

A Syntactic Analysis of Gapping in English

高木, 留美
九州大学人文科学府

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A Syntactic Analysis of Gapping in English*

Rumi Takaki

1. Introduction

Gapping in English is one of several elliptical constructions first studied by Ross (1970). The terms for Gapping are illustrated in (1).

(1) a. Mary bought a car and Sam a bike.

b. Mary bought a car] and [Sam ~~bought~~ a bike].
(correlate₁) (antecedent) (correlate₂) (remnant₁) (gap) (remnant₂)
【 first conjunct 】 【 second conjunct 】

In Gapping, the verb (or verb with additional elements) in the second conjunct, which is identical to the verb (or verb with additional elements) in the first conjunct, is elided. We call the former the gap, and the latter the antecedent. In addition, the elements which appear in the second conjunct are called the remnants, and the correlates correspond to the remnants.

A number of analyses about Gapping have been developed over the years. At present, we have three main approaches as in (2).

(2) a. the deletion analysis

b. the copying analysis

c. the movement analysis

With the deletion analysis, deletion is conducted at PF under the condition in which the verb in the second conjunct is identical to the antecedent (see Sag (1976); Jackendoff (1971); Jayaseelan (1990); Coppock (2001)). In the general copying analysis, the antecedent in the first conjunct is copied to the gap at LF (see Abe and Hoshi (1997,1999); Repp (2009)).¹ With the across-the-board (ATB) movement analysis, the antecedent and the gap move to some place by ATB movement.

This paper is organized as follows. In section 2, we will examine the properties of Gapping. In section 3, we will survey the three previous analyses: the first is the VP deletion analysis, which is argued for by Coppock (2001), the second is the ATB movement analysis, which was proposed by Johnson (1996), and the last one is the vP deletion analysis which was suggested by Gengel (2007). In section 4, I will take a stance for the deletion approach and make a new proposal. In the conclusion, I summarize the main results of my research.

2. Properties of Gapping

The most basic property of Gapping is that it occurs only in coordination structures involving conjunctions such as *and*, *or*, and *but*, as illustrated in (3). By contrast, other conjunctions like *because*, *after*, and *if* cannot be used in Gapping as in (4).

- (3) a. Sam plays the sousaphone, and Max the saxophone.
b. Either Sam plays the sousaphone or Jekyll the heckelphone.
c. Bill ate the peaches, but Harry the grapes. (Jackendoff 1971)
- (4) a. Sandy plays the guitar, {*because/*after/*if} Betsy the harmonica.
(Vicente 2010)

In Gapping, the antecedent clause which is embedded in the matrix clause is not allowed as shown in (5a), nor can a gapped clause be embedded as in (5b).

(5) a. *She's said Peter has eaten his peas, and Sally her green beans, so now we can have dessert.

b. *Some had eaten mussels and she claims that others shrimp.

(Johnson 2009)

Gapping can also allow examples involving more than two antecedents, known as split antecedents.²

(6) Wendy wants to sail around the world because she loves travel, and Bruce wants to climb Kilimanjaro in order to prove to himself that he can, but neither in order to show off for anyone.

(Coppock 2001)

In this example what is gapped in the second conjunct is *Wendy wants to sail around the world (because she loves travel) nor Bruce wants to climb Kilimanjaro (in order to show off for anyone)*.

Moreover, there are examples in which non constituent elements are gapped as in (7b).³

(7) a. Carrie gave a set of directions to me, and Will gave a map to me.

(Johnson 2006)

b. Carrie gave a set of directions to me, and Will a map.

Another property of Gapping is centered on Case. In Gapping, remnants often show different Case-markings from the ones in non gapped sentences as is exemplified in (8).

(8) a. She ate the beans, and he ate the rice.

b. She ate the beans, and he/him the rice.

(Johnson 1996/2003)

The nongapped example (8a) shows that the subject in the second conjunct has

nominative Case, whereas the gapped one in (8b) shows that it has not only nominative Case but also accusative Case.

Finally, we will look at the relationship between Gapping and negation in the first conjunct. It has been argued that negation has three options for the interpretation in gapped sentences: () distributive scope reading over the coordination, () wide scope reading of negation over it, and () narrow scope reading of negation over it. (9a) generally has the interpretation of (), as is paraphrased in (9b).

- (9) a. Pete hasn't got a video and John a DVD. (Repp 2009)
b. It is not the case that Pete has a video and it is not the case that John has a DVD.

Namely, example (9a) has a similar meaning to (9b) but *hasn't got* has been elided in its second conjunct. In this case, the second conjunct has the interpretation of negation in its own clause. In the second case, negation takes scope over the coordination, as in (10).

- (10) a. Pete didn't clean the whole flat and John laze around all afternoon. (ibid.)
b. It is not the case that [Pete cleaned the whole flat and John lazed around all afternoon].
- (11) a. Pete hasn't got a video and John a DVD. (=9a) (ibid.)
b. It is not the case that [Pete has a video and John has a DVD].

The interpretation of (10a) is that of (10b), i.e. that both events that Pete cleaned the whole flat and John lazed around all afternoon, did not happen, therefore the two events are regarded as a pair. As for this reading, although examples like (9a) (= (11a)) normally have distributive scope reading, they can also have wide scope reading of negation like (11b) with appropriate intonation (this is called external negation).⁴

Concerning narrow scope reading, negation affects just the first conjunct but not the second conjunct, thus it does not have the interpretation of negation. This is

illustrated in (12).

