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Masaaki Takashima

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SYNTACTIC ANALYSIS OF JAPANESE VERBAL REDUPLICATION

By

Masaaki Takashima

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ABSTRACT

SYNTACTIC ANALYSIS OF JAPANESE VERBAL REDUPLICATION

By

Masaaki Takashima

This paper investigates the derivation of Japanese verbal reduplication, *tabe-ni-tabe-ta* (eat-NI-eat-PAST), based on its syntactic and semantic properties. From the comparative study with English, I claim that *–ni* between verbs is a conjunction, and the verbal reduplication is in fact verb coordination as its English counterpart, *ate and ate*. English and Japanese same verb coordination share several properties, meaning for example. However, they do not share a few properties such as a constituency between a verb and a conjunction, which reflects the head-parametric difference of the two languages. I argue that Parameterized version of Merge (PM) (Saito and Fukui 1998, and Fukui 2003) correctly predict differences of same verb coordination between the two languages, while captures their similarities. The derivation of same verb coordination in this paper lends support to PM's claims that Merge generates an ordered pair, as opposed to an unordered pair as in Chomsky (1995).

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INTRODUCTION

Kageyama (1993) notes several properties of Japanese verbal reduplication (1a). Phonologically, the stem of the reduplicated verb in Verb *ni* Verb has to be bimoraic or larger in size. When the stem is monomoraic as in the verb *su-ru* (do-PRES), it gets bimoraic and *ni* between the verbs is deleted (1b).

(1) a. Ken-ga kabe-o tataki-ni-tatai-ta
Ken-NOM wall-ACC hit-NI-hit-PAST
'Ken hit and hit the wall.'

b. Ken-ga geemu-o sii-sii, ie-ni kaet-ta
Ken-NOM game-ACC do-do, home-to return-PAST
'Ken played and played games and returned home.'

Syntactically, Japanese verbal reduplication is subject to syntactic processes such as passivization (2) and causativization (3). Based on this fact, Kageyama claims that Japanese verbal reduplication is derived syntactically, not lexically.

(2) Taroo-ga Hanako-ni nagu-rare-ni-nagu-rare-ta
Taroo-NOM Hanako-by hit-PASS-NI-hit-PASS-PAST
'Taroo was hit and hit by Hanako.'

(3) Taroo-ga Hanako-o hasir-ase-ni-hasir-ase-ta
Taroo-NOM Hanako-ACC run-CAUS-NI-run-CAUS-PAST
'Taroo made him run repeatedly.'

However, the analysis of Japanese verbal reduplication has never been offered in the literature. The main purpose of this paper is to propose such an analysis. To reach this goal, the next section, Chapter 1, discusses the properties of Japanese verbal reduplication. I point out that Japanese verbal reduplication shows the same properties as same verb coordination in English. Based on this observation, it is hypothesized that Japanese verbal reduplication is same verb coordination. Following the hypothesis, Chapter 2 deals with the derivation of same verb coordination. From the similarities

between verbal compounds and same verb coordination, we apply Collins' (2002) analysis of verbal compounds to same verb coordination. According to Collins, a verbal compound is derived by multiple verb movements from a base-form of verb phrases. I show that the application answers problems of same verb coordination but faces some empirical problems. An alternative proposal is made in Chapter 3, based on the Parameterized version of Merge (PM) by Saito and Fukui (1998), and Fukui (2003). Parameterized version of Merge dictates that the operation Merge specifies the linear-order according to the direction of the given head. Motivation and empirical support for the theory is offered in this section as well. Chapter 4 summarizes and concludes the paper.

CHAPTER 1.

PROPERTIES OF JAPANESE VERBAL REDUPLICATION

1.1 Syntactic properties

Japanese verbal reduplication has three syntactic properties, strict adjacency, repeatability, and constituency. Strict adjacency holds between the verbs and the conjunction. As (4) shows, neither arguments nor adjuncts can intervene between *-ni* and the verbs.

(4) a. *Ken-ga kabe-o tataki-ni subayaku tatai-ta
Ken-NOM wall-ACC hit-NI quickly hit-PAST
'Ken quickly hit and hit the wall.'

b. *Ken-ga tataki-ni kabe-o tatai-ta
Ken-NOM hit-NI wall-ACC hit-PAST
'Ken hit and hit the wall.'

Repeatability is the property that a verb with *ni* can be repeated freely, once, twice and multiple times as in (5b-e). Constituency in the reduplicated verb is shown with the repeatability data in (5a-e). The examples in the underlined part show that as the number of repetitions increases, the unit of verb+*-ni* is added and the repetition always ends with a verb with a tense marker. This property shows that a preceding verb and *–ni* form a constituent. Together with the first property, strict adjacency, this indicates that the reduplicated verb has the syntactic structure in (6) (the category of *–ni* is X since it is still unknown at this point). (6) has a complex head to capture the strict adjacency, and the preceding verb and *–ni* form a constituent.

(5) a. Ken-ga kabe-o tatai-ta
Ken-NOM wall-ACC hit-PAST
'Ken hit the wall.'

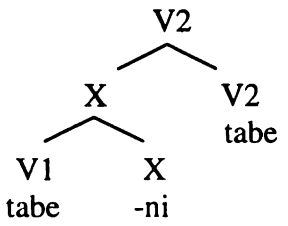
b. Ken-ga kabe-o tataki-ni-tatai-ta
Ken-NOM wall-ACC hit-NI-hit-PAST
'Ken hit and hit the wall.'

c. Ken-ga kabe-o tataki-ni-tataki-ni-tatai-ta
Ken-NOM wall-ACC hit-NI-hit-NI-hit-PAST
'Ken hit and hit and hit the wall.'

d. Ken-ga kabe-o tataki-ni-tataki-ni-tataki-ni-tatai-ta
Ken-NOM wall-ACC hit-NI-hit-NI-hit-NI-hit-NI-hit-PAST
'Ken hit and hit and hit and hit and hit the wall.'

e. Ken-ga kabe-o tataki-ni-tataki-ni-tataki-ni-tataki-ni-tatai-ta
Ken-NOM wall-ACC hit-NI-hit-NI-hit-NI-hit-NI-hit-PAST
'Ken hit and hit and hit and hit and hit and hit the wall.'

(6)



1.2 Semantic properties

1.2.1 Repetitive reading

Japanese verbal reduplication also has two semantic properties specific to it. The first is the repetitive reading. A sentence with reduplicated verbs (5b-e) has a repetitive reading, which a sentence without the reduplication (5a) does not. Another property is related to aspect. Before going to the aspectual property, let us review past aspectual studies.

1.2.2 Aspectual classification

Verkuyl (1993) and Krifka (1989) propose the compositional analysis of the aspectual properties of a predicate. They claim that the aspectual properties of a predicate are determined not by the verb alone but by the combination of the properties of the verb and its nominal arguments (7). Both (7a) and (7b) have the same verb, *eat*, and the same external argument, *Ken*, but different internal arguments. (7a) has singular argument, *a chip*, whereas (7b) has bare plural argument, *chips*. (7a) with the singular argument is compatible with a *in*-X-time-adverbial but not with a durational adverbial. (7b) with a bare plural argument exhibits the opposite properties. These data support the compositional analysis of the aspectual properties of a predicate. The Japanese data (7c and d) patterns the same.

(7) a. Ken ate a chip *for an hour/ in an hour.

b. Ken ate chips for an hour/*in an hour.

c. Ken-ga poteto-o iti-mai *iti zikan/ itizikan-de tabe-ta
Ken-NOM potato-ACC one-COU onehour (for)/ onehour-in kill-PAST
'Ken ate a chip for an hour/ in an hour.'

d. Ken-ga poteto-o iti zikan/ *iti zikan-de tabe-ta
Ken-NOM potato-ACC onehour (for)/ onehour-in kill-PAST
'Ken ate chips for an hour/ in an hour.'

In Verkuyl (1993), there are three aspectual classes: States, Processes, and Events. A stative verb (8a) is a State and it is separated from the other two non-stative aspectual classes, Processes and Events. A verb with the property of affecting its arguments in a gradual way denotes an Event if its internal arguments are quantized (8b), and a Process if its internal arguments are not quantized as with bare plurals and mass nouns (8c). A verb without the property of affecting its arguments in a gradual way is also a Process (8d).

(8) a. Ken was sick. (State) b. Ken ate a chip. (Event)

c. Ken ate chips/ bread. (Process) d. Ken push a cart. (Process)

For the classification of stative and non-stative verbs, I follow Levin (2007) and use the following two diagnostics. First is the interpretation of the simple present. The simple present of stative verbs refers to the present, but with non-statives it has a habitual interpretation (9). Secondly, non-stative verbs can appear with *what happened/occurred/took place was...* sentences, but statives are incompatible with it (10).

(9) a. Kim knows the capitals of all 50 states.
(interpreted as referring to what Kim knows now; a state)

b. Kim rides a bicycle to work.
(interpreted as habitual; non-state)

(10) a. *What Sally did was know the answer. (state)

b. What Sally did was write. (non-state)

1.2.3 Aspectual classification in Japanese

Given that the aspectual type of a predicate is determined compositionally both in English and Japanese, as McClure (1994) argues, the direct translation from English to Japanese does not help to determine the aspectual types of a verb in Japanese.[1] Below in order to separate stative verbs from non-stative verbs in Japanese, I use several diagnostics. The diagnostics are from studies such as Kindaichi (1976) (the interpretation of *te-iru* construction) and Moriyama (1988) (the time adverbial tests like Dowty (1979) and compounding with *hazimeru* 'begin' and *tuzukeru* 'continue'.

According to the studies the stative verbs pattern as below. Stative verbs are incompatible with the *te-iru* construction (11a). As the data (11b) and (11c) show, stative verbs cannot form a compound with *hazimeru* 'begin' but they can with *tuzukeru* 'continue'. Furthermore, they cannot occur in *time kakatte verb* 'takes time to verb' contexts (11d) while they can with durational adverbs (11e).

(Statives)

(11) a. *Tom-ga gakkou-ni ite-i-ta
Tom-NOM school-in being-is-PAST
'Tom is being in school.'
(does not co-occur with *te-iru* construction)

b. *Tom-ga gakkou-ni i-hazime-ta
Tom-NOM school-in be-begin-PAST
'Tom began to be in school.'

c. Tom-ga gakkou-ni i-tuzuke-ta
Tom-NOM school-in be-continue-PAST
'Tom continued to be in school.'

[1] McClure bases his lexical aspectual classification of verbs on that by Vendler (1967) and Dowty (1979). There are four aspectual types in Vendler (1967) and Dowty (1979), States (know), Activities (run), Accomplishments (draw a circle) and Achievements (die). McClure claims that Accomplishments are characterized as a process (Process) followed by a result (Achievements), and treat accomplishment not as a separate aspectual type.

d. *Tom-ga sanzikan kakatte gakkou-ni i-ta
Tom-NOM three-hours take-ing school-in be-PAST
'Tom took three hours to be in school.'

e. Tom-ga sanzi-kan gakkou-ni i-ta
Tom-NOM three-hours-for school-in be-PAST
'Tom is in school for three hours.'

Table 1. Diagnostics for three lexical aspectual classes in Japanese

	Stative	Activity	Achievement
V-*te-iru*	×	progressive	Perfective
V-*hazimeru*	×	√	√
V-*tuzukeru*	√	√	×
time kakatte	×	×	√
time (duration)	√	√	×

Table 1 is the diagnostic table for three aspectual types of verbs in McClure (1993). (12) and (13) are examples of Activities and Achievements, respectively.

(Activities)

(12) a. Tom-ga hasitte-i-ru
Tom-NOM runing-is-PRES
'Tom is running.'
(progressive meaning with *te-iru* construction)

b. Tom-ga hasiri-hazime-ta
Tom-NOM run-begin-PAST
'Tom began to run.'

c. Tom-ga hasiri-tuzuke-ta
Tom-NOM run-continue-PAST
'Tom continued to run.'

d. *Tom-ga sanzikan kakatte hasit-ta
Tom-NOM three-hours take-ing run-PAST
'Tom took three hours to run.'

e. Tom-ga sanzi-kan hasit-ta
Tom-NOM three-hours-for run-PAST
'Tom ran for three hours.'

