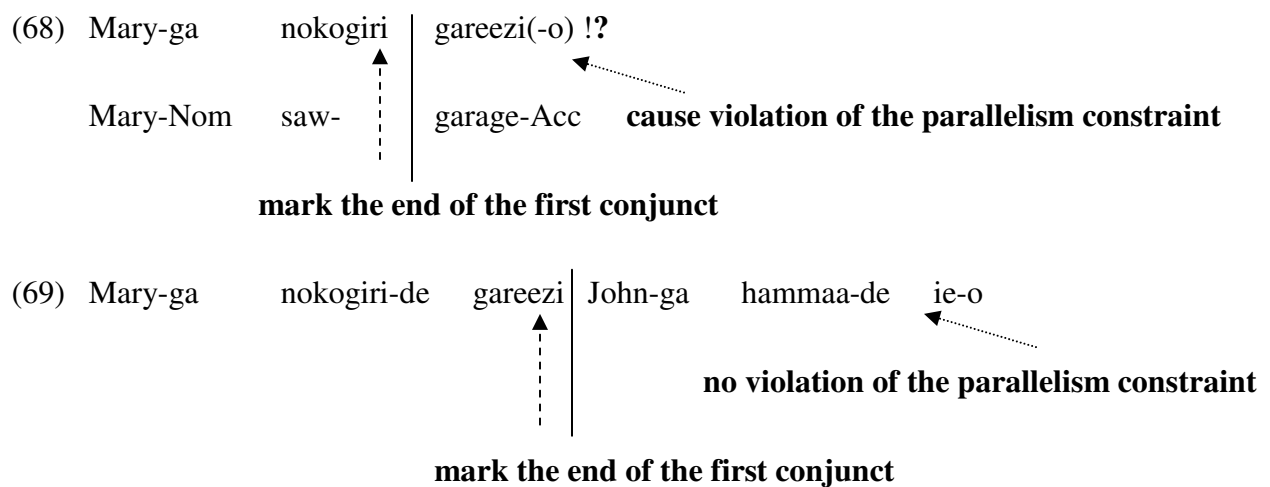
Mary-Nom garage-Acc saw-with and John-Nom hammer-with house-Acc built

‘Mary built the garage with a saw and John the house a hammer.’

Similarly, Sohn (1999: 383) speculates that P/case particle-omission is a PF phenomenon, stating “conjunction takes the whole contrasted part as one unit, optionally deleting the postposition on

the last NP.” Kato (2006: 124, 125) speculates that P-stranding in Japanese might have to do with a different intonational contour on the element that immediately precedes the gap (such as lengthening of the syllable preceding the gap), but leaves the issue for future research.

Following the suggestion of an anonymous reviewer, I pursue a different analysis of the case at hand in the area of on-line processing whereby the ungrammaticality of (67a, b) is not due to Kim’s PF constraint itself but ultimately to the violation of the parallelism constraint (see section 2) induced by that constraint as one processes gapping on line. According to the PF constraint, once we hear the DP without the postposition or case-particle, we interpret it as marking the end of the first conjunct, in conformity with the PF constraint. Thus, the first conjunct of (67a) with *nokogiri* ‘saw’ is interpreted as in (68). When one hears *gareezi-o* ‘garage-Acc’, however, we perceive that the parallelism constraint is immediately violated, for this DP has no correspondent in the first clause. This problem does not occur in processing (67a) with *nokogiri-de* since this variant meets the parallelism constraint (69).



Our analysis crucially relies on the idea that the parallelism constraint must be satisfied as one processes gapping in real time in conformity with Kim's observation.

It is important to note in this present context that Kuno (1976) proposes the following constraints on the application of gapping in English.

(70) The Requirement for Simplex-Sentential Relationship (Kuno 1976: 314)

The two constituents left over by Gapping are most readily interpretable as entering into a simplex-sentential relationship. The intelligibility of gapped sentences declines drastically if there is no such relationship between the two constituents.

This constraint is different from our constraint in that it was motivated on certain parallelism required by question-answer pairs. However, the two constraints share the same underlying idea that gapping is constrained by various strategies informed by grammatical principles (subject-predicate relation, case-particle/postposition omission in the final conjunct immediately before conjunction).

7. Conclusions

Gapping in Japanese is best analyzed by the coordinate and dependent ellipsis theory proposed by Williams (1997). This analysis provides a natural explanation for several syntactic, semantic, and phonological properties associated with this construction that would remain unexplained under

previous analyses resorting to Right-Node-Raising, LF Copy, PF-String Deletion, Syntactic Movement + PF Deletion, and Argument Ellipsis. Our proposed analysis has right theoretical characteristics to accommodate the multi-modular aspects of Japanese gapping in a unified fashion to the degree that previous uni-modular analyses cannot. The payoff of our present analysis, of course, is that it achieves this result from independently motivated principles of coordination, dependency and their manifestations at the interfaces among syntax, phonology, semantics, and processing.

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