(12) a. Pete wasn't called by Vanessa but John by Jessie.

b. It is not the case that Pete was called by Vanessa but it is the case that John
was called by Jessie. (ibid.)

The crucial difference between the first and the second cases ((9) to (11)) and the last one (12) is the existence of markers like the conjunction *but* and the adverb *only*, which indicate a contrastive situation which is opposite to the one in the first conjunct. Additionally, this narrow scope reading of negation is similar to distributive scope reading of negation in intonation: each conjunct has an individual intonational phrase.

3. Previous Analyses

3.1 VP Deletion Analysis

Coppock (2001) suggests that Gapping includes a VP deletion process in the second conjunct. Furthermore, following Johnson (1996), she argues that the second conjunct consists of VP, not TP, and the remnants in the second conjunct are adjoined to VP.

Her argument is grounded on the fact that VP is an unacceptable second remnant in the second conjunct, as shown in Sag (1976).

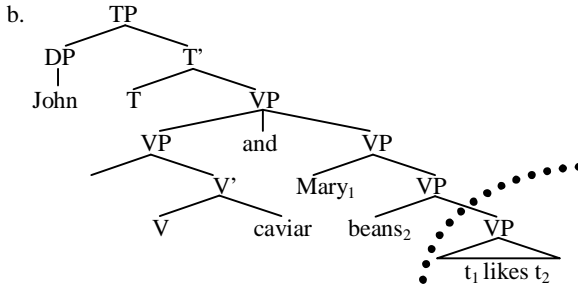
(13) *John will bring dessert, and Mary provide dinner.

The example (13) shows that only *will* in the second clause is gapped. According to Coppock, V in VP must be obligatorily deleted. Thus the ungrammaticality in (13) can be appropriately explained.

In the light of Coppock's suggestions, the structure would be as follows.⁵

(14) a. John likes caviar and Mary beans.

(ibid.)

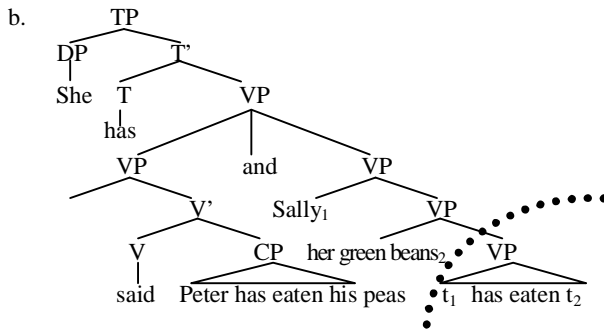


Specifically, the structure consists of two VPs in this analysis. Moreover, the DPs *Mary* and *beans* both adjoin to VP, and the deletion of VP would be conducted at PF.

However, the next example cannot be properly explained by this analysis.

(15) a. *She's said Peter has eaten his peas, and Sally her green beans, so we can have dessert.

(Johnson 2009)



(15), in which the first conjunct is embedded in the matrix clause is not allowed. However, contrary to the fact, Coppock's assumption should predict that it is grammatical, because VP ellipsis is generated even though the first conjunct is embedded.

(16) a. John said that Mary would attend the party and, in fact, she did.

b. [_{TP} John [_{VP} said [_{CP} that [_{TP} Mary would [_{VP} attend the party]]] and [_{TP} in fact [_{TP} she did [_{VP} ~~attend the party~~]]]]].

(16b) shows that the antecedent of VP deletion can be in an embedded clause. In contrast to VP deletion, the Gapping in (15b) is ungrammatical. This strongly suggests that Gapping cannot be generated using the VP deletion approach.

There is a theoretical problem: it is not clear why the remnants move. Thus, she needs to provide a reason, utilizing the ideas such as Case or feature checking.

3.2 Across-the-Board Movement Analysis

ATB movement analysis is a new kind of analysis of Gapping, proposed by Johnson (1996/2003, 2006, 2009). He assumes that Gapping consists of vP coordinations, and relates the fact that Gapping can be generated only in coordinations to ATB movement, which is applicable just in coordinations. There are two grounds for his assumptions.

(17) a. Mrs. Smith can't dance or Mr. Smith sing.

b. Mrs. Smith can't dance and Mr. Smith can't sing.

c. Mrs. Smith can't dance or Mr. Smith can't sing. (Johnson 2009)

Johnson notes that the interpretation of (17a) can only be the one in (17b). This fact can successfully be captured by the vP coordination approach as in (18). Since *can't* embeds the coordination, negation has wide scope over the coordination.

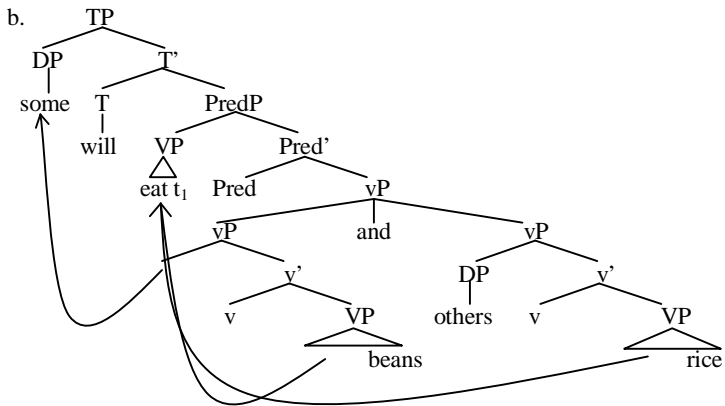
(18) [_{TP} Mrs. Smith can't [_{vP} [_{vP} v [_{VP} dance]] or [_{vP} Mr. Smith v [_{VP} sing]]]]

Thus, this fact is one of the reasons for assuming the vP coordinations in Gapping. The second point is related to the fact that gapping is not possible in embedded contexts.