(Achievements)

(13) a. Tom-ga sinde-i-ru
Tom-NOM die-is-PRES
'Tom has died.'
(perfective meaning with *te-iru* construction)

b. Tom-ga sini-hazime-ta
Tom-NOM die-begin-PAST
'Tom began to die.'

c. *Tom-ga sini-tuzuke-ta
Tom-NOM die-continue-PAST
'Tom continued to die.'

d. Tom-ga sanzikan kakatte sin-da
Tom-NOM three-hours take-ing die-PAST
'Tom took three hours to die.'

e. *Tom-ga sanzi-kan sin-da
Tom-NOM three-hours-for die-PAST
'Tom died for three hours.'

As the Japanese examples (16) and (17) show, the direct translation of stative verbs such as *siru* 'know' (14) and *omou* 'think' (15) from English does not keep the aspectual type in Japanese.

(14) a. Kim knows the capitals of all 50 states.
(interpreted as referring to what Kim knows now; a state)

b. *What Sally did was know the answer. (state)

(15) a. Kim thinks that the answer is correct.
(interpreted as referring to what Kim thinks now; a state)

b. *What Sally did was think that the answer was correct. (state)

(16) a. sou omotte-i-ru 'thinking that way'
so thinking-is-PRES
(progressive interpretation)

b. sou omoi-hazime-ta 'began to think that way'

c. sou omoi-tuzuke-ta 'continued to think that way'

d. *sanzikan kakatte sou omot-ta 'took three hours to think that way'

e. sanzikan sou omot-ta 'thought that way for three hours'

(17) a. sono koto-o sitte-i-ru 'has known that'
that thing-ACC know-ing-is-PRES
(perfective interpretation)

b. sonokoto-o siri-hazime-ta 'began to know that'

c. *sonokoto-o siri-tuzuke-ta 'continued to know that'

d. sannenkan kakatte sonokoto-o sit-ta 'took three hours to know that'

e. *sonokoto-o sannenkan sit-ta 'knew that for three hours'

The diagnostics show that *omou* 'think' (16) is activity, and *siru* 'know' (17) is achievement. The next question is whether they can be in reduplication. *Omou* 'think' can only make a Event predicate, since it can affect its internal argument in a gradual way but it takes a *that*-clause and a *that*-clause is singular. In contrast, *siru* 'know' can make either a Process or an Event predicate, depending on its arguments. If the verb *siru* takes a plural internal argument, bare *facts* for example, the predicate can be a Process, since the verb can affect the internal argument in a gradual way. On the other hand, if the verb takes a singular *fact*, the predicate is a Event. As the examples below show, only the Process type of a predicate is compatible with verbal reduplication.[2]

(18) *Taroo-wa sono kotae-ga tadasii-to omoi-ni-omot-ta (Event)
Taroo-TOP that answer-NOM right-that think-NI-think-PAST
'Taroo thinks and thinks that the answer is correct.'

(19) a. Taroo-wa tugi-kara tugie-to atarasii zizitu-o siri-ni-sit-ta (Process)
Taroo-TOP next-from next-to new facts-ACC know-NI-know-PAST
'Taroo starts to know new facts one from another.'

[2] The aspectual property of Japanese verbal reduplication is first noted in Kageyama (1993), based on the lexical aspectual classes in Vendler (1967) and Dowty(1979).

b. *Taroo-wa sono zizitu-o siri-ni-sit-ta (Event)
Taroo-TOP that facts-ACC know-NI-know-PAST
'Taroo knows and knows the fact.'

(20) a. *Tosyokan-ni ii-ii, ie-ni kaet-ta (State)
library-in stay-stay, home-to return-PAST
'(I) stayed and stayed in the library and went home.'

b. Tom-ga kouen-de hasiri-ni-hasit-ta (Process)
Tom-NOM park-in run-NI-run-PAST
'Tom ran and ran in the park.'

c. *Tom-ga sini-ni-sin-da (Event)
Tom-NOM die-NI-die-PAST
'Tom died and died.'

This property is further confirmed by the examples below.

(21) a. Ken-ga *sushi-o hitotu/sushi-o tabe-ni-tabe-ta (Event)/ (Process)
Ken-NOM sushi-ACC one/sushi-ACC eat-NI-eat-PAST
'Ken ate and ate a sushi/ sushi.'

b. Ken-ga kaato-o osi-ni-osi-ta (Process)
Ken-NOM cart-ACC push-NI-push-PAST
'Ken pushed and pushed a cart.'

1.3 Similarity with English same verb coordination

Japanese verbal reduplication is very similar to same verb coordination in English. English same verb coordination has the strict adjacency (22) and repeatability properties (23). It also shares semantic properties with Japanese verbal reduplication. As shown in (24), it has the repetitive reading, and is compatible only with Process predicates.

(22) a. *Ken hit and quickly hit the wall.

b. *Ken hit the wall and hit the wall.

(23) a. Ken hit and hit the wall.

b. Ken hit and hit and hit the wall.

c. Ken hit and hit and hit and hit and hit the wall.

d. Ken hit and hit and hit and hit and hit and hit the wall.

(24) a. *Ken knows and knows French. (State)

b. *Ken thinks and thinks that the answer is correct. (State)

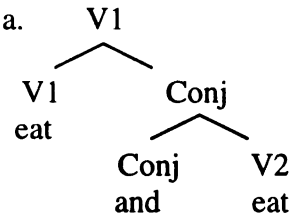
c. Ken ate and ate *a chip/ chips. *(Event)/ (Process)

d. Ken pushed and pushed a cart. (Process)

These syntactic and semantic properties shared by English same verb coordination and Japanese verbal reduplication strongly indicate that Japanese verbal reduplication is in fact same verb coordination.

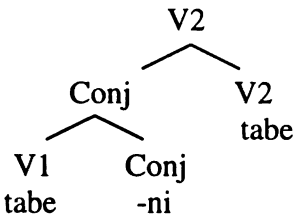
The conclusion leads us to the structure of same verb coordination as in (25). The head X in (6) is now conjunction head, Conj. English same verb coordination also requires the strict adjacency. This means that it forms a complex head from the verbs and the conjunction like its Japanese counterpart. On the other hand, English and Japanese are different in terms of the head-parameter. English is a head-initial langauge, whereas Japanese is a head-final langauge. The difference is presented as the mirror-image of the two strucures in (25).

(25) a.



English
Head-initial

b.



Japanese
Head-final

Following the discussion in this section, below I will investigate same verb coordination in more detail.[3]

[3] From now on, I use 'and' in stead of '-NI' in the gloss for '-ni'.

CHAPTER 2

DERIVATION OF SAME VERB COORDINATION

2.1 The two problems of same verb coordination

Analyzing Japanse verbal reduplication as same verb coordination still raises some important syntactic issues. Firstly, in same verb coordination, there is only one overt internal and external argument for more than one verb. The question is how each verb assigns its theta-roles, and, as the second problem, if the theta-roles are assigned properly, how can the case of each argument be licensed? The Serial Verb Construction (SVC) in (26) shares the same problem.

(26) Me nya devi-e dzo (Ewe, Collins (1997))
ISG chase child-DEF leave
'I chased the child away.'

The formal definition of an SVC is in (27) from Collins (1997).

(27) *Serial Verb Construction (SVC)*
A serial verb construction is a succession of verbs and their complements (if any) with one subject and one tense value that are not separated by any overt marker of coordination or subordination
(Collins 1997)

The above definition covers a sentence like (26) where the object intervenes between the verbs. The definition also covers the verbal compounds as in (28). In this case, the verbs have strict adjacency and the object does not intervene between them.[4]

(28) a. Ya i tc'eon | o'a tsi (≠Hoan, Collins (2002))
3SG PAST make absent 3PL
'He finished making them'

[4] To differentiate the two types of SVC, in what follow I call the former type SVCs and the latter type verbal compounds.

b. Ken-ga Tom-o osi-taosi-ta (Japanese)
Ken-NOM Tom-ACC push-topple-PAST
'Ken pushed Tom down.'

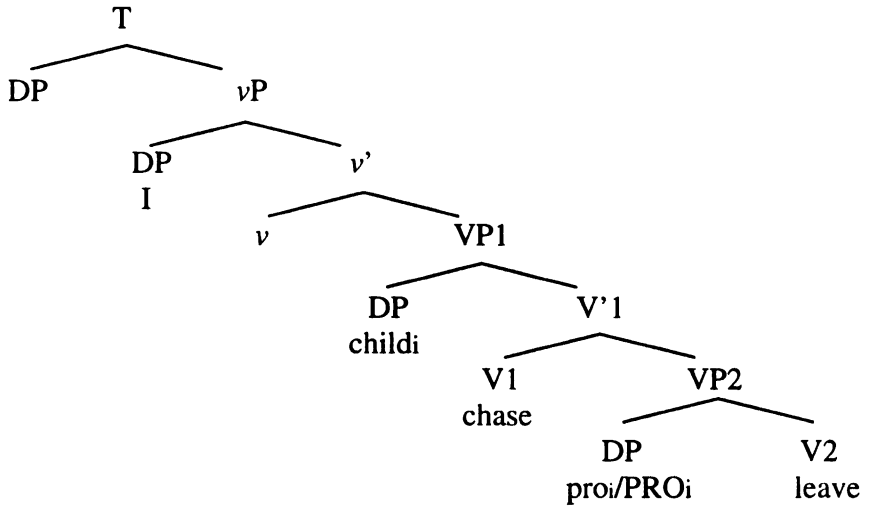
In both cases, there is one overt internal and external argument for more than one verb. Below we see the solution to this problem in Collins (2002) and its application to same verb coordination.

2.2 The analysis of Serial Verb Constructions and its application to same verb coordination

(29) is the structure of a SVC according to Collins (2002). One of the assumptions in the analysis is that the external theta-role is not assigned inside VP as in the strict VP Internal Subject Hypothesis (Kuroda 1988, among others). Instead, it is assigned by functional head *v* (Chomsky (1995) and Collins (1997)).[5] *v* can take either of the two values, + or -, depending on whether it assigns external theta-role or not. When it has the + value, it assigns the external theta-role to its spec position and also can check Acc Case on the object of V, following Burzio's generalization. On the other hand, when it has minus value, it does not assign an external theta-role, nor does it check Acc Case. To be more specific, [+*v*] selects transitive verbs and unergative verbs whereas [-*v*] selects unaccusative verbs.

[5] Here, I use the notation of the light verb, *v*, in Chomsky (1995) instead of Tr in Collins.

(29)



Another thing to be noted in this structure is the VP shell. This structure is in accordance with the resultative structure by Hoekstra (1988), Carrier and Randall (1992) and Huang (1992). They all claim that a result phrase is selected by a verb. This idea is captured by the VP-shell in the structure. A SVC typically has a resultative meaning, and in (29), the second VP is selected by the first V, i.e. the complement of the first V.

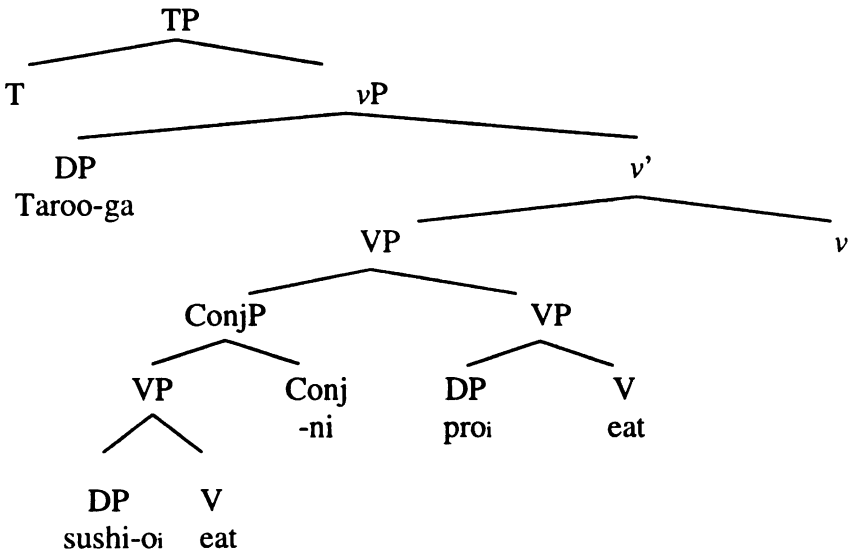
Notice this structure solves the problem mentioned in the beginning of this section. In the structure, each verb does not assign external theta-role. It is *v* which assigns an external theta-role. Therefore only one external argument is needed. Inside the VP-shell, there is the controlled empty category, pro/ PRO, and the internal theta-role is assigned to it as well as to the overt internal argument. Therefore, the internal theta-role of each verb is assigned properly. Collins (2002) leaves both possibilities of the controlled empty category.

He claims that if we follow Chomsky and Lasnik (1993) that PRO needs null Case by an intinitival I (T), the empty category has to be pro, instead of PRO. Alternatively, if there is a functional projection between the two verb phrases, PRO can

appear as an empty category. In that case, the case of the overt internal argument is licensed by *v*. If the controlled empty category is pro, the case of both pro and the overt internal argument is licensed by *v*. The case of the external argument is licensed by T.

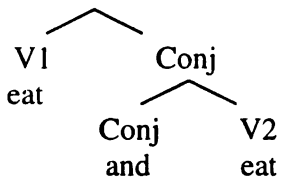
(30) is the tentative structure of Japanese same verb coordination based on the analysis of SVCs. In the structure, *v* assigns external theta-role to *Taroo-ga*. Each verb properly assigns internal theta-role to its argument. One is to the overt internal argument, *sushi-o*, and the other to the controlled empty category, pro. The structure does not allow the possibility of PRO for the empty category, since unlike the VP-shell, in (29) the empty category is not c-commanded by another internal argument, *sushi-o*. The case of the two internal arguments is licensed by *v*. The case of the external argument is licensed by T.

(30)



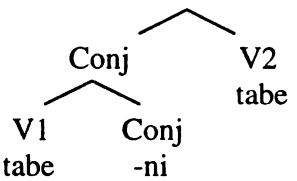
With the above structure, we overcome problems with respect to theta-role assignment and case licensing. The next question is how the structure is connected to the other structure of same verb coordination (25), repeated here as (31), which we reached from the syntactic properties of same verb coordination.

(31) a.



English
Head-initial

b.



Japanese
Head-final

The main point of the next section is to fill the gap between the two structures. To achieve this goal, I will introduce the derivation of verbal compounds in ǂHoan in Collins (2002). Finally, I show its application to same verb coordination.

2.3 Multiple verb movement in Collins (2002)

ǂHoan is a Khoisan language spoken in the Northwest District of Botswana. The point of the derivation in Collins (2002) is that verbal compound in ǂHoan as in (32) have a base-form similar to SVCs, and the two verbs in an SVC are both attracted to the light verb, *v*. This generates a verbal compound.

(32) Ma a- q‖hu |'o djo ki kx'u na.
1SG PROG pour put.in water PART pot in
I am pouring water into the pot. (Collins 2002)

The motivation for correlating SVCs and verbal compounds in ǂHoan is that the two constructions have a lot in common. As is pointed out already, the verbal compound matches the definition of an SVC, and they both have one overt internal and external argument for two verbs. Another common feature is the Temporal Iconicity Condition (Li 1993). The condition requires the linear order of the two verbs to reflect the actual sequence of the two events denoted by the verbs. As in the example in (33), if the linear order of the verbs is reversed, the sentences become ill-formed.

(33) a. *Me dzo devi-e nya
ISG leave child-DEF chase
'I chased the child away.'

b. *Ma a- | 'o q‖hu djo ki kx'u na.
1SG PROG put.in pour water PART pot in
'I am pouring water into the pot.' (Collins 2002)

In addition to the above general parallelism, there are more similarities between SVCs and verbal compounds across some languages. Collins (2002) notes that SVCs in Ewe and verbal compounds in ǂHoan express the same range of meanings such as directional, consecutive and benefactive. Moreover, in most cases the same verbs are used in the two constructions as exemplified in (34) and (35).

(34) Ma qo kí- tsaxo 'am ‖a''e
1SG FUT kí[PL] cook eat meat
I will cook and eat meat (repeatedly).

(35) Wo da fufu du
they cook fufu eat
They cooked fufu and ate it (Collins 2002)

Based on the parallelism, Collins (2002) derives the verbal compounds in ǂHoan by multiple verb movement from underlying structure similar to SVCs. Collins also claims that multiple verb movement can be made in analogy with other multiple movements such as multiple wh-movement. Following Richards (1997), the multiple movements involve two types of locality conditions. One is the Minimal Link Condition (Chomsky 1995) and the other is Local Move (Chomsky 2000). This is shown in (38).

(36) *Minimal Link Condition*
A can raise to target K only if there is no legitimate operation Move β targeting K, where β is closer to K

(37) *Local Move*
Let X has a selectional feature F, and let Y satisfy F. Then Y must move to the closest possible position to X

(38) a. [CP C [TP 'who' 'whom'] (underlying structre)

b. [CP 'who' [C' C TP]] (Minimal Link Condition)

c. [CP 'who' [C' 'whom' [C' C TP]]] (Local Move)

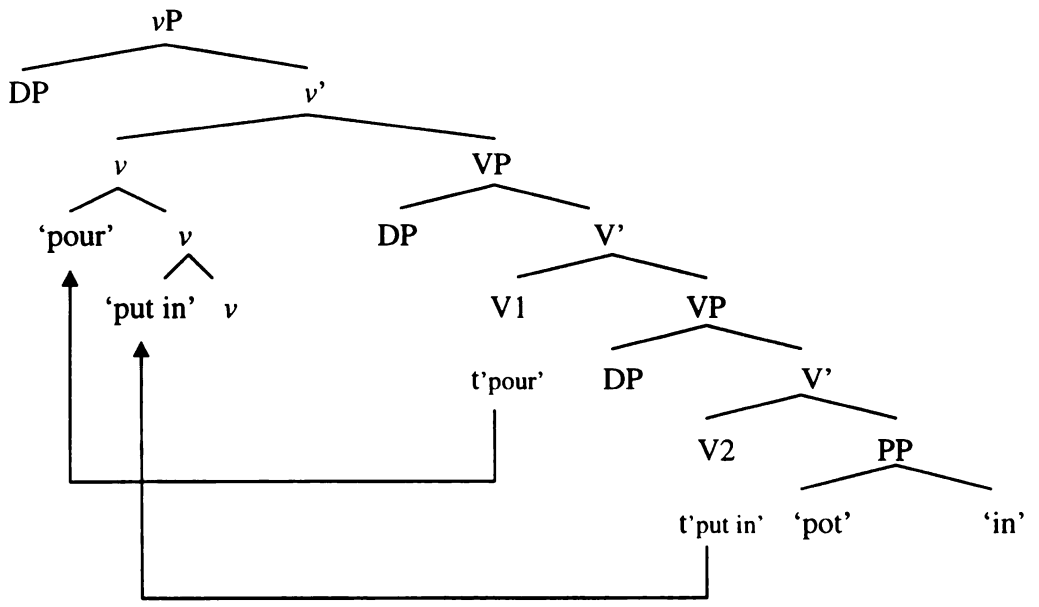
(39) a. Koj kogo vizda?
who whom sees
'Who sees whom?'

b. *Kogo koj vizda?
whom who sees
'Who sees whom?' (Bulgarian, Rudin 1988)

In the first step, the wh-phrase, *who*, which is closer to spec CP than another wh-phrase, *whom*, moves to the spec CP. As the second step, the lower wh-phrase "tucks in" (Richards 1997), where the lower wh-phrase raises to an inner spec CP, since this position is the closest to the head C. (39a), as opposed to (39b), justifies the process.

Collins (2002) argues that multiple movement is motivated by the feature [+multiple]. So in Bulgarian C has [+multiple] for wh-feature checking, whereas in English C has [-multiple] and does not allow multiple wh-movement. Likewise, in Kwa and Ewe *v* has [-multiple] for verb movement and they have SVCs, whereas in ǂHoan *v* has [+multiple] for verb movement and the language has verbal compounds, instead of SVCs. Collins' derivation of verbal compound, based on above discussion, is in (40).

(40)



Collins (2002)

In the first step (40), V1, *pour*, moves to *v* because of the MLC, since in the underlying VP-shell structure of the SVC, V1 is closer to *v* than V2. In the next step, the Local Move requires "tucking in" of V2, *put in*, to the inner head position. Here, Collins assumes that the trace of the first verb movement does not block the verb movement of the lower verb. He also assumes that verb movements are always to a functional head, not to a verb and it is always left-adjunction. This assumption is consistent with Kayne's (1994) antisymmetry hypothesis, whose consequence is in (41). This generates the correct word order of verbs in verbal compounds, *pour-put in*, keeping the word order before/after the derivation.

(41) Let X and Y be heads; if X adjoins to Y, then X precedes Y

Based on the discussion above, Collins proposes the following generalization of the verb movement.

(42) a. Verbs always adjoin to the left.

b. A verb cannot adjoin to another verb. Rather, a verb must adjoin to a functional head (such as *v*, T or C).

c. The trace of a verb does not block verb movement.

d. A verb always adjoins as close as possible to *v* (Local Move).

Collins (2002)

2.4 Application of multiple verb movement to same verb coordination

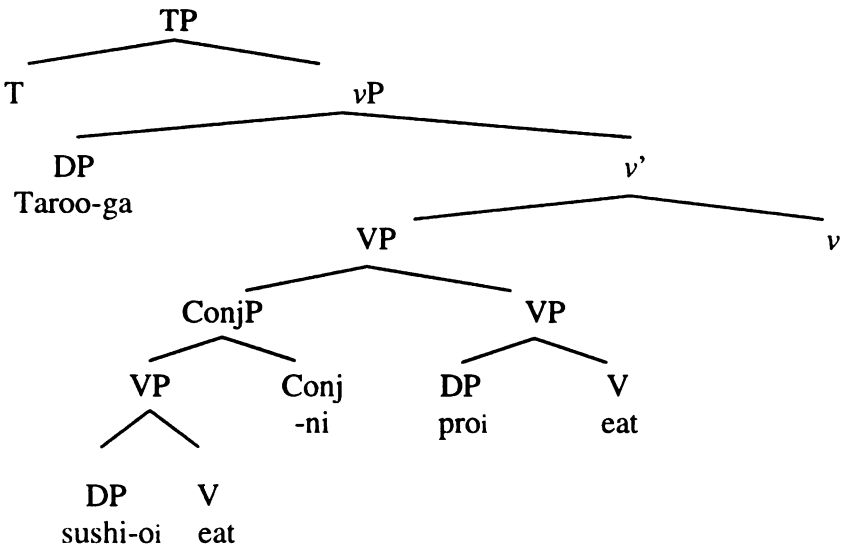
There is also a motivation to connect SVCs, verbal compounds and same verb coordination. There is a parallelism among the three constructions, especially between verbal compounds and same verb coordination. First, as we have seen already, as in SVCs and verbal compounds, in same verb coordination (43) there is only one overt internal and external argument (if any) for the coordinated verbs.

(43) a. Ken-ga kabe-o tataki-ni-tatai-ta
Ken-NOM wall-ACC hit-and-hit-PAST
'Ken hit and hit the wall.'