(19) Some had eaten mussels and she claims that others *(had) shrimp.

If the second conjunct consists of vP, then Johnson's approach can appropriately capture this fact, because the coordination in examples such as (19) must include the finite auxiliary. Consequently, he proposes the structure of Gapping as in (20).

(20) a. Some will eat beans and others rice.



To generate (20), after two DPs *beans* and *rice* adjoin to each VP, each *eat t_i* moves to the specifier of Predicate Phrase (PredP) in ATB fashion. Subsequently, to meet the requirement of EPP of T, *some* moves to Spec-TP.

Under his assumption, the ungrammaticality of (21) is properly explained.

(21) a. *She's said Peter has eaten his peas, and Sally her green beans, so now we can have dessert. (= (5a))

b. [_{TP} She_i has [_{PredP} [_{VP} has eaten] [_{vP} [_{vP} t_i [_{VP} said [_{CP} Peter [_{VP} [_{VP} [_{VP}] his peas]]]]]]] and [_{vP} Sally [_{VP} her green beans]]]]].

In this structure, the identical constituents *has eaten* move in ATB fashion to Spec-PredP. However, we can see that VP in the first conjunct which is embedded in CP needs to move to PredP with VP in the second conjunct which is not embedded.

Recall that, under Johnson’s assumption, the coordination of vPs is formed by the same level of vPs in both conjuncts, thus the coordination of vPs in (21b) is illegitimate. Therefore, Johnson’s account of Gapping correctly explains the ungrammaticality of (21a). However, example (22) illustrates some potential problems of the ATB account.

(22) a. I make too strong an espresso and Fred too weak.

b. [_{TP} I [_{PredP} [_{VP} make t an espresso] Pred [_{VP} [_{VP} v [_{VP} [_{DegP} too strong] [_{VP}]]]] and [_{VP} Fred v [_{VP} [_{DegP} too weak] [_{VP}]]]]]].

c. [_{TP} I [_{PredP} [_{VP} make [_{DegP} too strong] t an espresso]_i] Pred [_{VP} [_{VP} v [_{VP} t_i] and [_{VP} Fred v [_{VP} [_{DegP} too weak] t_i]]]].

In this example, after adjoining of the two Degree Phrases (DegPs) to each VP, it seems that the derivation converges at this point. However, the word order in (22b) is different from that of (22a), thus Johnson (2009) proposes a new condition in (23).

(23) The Deg-XP Adjacency Condition

If DegP merges with XP and both DegP and XP are pronounced, then DegP must be left-string-adjacent to XP.

Under this condition, he notes that in (22b) *too strong* is not pronounced where it adjoins to VP, and it must move to the left side of DP *an espresso* as in (22c). Thus the problem can be overcome. However, the next example cannot be explained only by ATB movement.

(24) a. Arizona elected Goldwater senator, and Pennsylvania Schweiker.

(Johnson 1996/2003)

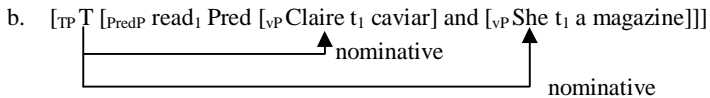
b. [_{TP} Arizona_j [_{PredP} [_{VP} elected t_i senator] Pred [_{VP} [_{VP} t_j [_{VP} [_{VP}]Goldwater_i], and [_{VP} Pennsylvania [_{VP} [_{VP}] Schweiker_i]]]].

The diagram shows a box around the VP 'and Pennsylvania' and another box around the VP 'elected t_i senator'. An arrow points from the t_i in the first VP to the VP 'and Pennsylvania'.

In (24b), after *Goldwater* adjoins rightward to VP, VP [*elected t senator*] moves to Spec-PredP. However, at this point, the word order of (24b) becomes different from that of (24a), and there is no condition which can solve the word order problem in (24b). Therefore, the derivation of (24a) cannot be generated by the ATB approach.

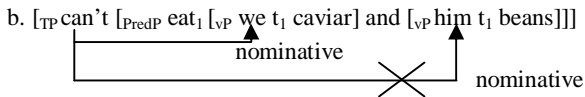
Next, concerning the Case of the gapped conjunct, it is common that a pronominal subject in the second conjunct bears the nominative Case as in (25a), and Johnson assumes that nominative Cases of both subjects in each conjunct are assigned by T as in (25b).

(25) a. Claire read a book and she a magazine. (Gengel 2007)



However, the subject of the second conjunct has accusative Case in (26a).

(26) a We can't eat caviar and him beans.



In (26), T is supposed to assign the subject in the second conjunct nominative Case, although it has accusative Case. Thus it seems that T fails to assign Case to the subject in the gapped conjunct.

Furthermore, there is a problem concerning the scope of negation in Gapping. As mentioned in section 2, there are three ways of reading sentences with respect to the scope of negation in Gapping: () the wide scope reading of negation over the whole coordination, () the distributive scope reading of negation over each conjunct, and () the narrow scope reading of negation with the scope limited to the first conjunct. Let us consider these cases, starting with case () and ATB movement analysis.

(27) a. Pete hasn't got a video and John a DVD. (Repp 2009)

b. $[_{TP} \text{Pete}_1 \text{ hasn't } [_{\text{PredP}} [_{\text{VP}} \text{got } t_2] \text{ Pred } [_{\text{VP}} [_{\text{VP}} t_1 [_{\text{VP}} \text{ a video}_2]], \text{ and } [_{\text{VP}} \text{John } [_{\text{VP}} \text{ a DVD}_2]]]]]]]$

We have seen in section 2 that (27a) has two readings. One is the wide scope reading of negation over the coordination (viz. $\neg (A \text{ } B)$) with appropriate intonation. The other one is the distributive scope reading of negation (viz. $(\neg A) (\neg B)$). In the light of ATB movement as shown in (27b), parts of VP *got t* in both conjuncts move to Spec-PredP in an ATB manner. As a result, negation takes scope over coordination of vPs, thus the ATB account of this instance can adequately capture this fact. In contrast, when it has the distributive reading of negation, it should have negative phrases for each conjunct. However, since negation is situated higher than the coordination of vPs, it cannot have the distributive scope reading by the ATB movement approach. A similar argument holds for the narrow scope reading of negation in (28).

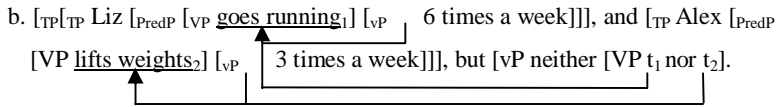
(28) a. Pete wasn't called by Vanessa but John by Jessie. (ibid.)

b. $[_{TP} \text{Pete}_1 \text{ wasn't } [_{\text{PredP}} [_{\text{VP}} \text{called } t_2] \text{ Pred } [_{\text{VP}} [_{\text{VP}} t_1 [_{\text{VP}} \text{ by Vanessa}_2]], \text{ but } [_{\text{VP}} \text{John } [_{\text{VP}} \text{ by Jessie}_2]]]]]]]$

It seems that this derivation converges and has no flaws. However, since negation is located structurally above the coordination of vPs, negation should take scope over the coordination; in other words, it affects the second conjunct and the gapped clause has the interpretation of negation. Thus, Johnson's analysis fails to get the narrow scope reading of negation.

The final problem with ATB movement analysis is that it has difficulty in accounting for split antecedents, i.e. where there are two antecedents for one gapped clause in a sentence. Let us consider this case in light of the ATB movement approach.

(29) a. Liz goes running 6 times a week, and Alex lifts weights 3 times a week, but
neither every day. (Coppock 2001)



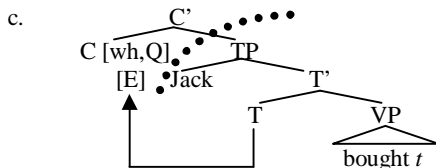
If we show the structure of (29a), it would be like (29b). However, since ATB movement is generally regarded as a movement whereby two elements move simultaneously to a single target, the sentence like those in (29a) cannot be derived by the ATB movement approach.

3.3 vP Deletion Analysis

The vP deletion analysis was proposed by Gengel (2007), who argues that the coordination of Gapping consists of TPs. Further, she adopts Merchant's (2001) E-feature, which drives deletion of phonological features. Merchant (2001) offers rich data of sluicing and proposes a mechanism of sluicing utilizing the conception of E-feature.⁵

(30) a. *What is needed is a feature on I that can be checked only by a [+wh, +Q] C head, and that triggers deletion of the IP at PF. Call this feature E. E moves from I to C, ... being checked in C.* (Merchant 2001: 60)

b. Jack bought something, but I don't know what [TP ~~Jack bought t~~].



Merchant defines E-feature as a feature which is located on T head and moves to C head to be checked by [+wh, +Q]. After the movement of E-feature, the deletion operation for phonology will be conducted on the complement of C head, TP.

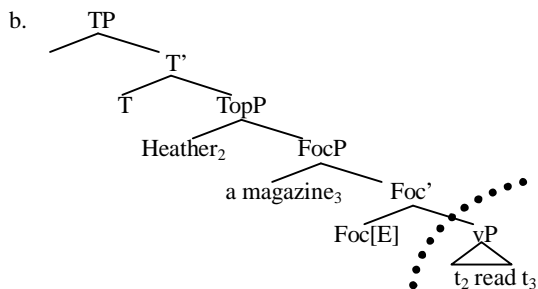
Extending Merchant's (2001) E-feature mechanism, Gengel assumes that E-feature interacts with focus feature, and it is on Foc head.

Furthermore, Gengel follows Jayaseelan (2001), who assumes the hierarchy of informational structure, particularly Focus Phrase (FocP) and Topic Phrase (TopP) above vP.

(31) [_{Top} Top [_{FocP} Foc [_{vP} v]]]

Gengel (2007) proposes the structure of Gapping as in (32b) under those assumptions.

(32) a. John read a book, and Heather a magazine. (Gengel 2007)



According to Gengel (2007), the first subject remnant (*Heather*) is a contrastive-topic and the second object remnant (*a magazine*) is a contrastive-focus. Moreover, she follows Merchant's (2006) idea which suggests that an E-feature in Gapping interacts with a focus feature and is located in the Foc head. Since she assumes the Focus Phrase above vP, the deletion, is conducted for the complement of v, VP.