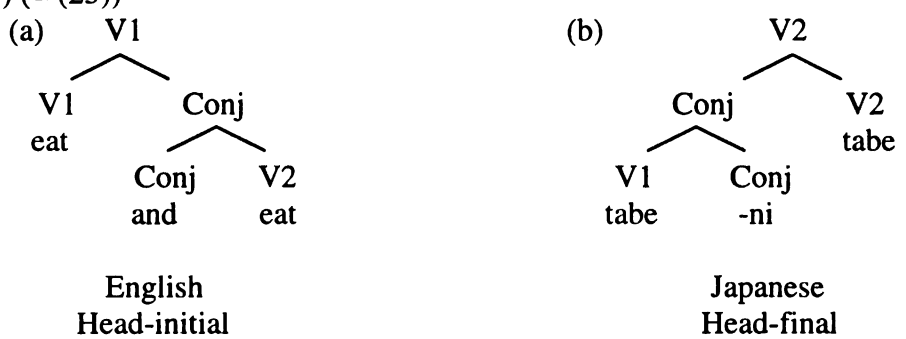
b. Ken hit and hit the wall.

Secondly, like verbal compounds but unlike SVCs, same verb coordination requires strict adjacency between the verbs and the conjunction and no object or adjunct intervenes between them. Furthermore, following Collins (2002), verbal compounds are derived by multiple verb movement from the underlying structure of SVCs. These three facts lead to a hypothesis that same verb coordination is also derived by multiple verb movement from an underlying structure of some phrasal coordination. This hypothesis is consistent with the conclusion we reached so far. Specifically, the underlying form corresponds to the structure (30) from the previous section. The structure after the multiple verb movement corresponds to the structure we obtained in the first section (25).

(44) (= (30))



(45) (= (25))



There is one question that immediately arises here. What is the functional head with [+multiple]? Is it the light verb, *v*? I argue that it is the Aspect (Asp) head for the following two empirical reasons. Firstly, as we saw in the beginning of this paper, in Japanese, same verb coordination is possible with passivized verbs as in (2), repeated as (46). In (46), each coordinated verb has the passive morpheme. Following the widely accepted analysis of passive construction as in Baker, Johnson and Roberts (1989) that the passive morpheme absorbs the external theta-role and Acc case, coupled with our assumption with Chomsky (1995) that the light verb, *v*, introduces the external theta-role and assigns Acc case, the coordinated phrases have to be equal to or higher than *v*P.

(46) Taroo-ga Hanako-ni nagu-rare-ni-nagu-rare-ta
Taroo-NOM Hanako-by hit-PASS-and-hit-PASS-PAST
'Taroo was hit and hit by Hanako.'

Secondly, in Chinese same verb coordination in (47), the aspect marker, *-le*, can appear only once, *zou-le-you-zou,* not twice **zou-le-you-zou-le*. If we assume with Li (2004) that *–le* projects AspP as a head, there should be one Asp phrase in same verb coordination.

(47) Zhangsan zou-le-you-zou (Chinese)
Zhangsan walk-ASP-and-walk
'Zhangsan walked and walked.'

These two empirical facts suggest that same verb coordination has the base-form of *v*P-coordination with one Asp head above it. The analysis makes the structure the same as that independently suggested by Collins (2002) for consecutive verbal compounds (48). He suggests that (48) has the underlying structure of *v*P coordination with AspP, from which multiple verb movement takes place to Asp with [+multiple].

(48) Ma qo kí- tsaxo 'am ǂía''e (ǂHoan, Collins 2002)
1SG FUT kí[PL] cook eat meat
'I will cook and eat meat (repeatedly).'

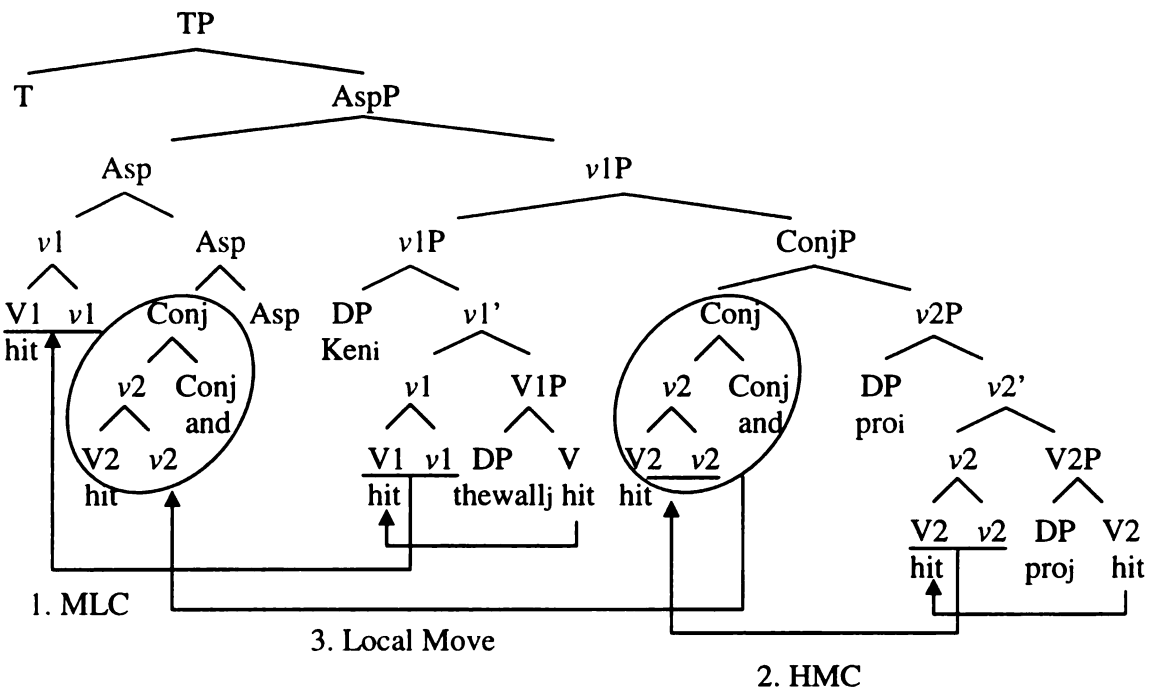
The derivation of same verb coordination based on the above discussion is given in (49). The structure has *v*P coordination with one Asp marked [+multiple] above it. In the beginning, verbs raise to light verbs for *v*'s morphological requirement to suffix to a verb. Specifically, both verbs, V1 and V2, are attracted by *v*1 and *v*2.

Next, as the first step, *v*1 with V1 raises to Asp because of the MLC, since *v*1 is closer to Asp than *v*2. In the next step, *v*2 with V2 raise to Asp. In this process there is an intervening head between Asp and *v*2, which is the conjunction head, Conj. Therefore, following the Head Movement Constraint (HMC) (Travis 1984), *v*2 with V2 raise to Conj at first (the circle) and then they together raise to Asp head. The multiple movement in

(49b) follows Collins' (2002) assumption that verb movements are always to a functional head, not to a verb and it is always left-adjunction. This is held even when the *v*2 with V2, *hit*, raises to the conjunction head Conj, because Conj is a functional head.

(49) a. Ken hit and hit the wall.

b.



The derivation based on Collins' (2002) multiple verb movement captures the properties of same verb coordination and solves its problems with respect to theta-role and case. Strict adjacency is because of the complex head formed by the multiple verb movement. The structure has base-form of *v*P-coordination and all of the covert arguments are pro. Therefore, each verb can assign its theta-role to its own internal argument. The case of the argument is licensed by its own light verb, *v*. The case of all the external arguments is licensed by T above Asp head.

2.5 Correction of Collins' (2002) derivation and proposal

2.5.1 Feature-driven and optional movements in Saito and Fukui (1998)

Despite all the answers the derivation (49) provides, it generates the wrong word order of the coordinated verbs, *hit hit and* as opposed to *hit and hit.* Thus, here I depart from Collins (2002) with respect to Kayne's (1994) antisymmetry for linearization of the verbs in the complex head. Instead, I follow Saito and Fukui (1998), and Fukui (2003) for the linearization of the complex head and the word order in general. In this section, I summarize their analysis of phrase structure and its supporting evidence.

The focus of Saito and Fukui's study is to account for the cross-linguistically different distribution and properties of movement operations with respect to the head-parameter, particularly feature-driven movements and non-feature-driven, optional, movements. Two examples of optional movement are Japanese scrambling (50) and English heavy NP-shift (51). These operations are different from feature-driven movement in the following two respects.

(50) a. [TP Mary-ga John-ni sono hon-o watashi-ta].
Mary-NOM John-to that book-ACC hand-PAST
'Mary handed that book to John.'

b. [TP John-nii [Mary-ga ti sono hon-o watashi-ta].
John-to [Mary-NOM ti that book-ACC hand-PAST

(51) a. They brought the beautiful pink dress into my room.

b. They brought ti into my room [the beautiful pink dress]i.

Firstly, as for scrambling, it is subject to radical reconstruction (Saito 1986, 1989). Wh-phrases in Japanese must be within a CP headed by a Q morpheme, *-ka*. In (52a), the wh-phrase, *dare-ga*, is within the CP headed by a Q morpheme, and the sentence is

grammatical. On the other hand, in (52b) the wh-phrase is outside the CP headed by a Q morpheme. Therefore, the sentence is ungrammatical.

(52) a. [TP John-ga [CP [TP dare-ga sono hon-o kat-ta ka] siri-taga-tteiru]
John-NOM who-NOM that book-ACC buy-PAST Q know-want-ing
'John wants to know [Q [who bought that book.]]'

b. * [TP Dare-ga [CP [TP John-ga sono hon-o kat-ta ka] siri-taga-tteiru]
who-NOM John-NOM that book-ACC buy-PAST Q know-want-ing
'Who wants to know [Q [John bought that book.]]'

In (53b), wh-phrase, *dono hon-o*, is scrambled outside the CP headed by a Q morpheme, but the sentence is still grammatical. Based on this example, Saito (1986, 1989) proposes that scrambling is 'semantically vacuous' in the sense that it need not be represented at LF.

(53) a. [John-ga [CP [TP Mary-ga dono hon-o yonda] ka] siritagatteiru]
John-NOM Mary-NOM which book-ACC read Q want-to-know
'John wants to know [Q [Mary read which book]]

b. [TP Dono hon-oi [John-ga [CP [TP Mary-ga ti yonda] ka] siri-tagatteiru
which book-ACC John-NOM Mary-NOM read-PAST Q know-want-ing
'which booki, John wants to know [Q [Mary read ti]]]

The examples below show that English heavy NP-shift is semantically vacuous. In (54), *what* is topicalized. However, it is not interpreted in that position and therefore, the sentence is ungrammatical. In contrast, (55) is grammatical. This can be accounted for if we take heavy NP-shift as semantically vacuous like Japanese scrambling (53b) but unlike topicalization (54) which is feature-driven.

(54) *Whoi ti said that whatj Mary bought tj?

(55) Whoi ti borrowed tj from the library [which book that David assigned in class]j?

The second difference between the feature-driven and optional movements is related to the Minimal Link Condition (MLC). As is already mentioned, the condition requires the target to attract only the closest relevant feature (39), repeated below as (56).

(56) a. Ko kogo vizda?
who whom sees
'Who sees whom?'

b. *Kogo ko vizda?
whom who sees
'Who sees whom?' (Bulgarian, Rudin 1988)

However, scrambling (57) as well as heavy NP-shift (58) and (59) do not follow the condition.

(57) a. [TP Mary-ga John-ni sono hon-o watasi-ta]
Mary-NOM John-to that book-ACC hand-PAST
'Mary handed that book to John.'

b. [TP sono hon-oi [John-nij [Mary-ga tj ti watasi-ta]
that book-ACC John-to Mary-NOM hand-PAST

c. [TP John-nij [sono hon-oi Mary-ga tj ti watasi-ta]
John-to that book-ACC Mary-NOM hand-PAST

(58) a. John told [a most incredible story] [to practically everyone who was willing to listen] yesterday.

b. John told ti [to practically everyone who was willing to listen] yesterday [a most incredible story]i.

c. John told [a most incredible story] tj yesterday [to practically everyone who was willing to listen]j.