However, this vP deletion approach of Gapping has several problems. First, as Jackendoff (2002) points out, universal quantifier phrases (universal QPs) such as *every N* cannot be topicalized, and such sentences are ungrammatical as shown in (33).

- (33) a. *Every girl, one of the boys danced with.
 b. *As for every girl, one of the boys danced with her. (Jackendoff 2002)

Now let us look at the examples (34).

- (34) a. Every girl showed her project to the teacher and every boy to the principal.
 (Johnson 1996/2003)
 b. [_{TopP} every boy₁ Top [_{FocP} to the principal Foc_[E] [_{VP} t₁ showed her project t₂]]]

Since the remnant *every boy* in (34b) can appear as the first remnant in the gapped clause, it follows that Gapping can be allowed to have universal QPs in the position of the first remnant. However, this fact is incompatible with Gengel's proposal, because she suggests that the first remnant is moved into Spec-TopP. The second problem concerns the existence of elements which appear in T.

- (35) a. I was a teenager in the 70's, and my brother in the 80's.
 (Kamio and Takami 1998)
 b. Some have served mussels to Sue and others swordfish.
 (Johnson 2009)
- (36) a. [_{TP} was [_{TopP} my brother₁ [_{Foc} in the 80's₂ Foc_[E] [_{VP} t₁ a teenager t₂]]]]
 b. [_{TP} have [_{TopP} others₁ [_{Foc} swordfish₂ Foc_[E] [_{VP} t₁ served mussels t₂]]]]]

The structures (36a) and (36b) indicate that T is located outside the deletion site, thus elements on T obligatorily should be left under Gengel's assumption. Then the word orders of each second conjunct in (36) conflict with the actual ones.

4. Proposal

4.1 TP Deletion Analysis

In this subsection, I will suggest a new structure of Gapping. In Particular, I will argue that Gapping includes the deletion of TP in the second conjunct. To

demonstrate the validity of this claim, I propose four notable points in (37).

- (37) a. the coordination of FocPs
- b. E-feature on Foc and v and the deletion of their transfer domain, TP and VP
- c. focus agreement between Foc and remnants (or operators) in the first and second conjuncts
- d. movement of remnants to Spec-FocP with tucking in operation

As for the first point, I assume that the remnants in the second conjunct ultimately move to the specifiers of FocP. This is because I assume that the remnants in Gapping have foci, and that TP is obligatorily deleted when it is transferred. For this reason, I follow Rizzi (1997), who proposes the fine structure of CP, as illustrated in (38).

(38) [_{ForceP} Force [_{Top*P} Top* [_{FocP} Foc [_{Top*P} Top [_{FinP} Fin [_{TP} T]]]]]] (Rizzi 1997)

Further, let us look at the next example in (39).

(39) What did John buy, and what Mary?

Rizzi (1997) assumes that wh-phrases move to Spec-FocP in root clauses. Therefore, (39) indicates that the coordination of FocPs can be possible in Gapping.

Moreover, there is a proof that the first remnant in the second conjunct has focus. As mentioned in 3.3, a universal quantifier such as *every N* cannot be topicalized as in (34), which are repeated as (40). In contrast, *every N* can appear in the focus position in the cleft sentence in (41).

- (40) a. *Every girl, one of the boys danced with.
- b. *As for every girl, one of the boys danced with her. (Jackendoff 2002)

(41) It's every problem that Sal needs to solve or Hollo needs to tackle.

(Jackendoff 2002)

(42) a. Every girl showed her project to the teacher and every boy to the principal.

(Johnson 1996/2003)

b. [_{TopP} every boy₁ Top [_{FocP} to the principal Foc_[E] [_{vP} t₁ showed her project t₂]]]

The fact that *every N* can appear as the first remnant of Gapping as in (42) indicates that the first remnant in the second conjunct also has focus but not topic. Turning to the second point, that is, the motivation for deletion, I assume that E-feature (Merchant (2001)) is located on the head Foc and v. Moreover, adopting the phase theory which was first proposed by Chomsky (2000), I suppose that when the transfer domain VP and TP are transferred, E-features which are on Foc and v drive the PF deletion of VP and TP. Evidence that the E-feature on v must be present comes from the fact the VP adverb in the second conjunct, which is identical to the one in the first conjunct is removed.

(43) Simon quickly dropped the gold, and Jack the diamonds.

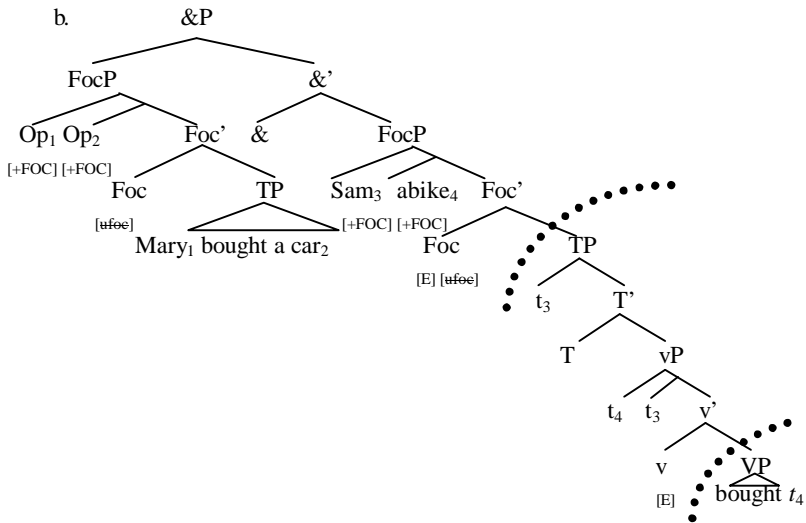
(Jackendoff 1971)

Jackendoff argues that adverbs in the first conjunct are interpreted as being at the second conjunct. Thus, (43) indicates that the VP adverb *quickly* should be present in the second conjunct and deleted at PF, and this leads to the assumption that E-feature on v must appear.