(59) John told ti tj yesterday [a most incredible story]i [to practically everyone who was willing to listen]j.

Webelhuth (1989)

2.5.2 Relativized X-bar Theory (Fukui and Speas 1986)

Saito suggests that the two adjunction operations, Japanese scrambling and English heavy NP-shift, can be treated in the same way in connection with the directionality of

the head. Specifically, they are movements opposite to the direction of the head. English is a head-initial language and heavy NP-shift is rightward, whereas Japanese is a head-final language and scrambling is leftward. Fukui and Speas (1986) and Fukui's (1986) relativized X-bar theory is an attempt to capture this insight. The basic proposal made in these works is given (60).[6]

(60) a. Free recursion is allowed at the X' level

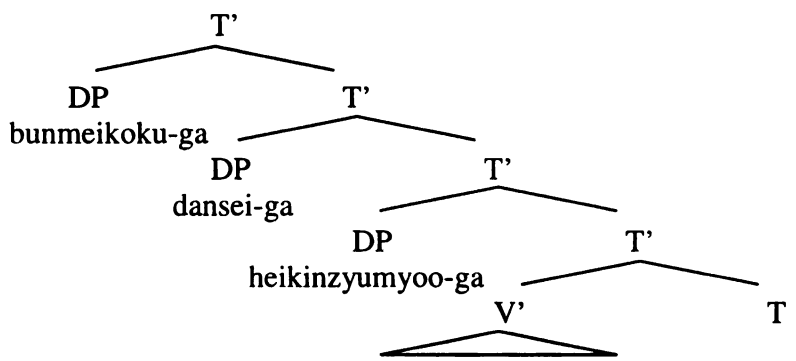
b. [Spec, X°] is the maximal projection that agrees with X°

c. An X' projects to XP when and only when it is combined with a Spec

Japanese allows multiple nominative case as in (61a). If nominative case is licensed contextually, not through Spec-head agreement (Saito 1982, 1983), the projection does not closeoff and the recursion allows more than one nominative-case-marked DP to appear within the T' projection (61b). Moreover, the recursion also permits scrambling (multiple scrambling, and long-distance scrambling (62)).

(61) a. Bunmeikoku-ga dansei-ga heikinzyumyoo-ga nagai
civilized-country-NOM male-NOM average-life-span-NOM is-short
'It is in civilized countries that the average lifespan of men is short.'
Kuno (1973)

b.



[6] Here for the maximal projection, I use XP instead of X'' in Fukui and Speas (1986) and Fukui (1986).

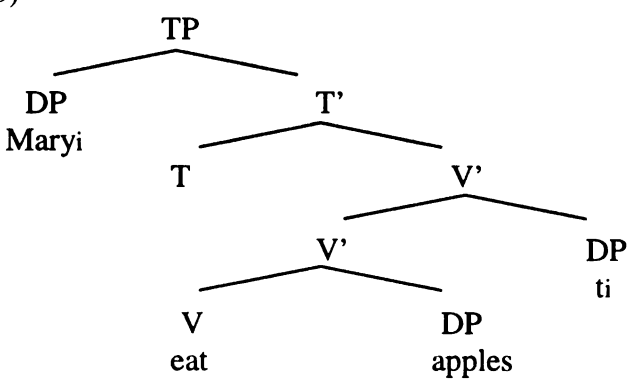
(62) a. [TP Bill-ga [CP [TP Mary-ga John-ni sono hon-o watasi-ta] to] it-ta
Bill-NOM Mary-NOM John-to that book-ACC hand-PAST that say-PAST
'Bill said that Mary handed that book to John.'

b. [TP Sonohon-oi [John-nij [Bill-ga [CP [TP Mary-ga tj ti watasi-ta] to] it-ta
that book-ACC John-to Bill-NOM Mary-NOM hand-PASTthat say-PAST

c. [TP John-nij [sono hon-oi [Bill-ga [CP [TP Mary-ga tj ti watasi-ta] to] it-ta
John-to that book-ACC Bill-NOM Mary-NOM hand-PAST thatsay-PAST

In contrast, in English, the Spec-head agreement between a DP, *Mary*, and T in (63) close-offs the projection.[7] This disallows the recursion of the T' level, and TP-adjunction scrambling is not possible. However, English does not have Spec-head agreement between DP and V, and V' level recursion is possible. This permits heavy NP-shift.

(63)



Optional movements take place in the opposite direction of head. In contrast, feature-driven movements occur in the same direction as head. Moreover, for the relativized X-bar theory, there is no traditional difference between 'adjunction' and 'substitution'. All the movement operations generate adjunction, the only difference being the spec-head agreement after that. Optional movements do not have spec-head agreement and free recursion is allowed, while feature-driven movements involve spec-head agreement and it closes-off the projection, disallowing free recursion.

[7] (63) follows the traditional VP-internal Subject Hypothesis (Kuroda 1988, among others) and the subject is base-generated within the V-projection.

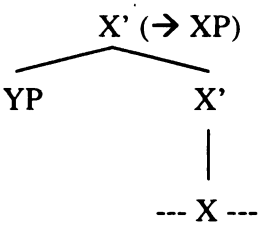
The formal description of the difference in Fukui and Saito (1992) is below (the '/' sign between symbols indicates that there is a choice between them. In (64), either X or X' can be chosen.).

(64) Basic phrase structure

a. English (head-initial): X' = X/X' XP

b. Japanese (head-final): X' = XP X/X'

(65) Agreement
(feature-driven)



The difference between the two types of movements can be rephrased with the term 'X-bar compatible' following (64) and (65). Non feature-driven movements are X-bar compatible, and feature-driven movements are non X-bar compatible and close-off the projection.

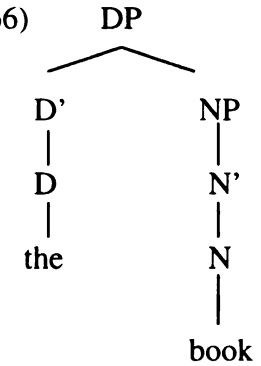
2.5.3 Relativized X-bar theory and Bare Phrase Structure (Chomsky 1995)

Reducing the distinction between 'adjunction' and 'substitution' to 'X-bar compatibility', however, leaves one structural relation which cannot be treated as adjunction. That is, the head-complement relation. Since the relation cannot be treated as an adjunction, the theory fails to make a generalization.

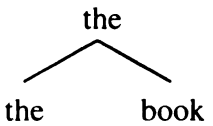
The solution to this problem Saito and Fukui (1998) adopts is Chomsky's (1995) Bare Phrase Structure (BPS). Under BPS, the basic structural configuration is a 'head' and a 'non-head'. According to Chomsky (1995), the operation Merge combines two elements in a bottom-up fashion, and the head projects. The head becomes the label of

the complex formed. Thus, the X-bar-based representation of DP, *the book,* in (66) is replaced with (67).

(66)



(67)

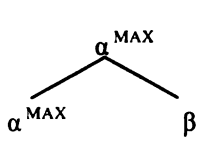


(Chomsky 1995)

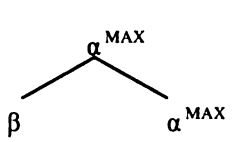
In BPS, there is no branching projection, and the minimal and maximal projections are determined relationally.[8] Concretely, in (67) *book* is simultaneously minimal and maximal projection. The evidence of an item both minimal and maximal projection in Chomsky (1995) is clitics. A Clitic raises from a θ-position and attach to an inflectional head. It is an XP in the position where it is assigned θ-role, but X° when it attaches to a head.

[8] Below, I sometimes use the notation X^{MAX} as in (i) to differentiate an adjunct structure and a structure formed by Merge. According to Chomsky (1995), adjunction forms a two-segment category, not a new category. I represent this like in (ii) as Saito and Fukui (1998).

(i)

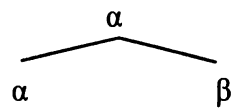


(ii)



Formally, Merge is represented as in (68). For Chomsky (1995), Merge is costless and generates an unordered pair (69).[9]

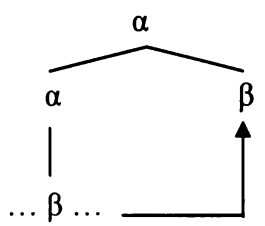
(68)



(69) $K = \{\alpha, \{\alpha, \beta\}\}$

Moreover, according to Chomsky (1995), the operation Move is a special case of Merge.

(70)



Therefore, under the BPS, there is no distinction between the traditional head-complement relation as in (68) and the structure generated by Move as in (70). This comes as a solution to the problem the relativized X-bar theory faces.

2.5.4 Parameterized version of Merge (Saito and Fukui 1998, and Fukui 2003)

In order to preserve the insight of relativized X-bar theory under the BPS, Saito and Fukui incorporate the head-parameter into the BPS. They propose the Parameterized version of Merge (PM) as below.

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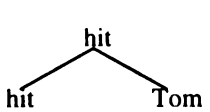
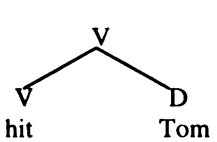
[9] The BPS has the structure for hit Tom as in (i). However, I use the notation (ii) instead to make clear the category.

(i)



(ii)



(71) $K = \{\gamma, <\alpha, \beta>\}$, where $\gamma \in \{\alpha, \beta\}$

a. $\gamma = \alpha$: head-initial, left-headed

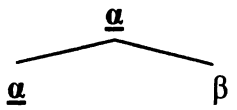
b. $\gamma = \beta$: head-final, right-headed

Under PM, Merge generates an ordered pair, as opposed to an unordered pair, and the left-side of the element always projects in the head-initial language like English (72a), whereas the right-side of the element projects in the head-final language like Japanese (72b).[10]

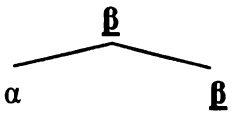
The reinterpretation of the relativized X-bar theory under BPS, or PM, is as follows. Merge is costless and this corresponds to free recursion in the relativized X-bar theory (73) (the structures like (61)). Move is a sub-case of Merge, and it is also costless. This responds to X-bar compatible operations such as Japanese scrambling (74b) and English heavy NP-shift (74a). They can be treated in the same way as Merge ((72) vs. (74)). In contrast, non X-bar compatible movements such as English topicalization and movements to [Spec, TP] and [Spec, CP] are costly in the sense that they need motivation to move to the direction of the head, in other words feature-driven. They involve adjunction and create a two-segment category (75).

[10] In order to show a head clearly in a structure, the head is sometimes represented with a bold and underlined letter.

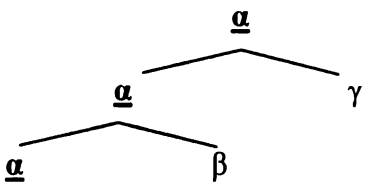
(72) a. English
Head-initial



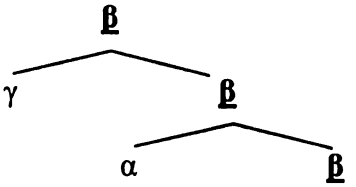
b. Japanese
Head-final



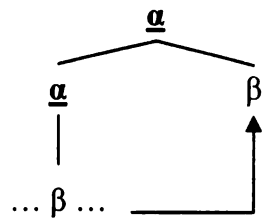
(73) a. English
Head-initial



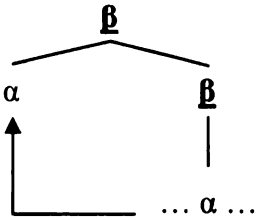
b. Japanese
Head-final



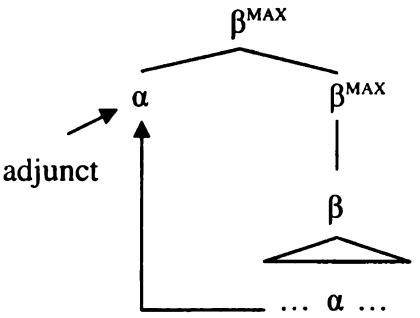
(74) a. English
Head-initial



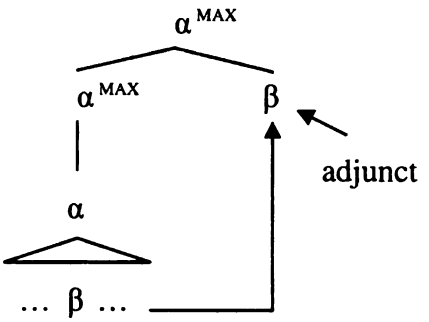
b. Japanese
Head-final



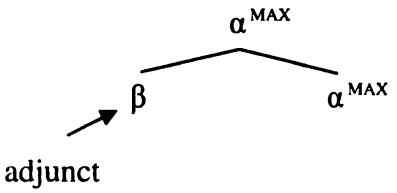
(75) a. English
Head-initial

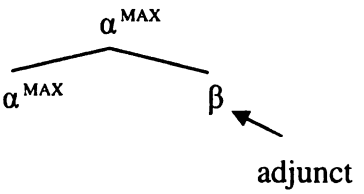


b. Japanese
Head-final



(76)



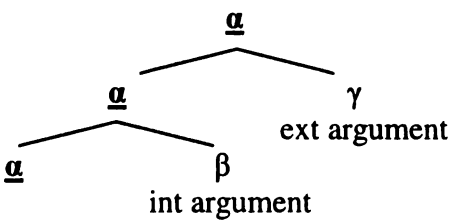


Furthermore, Saito and Fukui says that an adverb don't have directionality requirement, being on either side of a maximal projection (76), which follows that adverb involves feature-checking (Lee 1994).

2.5.5 Cross-linguistic evidence for PM

In this part, let us see some cross-linguistic evidence for PM. The first is related to external arguments. According to PM, in head-initial languages, elements are merged on the rightside of a head. This means that in head-initial languages, not only the internal arguments but also the external arguments are introduced on the right-side of a head. The problem is whether there is any empirical support for this base-form.

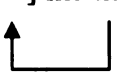
(77)



As discussed in Fukui (1993), a piece of empirical evidence comes from VSO languages. There has been much discussion about the derivation of the word order in the literature. One widely accepted account is to assume that the word order is derived via the leftward verb movement from the base-form of SVO order (Emonds 1979, Koopman 1984 and McCloskey 1990 among others). This derivation derives the Irish sentence (78a) from the base-form of (78b).

(78) a. Thug me ull donghasur sin inne
gave I an-apple to-that-boy yesterday
'I gave that boy an apple yesterday.' (McCloskey 1983)

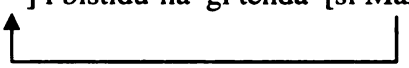
b. [T°] me thug ull donghasur sin inne



Chung (1990), however, claims that the above derivation is not the only derivation of VSO word order. She argues that Chamorro, a VSO language (with an alternative VOS order) spoken in the Mariana Islands, has the base order of VOS, rather than SVO. She derives the surface order by optional leftward adjunction of a subject to V° (79).

(79) a. Ha-fahan si Maria i bistidu-na gi tenda.
Infl(3S)-buy Maria the dress-Agr(3S) LOCATIVE store
'Maria bought her dress at the store.'

b. [[V° ha-fahan]] i bistidu-na gi tenda [si Maria]



The underlying base word order has the structure (77) and this comes as a piece of empirical evidence for the PM-based structure.[11]

Cecchetto (2001) provides two more empirical evidence for the structure (77). First is the transitive expletive (80). Assuming that the superficial position of the subject in a expletive construction is its base-generated position, the data (80) suggests that the subject is base-generated as in the structure (77).

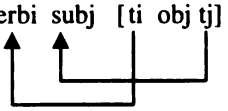
(80) a. There entered the room a strange man.

b. There hit the stands a new journal.

Second is the postverbal subjects in Italian. In (81) the external argument has to follow the internal argument, not precede it. This structure comes as another piece of empirical that external arguments is base-generated into the right branch of the structure.

[11] The Irish derivation (78) does not cause any problem to PM with two feature-driven movements, subject movement followed by verb movement.

(i) [verbi subj [ti obj tj]



(81) a. Non ha ditto niente Gianni
NEG has said nothing Gianni
'Gianni didn't say anything.'

b. ?*Non ha ditto Gianni niente
NEG has said Gianni nothing

Another set of empirical evidence for PM is related to optional movements. Huang (1982) claims that Chinese exhibits the properties of a head-initial language, except in the noun phrase where the language shows properties of head-final languages.

(82) Zhangsan zuotian zai xuexiao kanjian-le Lisi
Zhangsan yesterday at school see-ASP Lisi
'Zhangsan saw Lisi at school yesterday.' (Huang 1982)

(83) [NP [ta de] [neishuang] [hui shuohua de][piaoliang de][N° yenjing]]
s/he DE that-pair can speak DE pretty DE eye
'that pair of pretty eyes of hers that can speak' (Fukui 1993)

If the claim is true, it is expected by PM that Chinese does not have an optional leftward movement at the clause-level, whereas it does have an optional leftward movement in the noun phrase. The expectation is borne out.

(84) a. Zhangsan xie-le nei-fong-xin gei Lisi
Zhangsan write-ASP that –CLITIC-letter to Lisi
'Zhangsan wrote that letter to Lisi.'

b. Nei-fong-xini, Zhangsan xie-le ti gei Lisi

c. Gei Lisij, Zhangsan xie-le nei-fong-xin tj

d. *Nei-fong-xini, gei Lisij, Zhangsan xie-le ti tj

e. *Gei Lisij, nei-fong-xini, Zhangsan xie-le ti tj

(85) a. Zhangsan zuotian [zai New York de] ke
Zhangsan yesterday at/in New York DE lecture
'Zhangsan's lecture in New York yesterday.'

b. Zhangsan [zai New York (de)] zuotian de ke

c. zuotian Zhangsan [zai New York de] ke

d. zuotian [zai New York (de)] Zhangsan de ke

e. [zai New York] Zhangsan zuotian de ke

f. [zai New York] zuotian Zhangsan de ke

In (84), at the clause-level only one DP can be fronted for topicalization. However, in the noun phrase all the possible word order for the three elements (two DPs and one PP) in (85a) is allowed as in (85b-f). This parallels the optional movements in the noun phrase in Japanese, a strict head-final language as in (86).

(86) a. John-no kinoo-no New York-de-no koogi
John-GEN yesterday-GEN New York-in-GEN lecture
'John's lecture in New York yesterday.'

b. John-no New York-de-no kinoo-no koogi

c. kinoo-no John-no New York-de-no koogi

d. konoo-no New York-de-no John-no koogi

e. New York-de-no John-no kinoo-no koogi

f. New York-de-no kinoo-no John-no koogi

Finally, as a strictly head-final language, Japanese, allows leftward optional movements both at the clauselevel and inside noun phrases. English, a head-initial language, is expected to allow rightward optional movements inside both verb and noun phrases. This expectation is also borne out. Heavy NP-shift is an example of optional movement within verb phrases. The optional movement within noun phrases is in (87) and (88).

(87) a. a student of some obscure dialect of Ainu from Japan

b. (?)a student ti from Japan [of some obscure dialect of Ainu]i

(88) a. a teacher of modern post-realist literature from France

b. (?)a teacher ti from France [of modern post-realist literature]i

(Fukui 1993)

2.5.6 Subject condition and Adjunct condition in PM

There is another desirable consequence of PM. As Cattell (1976), Kayne (1981) and Huang (1982) observe, extraction from non-complement positions, subjects (89a) and adjuncts (89b), is not generally allowed.

(89) a. ?*Whoi did [a picture of ti] please John?

b. ?*Whoi did John go home [because he saw ti]?

However, as Kayne (1983) notes, the subject condition does not seem to apply to head-final languages. As in English, in Japanese the extraction from Complex NP (90a) and adjunct position (90b) is not allowed, in contrast with the extraction from a complement position (91).

(90) a. ??Nani-oi [John-ga [DP [TP ej ti kat-ta] hitoj]-o segasite-ru] no.
what-ACC John-NOM buy-PAST person-ACC look-for-ing Q
'Whati, John is looking for [the person that bought ti].'

b. ??Nani-oi [John-ga [PP Mary-ga ti kat-ta kara] okuotte-ru] no.
what-ACC John-NOM Mary-NOM buy-PAST since angry Q
'Whati, John is angry [because Mary bought ti].'

(91) Nani-oi [John-ga [CP Mary-ga ti kat-ta to] omotte-ru] no.
what-ACC John-NOM Mary-NOM buy-PAST that think-ing Q
'Whati, John thinks that Mary bought ti.'

However, scrambling can happen both out of a subject position and an object position (92a) and (92b). This fact can be accounted for if we take that subjects do not form islands for movement in Japanese.

(92) a. ?Nani-oi [John-ga [DP [Mary-ga ti kat-ta] koto]-o mondai-ni
what-ACC John-NOM Mary-NOM buy-PAST fact-ACC problem-into
site-ru no
make-PROG Q
'Whati, John is making an issue out of [the fact that Mary bought ti].'

b. ?Nani-oi [John-ga [CP [DP [TP Mary-ga ti kat-ta] koto]-ga mondai-da to]
what-ACC John-NOM Mary-NOM buy-PAST fact-NOM problem-is that
omotte-iru no
think-PROG Q
'Whati, John thinks that [the fact that Mary bought ti] is a problem.'

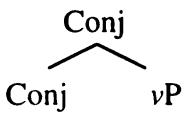
PM's treatment of subject unifies the ban on extraction from subject and adjunct positions, and accounts for the cross-linguistic differences. For PM, the subject in a head-initial language in (89a) is an adjunct position, the same as a base-generated adjunct position in (89b). Therefore, for PM, a subject position and a base-generated adjunct position in a head-initial language are both adjunct positions and extraction from them is not allowed. On the other hand, the subject position in a head-final language is a non-adjunct position. Therefore, the position is treated the same as a complement position, and extraction from the position is allowed (92).

2.5.7 Derivation of same verb coordination in PM

In light of PM, let us reconsider the derivation of same verb coordination. In our account, same verb coordination has the base-form of *v*P-coordination, and multiple verb head-movement generates the complex coordinated head. Both in English and Japanese, verb movements are not optional, but obligatory, and feature-driven to functional heads such as *v* and Asp. Thus, incorporation of PM to verb movement has two consequences. First, as for the directionality of movements, in English they are leftward and in Japanese rightward. Secondly, they have to follow the MLC and Relativized Miminality (Rizzi 1990). Moreover, I assume with Heycock and Zamparelli (2003) that conjunction head

has the same feature of the head whose projection it takes as a complement Concretely, in (93), Conj takes *v*P as a complement whose head is *v* so it has the verbal feature. I also assume that the feature in the conjunction head itself does not take part in Move operations.