The third point relates to the agreement between the head Foc and the remnants (or operators). I assume that all remnants bear focus features and they agree with the uninterpretable feature on the Foc head. Similarly, I presume that the antecedents have focus features; as remnants are said to have contrastivity, it can be assumed that the antecedents have also contrastivity. However, if they moved to Spec-FocP, the word order of the first conjunct would change and the appropriate interpretation could not be obtained. For that reason, to satisfy the uninterpretable feature of the

Foc head, I suppose that there are null operators of antecedents which have interpretable focus features, and they agree with the uninterpretable features of the Foc head. Concerning the final point, I adopt Richards' (2001) tucking-in operation: when there is one feature that attracts two elements, the closer element moves first, and the lower one moves second and it is tucked in under the first one. With those points, I propose the structure of Gapping as in (44).

(44) a. Mary bought a car and Sam a bike.



In this structure, the correlates, *Mary* and *a car*, have focus features; however, the two elements do not move to Spec-FocP. Since they need to check their focus features against the uninterpretable focus feature on the Foc head, their null operators have to appear instead. They are base-generated at Spec-FocP, and these operators and the uninterpretable focus features on FocP are in a checking relation. Second, in the second conjunct, two elements *Sam* and *a bike* are both interpreted as contrastive focus: hence they have focus features. In the second conjunct, after the v head is merged, *Sam* moves to inner Spec-vP and similarly *a bike* moves to outer Spec-vP. Then, since E-feature is located on the v head, the transfer domain VP are

transferred and the deletion operation for sound is conducted. Furthermore, after the T head is merged, the subject Sam moves to Spec-TP to satisfy the EPP requirement of T. Additionally, *Sam*, which has interpretable focus feature, moves to Spec-FocP to agree with the Foc head, which has an uninterpretable focus feature. Then, *a bike*, which has also interpretable focus feature moves to Spec-FocP underneath the first remnant with tucking-in to agree with the Foc head. Subsequently, the deletion operation occurs for TP. After the derivations of the first and the second conjuncts are formed in this way, the first conjunct is to be located in Spec-&P and the second conjunct is to be set in the complement of &P. Thus, the derivation appropriately converges.

Now, one question may come up: why are there null operators in the first conjunct and not in the second conjunct? One proposal would be to assume that the second conjunct has null operators; however, if there were operators in the second conjunct, the remnants would remain in situ and be deleted. Consequently, there is nothing left and it fails to generate. Moreover, if the elements in the first conjunct moved to the Spec-FocP to agree with the uninterpretable focus feature on Foc head, the word order would also be different from the actual one. In addition, one can assume that there is some association between E-feature and EPP/edge feature, because the deletion for vP and TP by E-feature and the movements of elements by EPP/edge feature take place as a series of the operation.

Next, let us look at the examples which the previous analyses could not explain. The first is the example which consists of discontinuous constituent as in (45).

(45) a. Arizona elected Goldwater senator, and Pennsylvania Schweiker.

b. [_{&P}[_{Foc} Op₁ Op₂ Foc [_{TP} Arizona₁ elected Goldwater₂ senator]]] and
 [+FOC] [+FOC] [ufoe]
 [_{Foc} Pennsylvania₃ Schweiker₄ Foc_[E] [_{TP} t₃ T [_{vP} t₄ t₃ v_[E] [_{VP} elected t₄ senator]]]]]
 [+FOC] [+FOC] [ufoe]

The structure of (45a) is (45b), in which the derivation proceeds in the same way

as in (44b). Since the two remnants, *Pennsylvania* and *Schweiker* in the second conjunct both have focus features, they move to the specifiers of FocP. As a result, even if discontinuous constituents are left in TP, it is a constituent TP which is deleted when it is transferred; we can have the proper interpretation of this example and no word order problem occurs for the deletion operation in the PF component.

The next example involves the split antecedents which the ATB movement analysis cannot explain.

(46) a. Liz goes running 6 times a week, and Alex lifts weights 3 times a week, but
neither every day. (Coppock 2001)

b. [_{&P}[_{Foc} Op₁ Op₂ Foc [_{TP} Liz₁ goes running 6 times a week₂]] and [_{&P}
[_{Foc} Op₃ Op₄ Foc [_{TP} Alex₃ lifts weights 3 times a week₄]] but [_{FocP} neither₅
every day₆ [_{TP} t₅ Liz₁ goes running nor Alex₃ lifts weight t₆]]]].

In (46a), the first and the second conjunct are the antecedents of the third conjunct which includes the gap. What TP in the third conjunct includes is *t₅ Liz goes running nor Alex lifts weights t₆*. In particular, the remnants *neither* and *every day* have focus feature and they need to agree with the Foc head, thus they move to the specifiers of FocP: the closer element *neither* moves first and the lower element *every day* is tucked in underneath the first remnant. After the movement of the remnants to the FocP domain, the E-feature on the Foc head in the second conjunct drives the deletion of TP at the same time as Spell-Out. Consequently, this structure can appropriately capture the facts in (46a).