(93)

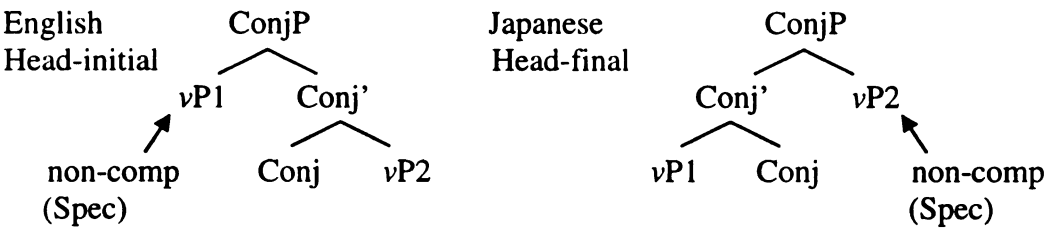


Another point about same verb coordination that needs to be cleared up about is the coordinate structure. Here I consider two types of proposal. The first is Munn (1987) and Johannessen (1996) among others. They claim that a conjunction head takes the two conjuncts in a specifier and a complement position. On the other hand, Munn (1993) argues that a conjunction head, Boolean (B), takes only one conjunct in a complement position. The other conjunct is adjoined by the BP. The schematic representation of the two analyses is in (94). One crucial difference between these two analyses rests in the argument/ adjunct structures. The structure in Munn (1987) and Johannessen (1996) in (94a) does not involve an adjunction, whereas the analysis in Munn (1993) in (94b) does.

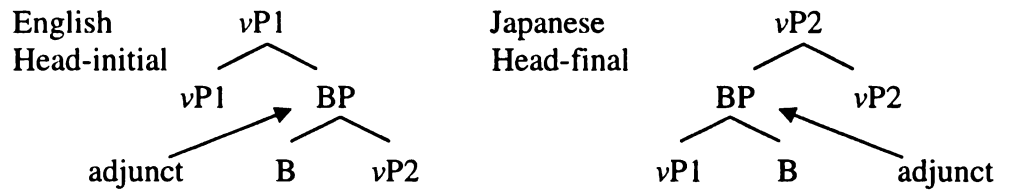
However, if we adapt the parameterized version of Merge as in the analysis of same verb coordination, we obtain a different look at the two analyses. Recall, under the parameterized version of Merge, elements are merged only on the opposite side of a head. In the analysis by Munn (1987) and Johannessen (1996), a conjunct in the specifier position is on the same side of a head, Conj. Therefore, it needs to be revised to be an adjunct. On the other hand, in the analysis by Munn (1993), the conjunction phrase, BP, is on the opposite side of the head. Thus, BP can be merged with a conjunct, creating a

non-adjunct structure. The revised version of the two analyses is in (95) (Another difference between (94) and (95) is that the latter follows BPS.)

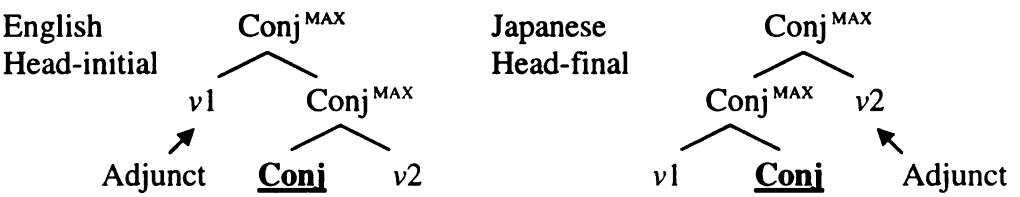
(94) a. Munn (1987), Johannessen (1996)



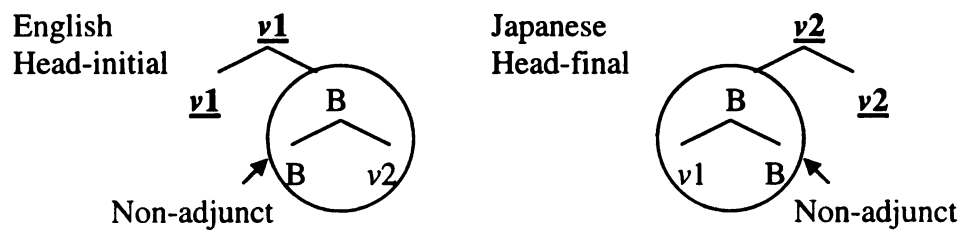
b. Munn (1993)



(95) a. Munn (1987), Johannessen (1996)



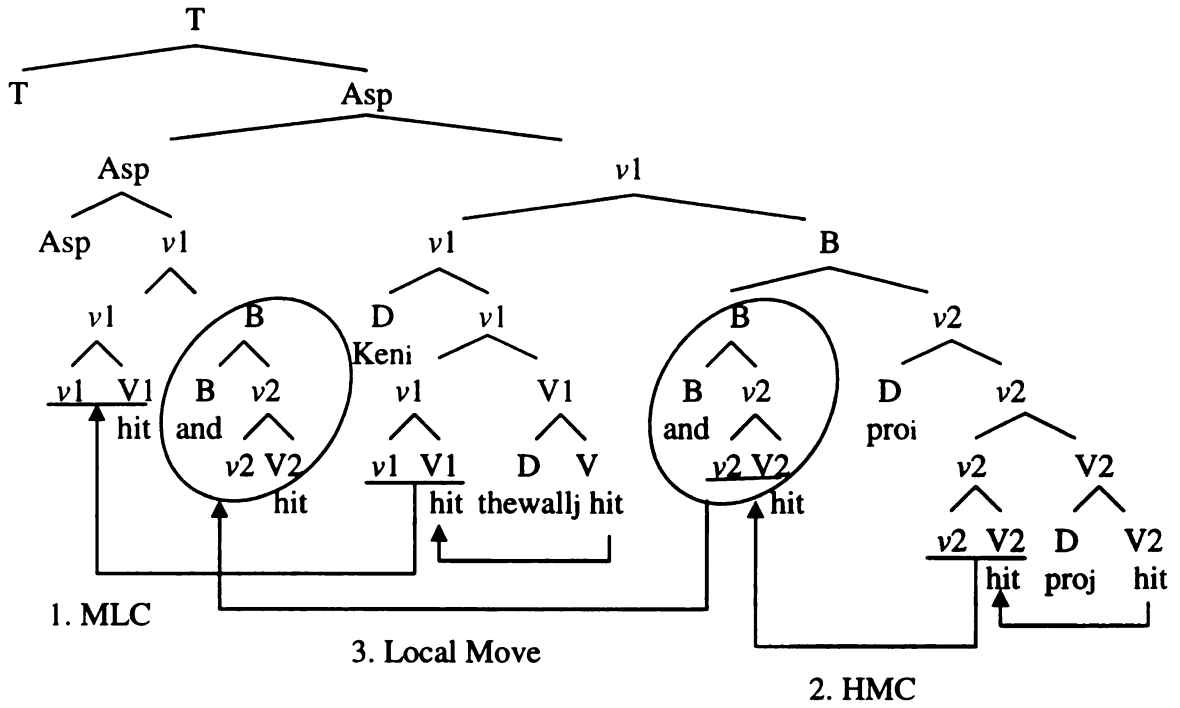
b. Munn (1993)



I take the revised coordinate structure analysis of Munn (1993) in (95b). The derivation of same verb coordination based on PM is in (96) and (97) for English and Japanese, respectively. It provides a straightforward account for the linearization of the coordinated verbs and the properties of same verb coordination.

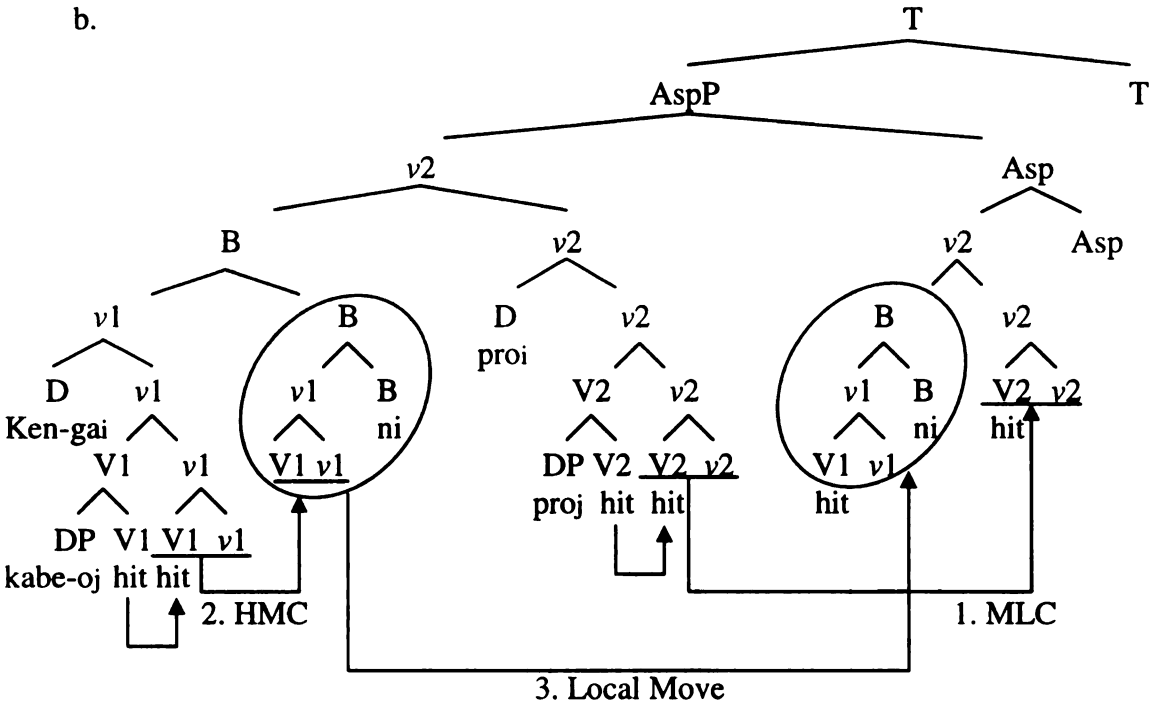
(96) a. Ken hit and hit the wall.

b.



(97) a. Ken-ga kabe-o tataki-ni-tatai-ta
Ken-NOM wall-ACC hit-and-hit-PAST
'Ken hit and hit the wall.'

b.



In both cases, all verbs raise to the light verb *v*. V1 raises to *v*1 and V2 raises to *v*2. Here, for the verbal features both V and *v* have, Relativized Minimality (Rizzi 1990) does not permit V move over *v*. In English (96), V adjoins to the rightside of *v*. In Japanese (97), V comes to the leftside of *v*. In the second step, the higher *v* with V, *v*1 with V1 for English and *v*2 with V2 for Japanese, raise to Asp because of MLC. In the next step, the lower *v* with V, *v*2 with V2 for English and *v*1 with V1 for Japanese, raise to Asp. In the process, there is an intervening head, conjunction head, B. So following the Head Movement Constraint (HMC) (Travis 1984) the lower *v* raises to B first, generating the complex head in the circle. There, the lower verb cannot move over B, since they share the same verbal feature. Thus, in English the lower *v* (*v*2) right-adjoins to B whereas in Japanese it (*v*1) left-adjoins to B. This is shown in the circle. Finally, the complex head in the circle raises to Asp. This process also exhibits Relativized Minimality effects and the complex head in the circle cannot move over the head which is already adjoined to Asp head (*v*1 in English and *v*2 in Japanese). In other words, it creates right-adjunction in English and left-adjunction in Japanese. In both languages, the generated word order of the coordinated verb is correct.

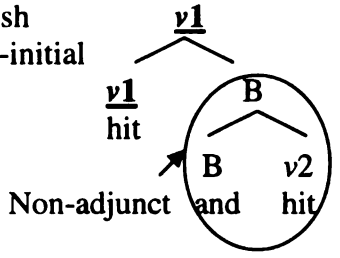
2.5.8 Accounts for the properties of same verb coordination

Above proposed analysis also accounts for the properties of same verb coordination. First, as for the constituency of one verb and the conjunction in same verb coordination, it is the result of the HMC. Specifically, in both (96) and (97), when the lower *v* with V raises to Asp, the HMC requires it to raise to the intervening head B between the lower *v* and Asp, as shown in the circle. The lower *v* (V) differs in the two languages. In English, it is the 2ndV in the linear order, whereas in Japanese it is the 1stV.

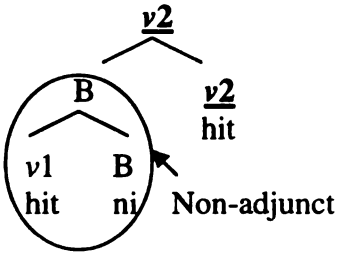
This is why the constituency holds between the 2nd verb and the conjunction in English, while in Japanese between the 1st verb and the conjunction.

Secondly, as for the repeatability, in the proposed analysis in (95b), repeated as (98) below, B is merged to a conjunct *v*. Therefore, creating a coordinate structure, or adding a B, is costless. This is true no matter how many times a new B is merged to a conjunct *v* as in (99) and (100).

(98) English
Head-initial



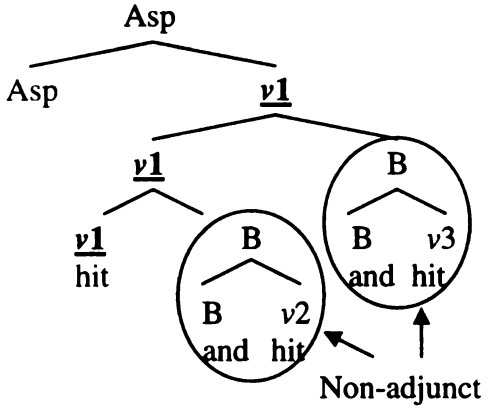
Japanese
Head-final



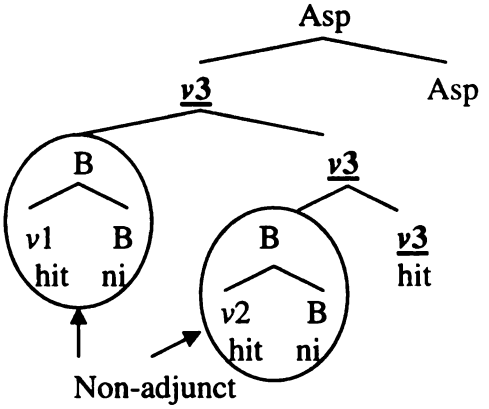
(99) a. Ken hit and hit and hit the wall.

b. Ken-ga kabe-o tataki-ni-tatai-ni-tatai-ta
Ken-NOM wall-ACC hit-and-hit-and-hit-PAST
'Ken hit and hit the wall.'

c. English
Head-initial



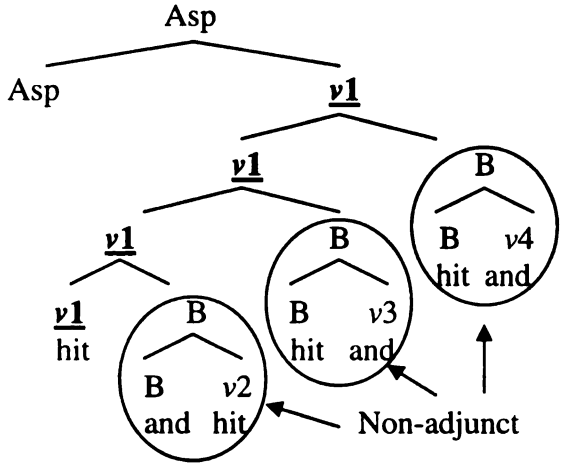
d. Japanese
Head-final



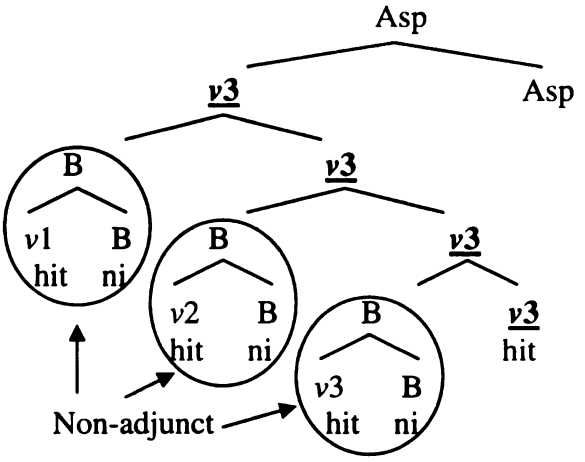
(100)a. Ken hit and hit and hit and hit the wall.

b. Ken-ga kabe-o tataki-ni-tataki-ni-tataki-ni-tatai-ta
Ken-NOM wall-ACC hit-and-hit-and-hit-and-hit-and-hit-PAST
'Ken hit and hit and hit and hit and hit the wall.'

c. English
Head-initial



d. Japanese
Head-final



Moreover, in our analysis, all the verbs have to raise to Asp head. So in (99) and (100), a verb inside each B projection picks up the B and then together raises to Asp head. This explains the repeatability.

Furthermore, in (99) and (100), all the extractions, verb-movements, are from the non-adjunct positions and they involve no extraction from adjunct position. In contrast, the other rest of the coordinate structure analysis cannot explain the Repeatability either because 1. Creating a coordinate structure is costly (95a) or 2. Extraction from subject or adjunct position cannot be avoided (94a), (94b) and (95a).

CHAPTER 3

FURTHER SUPPORT FOR THE PROPOSAL

3.1 Theoretical expectations of PM and their empirical evidence

This section discusses the theoretical and empirical arguments for PM. Saito and Fukui (1998), and Fukui (2003) present two examples of empirical evidence supporting their Parameterized version of Merge (PM): 1. Multiple applications of internal Merge (Move) such as multiple scrambling in Japanese and heavy NP-shift in English, 2. Unification of the Subject and Adjunct conditions under the Adjunct condition. The question that immediately arises here is that if the multiple application of internal Merge is possible, how about multiple application of external Merge. Another question is that since what is externally merged is in a non-adjunct position, the extraction from it should be possible. The repeatability fact provides the empirical evidence for the two theoretical expectations. In (99c, d) and (100c, d), B is merged to a conjunct *v* multiple times and extraction from all of the B takes place.

3.2 More theoretical and empirical evidence for PM

In the first section, as the semantic properties I showed that same verb coordination has a repetitive reading and aspectual restrictions. In fact, similar semantic properties are observed with the modification by the adverbial phrase *repeatedly* (*kurikaesi* in

Japanese).[12] As shown in (101) and (102), modification by *repeatedly* not only generates a repetitive reading but also selects only the predicate of the aspectual type of Process.

(101) a. *Ken knew French repeatedly. (State)

b. Ken ate *that chip/ chips repeatedly. (Event)/ (Process)

c. Ken hit the wall repeatedly. (Process)

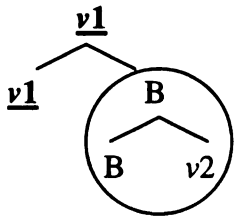
(102) a. *Tosyokan-ni kurikaesi i-te, ie-ni kaet-ta (State)
library-in repeatedly stay-ing, home-to return-PAST
'(I) stayed in the library repeatedly and went home.'

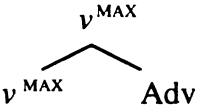
b. Ken-ga kurikaesi *sono sushi-o/ sushi-o tabe-ta (Event)/ (Process)
Ken-NOM repeatedly that sushi-ACC/ sushi-ACC eat-PAST
'Ken repeatedly ate *that sushi/ sushi.'

c. Ken-ga kurikaesi kabe-o tatai-ta (Process)
Ken-NOM repeatedly wall-ACC hit-PAST
'Ken repeatedly hit a wall.'

This semantic correlation between the two constructions, coupled with Verkyul (1993) and Krifka's (1989) claim that the aspectual property of a predicate is not determined by a verb alone but by the combination of the properties of the verb and its nominal arguments, which is structurally *v*P, supports our analysis of same verb coordination as having the base-form of *v*P-coordination. At the same time, this conclusion gives a reasonable explanation that same verb coordination has both the repetitive reading and the aspectual restriction in the similar way that the adverbial phrase generates the repetitive reading to a predicate and imposes the aspectual restriction to it as in the structure (103).

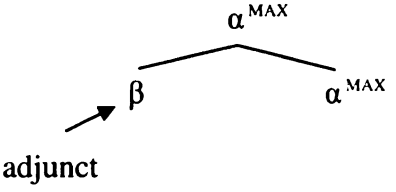
[12] In fact, there are several exceptions where Process predicate is compatible with the adverbial phrase such as ... *to kurikaesi omotta* (repeatedly think that...). However, a detailed aspectual analysis of the modification is beyond the scope of this paper, and I leave it to future research.

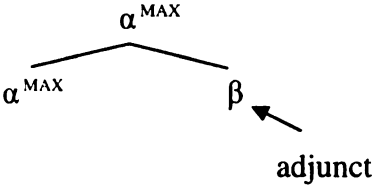
(103) a. 

b. 

If the adverbial phrase *repeatedly* adjoins to a *v* as in (103b), under the parameterized version of Merge, three theoretical expectations will follow. Firstly, since adjunction is costly, *repeatedly* cannot adjoin to a *v* multiple times. Secondly, adverb can appear on either side of a maximal projection as in (76), repeated as (104).

(104)





Finally, extraction from the adverbial phrase is not allowed. All of the three expectations are borne out both in English and Japanese. First, as in (105), *repeatedly* (*kurikaesi* in Japanese) cannot adjoin to a *v* multiple times. Secondly, as shown in (106) for English and (107) for Japanese, *repeatedly* and *kurikaesi* can adjoin either to left-side or right-side of a *v*. In (106b) and (107a), this is followed by subject-raising over the adverbial phrase. In (98b) verb movement over the adverbial phrase follows. In all the cases in (106) and (107), the word order between the adverbial phrase and rest of the elements are correctly accounted for by the PM. Finally, there is no extraction from the adverbial phrase, so the adjunct structure causes no problem with that respect.

(105) a. *Ken hit the wall repeatedly, repeatedly, (repeatedly).

b. *?Ken-ga kurikaesi kurikaesi (kurikaesi) kabe-o tatai-ta
Ken-NOM repeatedly repeatedly (repeatedly) wall-ACC hit-PAST
'Ken hit the wall repeatedly, repeatedly, (repeatedly).

(106) a. Ken hit the wall repeatedly. (Right-adjunction)

b. Keni repeatedly ti hit the wall. (Left-adjunction)

(107) a. Ken-gai kurikaesi ti kabe-o tatai-ta (Left-adjunction)
Ken-NOM repeatedly ti wall-ACC hit-PAST
'Ken hit the wall repeatedly.'

b. Ken-ga kabe-o ti kueikaes tataii-ta (Right-adjunction)
Ken-NOM wall-ACC ti repeatedly hit- PAST
'Ken hit the wall repeatedly.'

CHAPTER 4

CONCLUSION

This paper starts with the question of what is Japanese verbal reduplication. I have argued based on the syntactic and semantic properties it shares with English same verb coordination, that Japanese verbal reduplication is in fact same verb coordination.

The properties of same verb coordination raise several question; how it is compatible with syntactic theory such as theta theory and case theory as well as how to account for its syntactic and semantic properties. The solution came from two sources. The first is Collins (2002) for theta-role assignment and case-licensing, and properties such as strict adjacency and semantic properties. The second is Parameterized version of Merge by Saito and Fukui (1998) and Fukui (2003). This accounts for the linearization of coordinated verbs.

One of the main implications of Kayne's (1994) Linear Correspondence Axiom (LCA) is that there is no directionality (head) parameter. The LCA imposes the basic

word order of Specifier-Head-Complement (S-H-C) and the S-C-H order is derived by movements. The variants of the LCA (Nunes and Uriagereka 2000 and Richards 2001) keep this implication. Chomsky (1995) says that the operation Merge generates an unordered pair, and he still keeps this position in Chomsky (2005:14). Contrary to this direction, from the same verb coordination, this study provides empirical evidence that the head-parameter plays an important role in a phrase structure and linearization in the minimalist framework, as Saito and Fukui (1998) and Fukui (2003) claim.

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