Now let us turn to the following examples in which there are elements on T such as the copular verb and the perfect form *have*, as in (47a), and the structure of them, in (47b).

(47) a. I was a teenager in the 70's, and my brother in the 80's.

(Kamio and Takami 1998)

b. [_{&P}[_{Foc} Op₁ Op₂ Foc [_{TP}I₁ was a teenager in the 70's₂]] and

[+FOC] [+FOC] [ufoe]

[_{Foc} my brother₃ in the 80's₄ Foc_[E] [_{TP} t₃ was [_{VP} t₄ t₃ v_[E] [_{VP} a teenager t₄]]]]]

[+FOC] [+FOC] [ufoe]

After the remnants move to the specifiers of FocP in (47b), the E-feature on head Foc drives the deletion of TP, and thus elements on T are obligatorily deleted and they do not appear in a surface form. In this way, the structure which I propose can correctly explain the facts that were problematic for other analyses.

4.2 The Scope of Negation in Gapping

Concerning the licensing condition on negation, I follow Nishioka's (2002, 2004, 2005, 2007) PolP analysis. He argues that Pol is the functional category which has polarity feature and it is assumed to be above TP, as in (48).

(48) [_{CP} C [_{PolP} Pol [_{TP} T [_{VP1} not [_{V'} V1 [_{VP2} V2]]]]]]]

(Nishioka 2007)

According to Nishioka, the necessity to postulate PolP above TP follows from the following examples.

(49) a. Lee said [_{CP} that [_{PolP} at no time would [_{TP} she agree to visit Robin]]].

(Cilicover 1991)

b. Unless [_{TP} it rains tomorrow],...

(Nishioka 2004)

In (49a), although there is no negation in TP, it has sentential negation because of the existence of the phrase *at no time*. Similarly, the TP in (49b) is licensed to have sentential negation by the negative conjunction *unless*.

To explain these cases, he proposes the unified licensing mechanism as shown

in (50).

- (50) Sentential negation in English is licensed/encoded by Pol obtaining [+Neg], which is (a) supplied by negative conjunctions or (b) transferred from a negative element (NE) in TP through Agree between Pol and an NE.

Moreover, he proposes the following mechanism to clarify the licensing mechanism of sentential negation in (51).

- (51) a. Pol has an uninterpretable [NEG] feature (represented as [uNEG]). (Or Pol is provided with [+NEG] lexically (through being selected) by negative conjunctions.) Otherwise Pol has an interpretable [-NEG](=[+POS]) feature.
- b. NEs have an interpretable [+NEG] feature and an uninterpretable [neg] feature (represented as [uneg]).

The reason why I postulate the PolP analysis in Gapping is as follows. When there is negation in the first conjunct, the second conjunct without negation has a negative reading, as in (52a). Moreover, even if there is negation in the first conjunct, when there are elements such as *but* and *only* in the second conjunct, it has a positive reading, (52b). Therefore, I assume that these facts indicate that each conjunct include Pol.

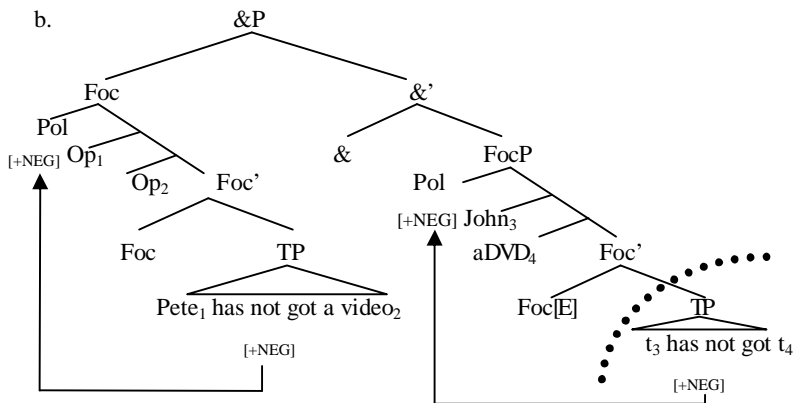
- (52) a. Max didn't read the book and Martha the magazine.
- b. Pete wasn't called by Vanessa and John only by Jessie. (Repp 2009)

In this paper, extending his PolP analysis, I will propose Pol as an operator as in (53).

(53) Pol is located at Spec-Foc and functions as an operator. In negative a sentence, Pol has a [+NEG (gative)] feature, and in an affirmative sentence, Pol has a [+POS (itive)] feature.

Based on this idea, we will look at the three ways to interpret negation in Gapping sentences. First, consider cases in which negation takes distributive scope over the coordination is in (54).

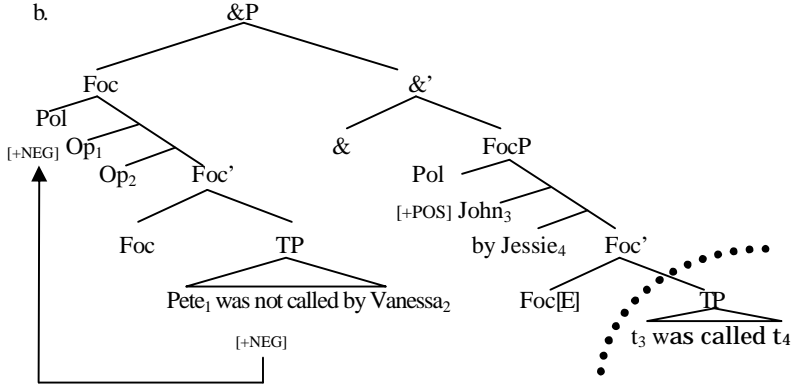
(54) a. Pete hasn't got a video and John a DVD.



Here the first and the second conjuncts are independent of each other in terms of polarity. There are negations with [+NEG] in each conjunct. Then, under the requirement suggested in (53), these [+NEG]s are transferred to the operator Pol's and have [+Neg]. As a result, negation is licensed in each conjunct independently. Second, in the narrow scope reading of negation, its derivation behaves similarly with the first option of reading in (54). That is, since the second conjunct has positive interpretation, it must not be affected by the negation in the first conjunct. Thus, it is just conceivable that the second conjunct is structurally independent of the first conjunct. Therefore, these two options are good evidence for the argument that Gapping consists of the coordination of above TPs. The example of the narrow

scope reading of negation is illustrated in (55).

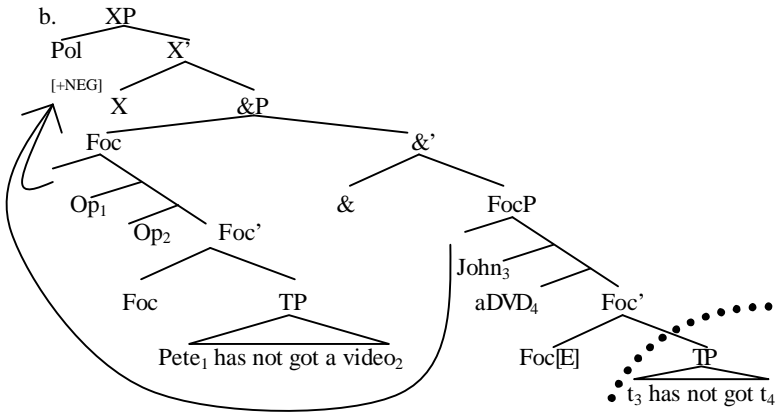
(55) a. Pete wasn't called by Vanessa but John by Jessie.



In (55), since the second conjunct includes no negation, the operator Pol obligatorily has $[+POS]$. As a result, the second conjunct has the positive interpretation.

Next, let us consider the wide scope reading of negation over the coordination in (56).

(56) a. Pete hasn't got a video and John a DVD.



As noted in section 2, Gapping can have wide scope reading of negation, with the

appropriate intonation. This situation is unique because it is affected by the discourse. For that reason, I assume that this reading has a different structure from the other two. The derivation of (56a) is as follows: since in this structure negation can take wide scope over the coordination of FocPs, the operator Pol must move to the position above FocPs. I postulate ATB movement: the two Pols move to Spec-XP, i.e. the functional category in which the operator Pol is placed.

5. Conclusion

This paper focused on how Gapping is generated in syntax, we have tackled problems which cannot be solved using previous approaches. In section 2, we reviewed several properties of Gapping. In section 3, we reviewed three previous analyses of Gapping phenomena. We argued that numerous problems met with in previous analyses can be properly explained by the TP deletion analysis presented in section 4.

As regards the scope of negation in Gapping, we have shown that the licensing mechanism of negation can be captured by adopting the idea of Pol as an operator in Spec-FocP. In addition, we have distinguished the structure of distributive and narrow scope reading of negation from wide scope reading. As a result, we can adequately capture the scope fact of negation. These proposals demonstrate that the TP deletion analysis successfully explains the properties of Gapping.

Notes

* This is based on my presentation at the 63th General Meeting of the Kyushu branch of the English Society of Japan held at Kyushu University on October 2010. I would like to thank the audience for their comments. I am especially grateful to Nobuaki Nishioka for his valuable comments and suggestions. I also would like to express my gratitude to Stephen Laker for his helpful stylistic improvements. Remaining inadequacies are of course my own.

1. I will not refer to the copy analysis in this paper anymore, because there are few differences between the deletion and the copy analysis.
2. Coppock (2001) offers examples of split antecedents; however, Johnson (2009) argues

against the judgment.

3. This situation also holds for other elliptical constructions, such as pseudogapping and Right Node Raising.

4. For external negation, see Bolinger (1977).

5. Merchant (2001) proposes e-GIVENness as a condition which allows E-feature.

() e-GIVENness

An expression E counts as e-GIVEN iff E has a salient antecedent A and,

modulo $\bar{\lambda}$ -type shifting, () A entails F-clo(E), and () E entails F-clo(A)

Under this condition, e-GIVENness of Gapping as shown in () is represented as below.

() Mary bought a car and Sam a bike.

() $IP_A = F\text{-clo}(IP_A) = \bar{\lambda} x y. x \text{ bought } y$

$IP_E = F\text{-clo}(IP_E) = \bar{\lambda} x y. x \text{ bought } y$

Thus, the example () satisfies e-GIVENness in (), and following the next condition, we

can account for the deletion of TP and VP concerning sound.

() Focus condition on IP-ellipsis

An IP α can be deleted only if α is e-GIVEN.

() Focus condition on VP-ellipsis

A VP α can be deleted only if α is e-GIVEN.

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