The Syntax of Dvandva V-V Compounds in Japanese

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1. Introduction

One of the main issues in linguistic theory is the division of labor between syntax and lexicon, and the recent analyses of the syntax-lexicon interface have proposed that some of the lexical information may be expressed in syntax. For instance, Chomsky (1995), following the idea from Hale and Keyser (1993), proposes the existence of the functional head v, which may assign the agent theta role to the subject, and consequently, theta roles, which have been considered as a property of a predicate, may be expressed syntactically. Marantz (1997) argues that categorical information is also predictable from syntactic information. More specifically, he argues that when a root is in the complement of v, it is realized as a verb, while the root becomes a noun when it is embedded in the complement of n. Furthermore, Ritter and Rosen (1998, 2000), Travis (2000, 2010), and Ramchand (2008) propose that aktionsart (event structure) is also expressed by syntactic representations.

The reconsideration that syntax can provide some of the lexical information also poses a serious doubt about the so-called lexical operations such as word-formation. Notice that word-formation concatenates the two objects to form a single element, which is the same as what the operation Merge does (see Fujita and Matsumoto (2005)). Accordingly, the only difference between word-formation and Merge is when the concatenation operation takes place: lexicon or syntax.

In this connection, it is quite interesting to consider the so-called V-V compounds in Japanese. With many diagnostics, Kageyama (1993) argues that there are two types of V-V compounds in Japanese: syntactic V-V compounds, which are formed in syntax, and lexical V-V compounds, which are formed in the lexicon. However, Nishiyama (1998) argues that the lexical V-V compounds which Kageyama (1993) proposes may be formed in the syntactic component, and discusses the similarities between V-V compounds in Japanese and serial verb constructions observed in some African languages.

In this paper, I would like to focus on so-called Dvandva V-V compounds (AND-compounds or co-compounds) in Japanese, which are one of the lexical V-V compounds according to Kageyama (1993) (see also Matsumoto (1996, 1998), Fukushima (2005), and Yumoto (2005)). In a Dvandva V-V compound, Kageyama (1993) argues that the two verbs share almost an identical meaning, and the two verbs function as a single head. In other words, it is not clear which verb in a Dvandva V-V compound becomes a head, and furthermore, we do not know the true nature of Dvandva V-V compounds in Japanese, which poses a serious problem if we assume, following Kageyama (1993), that all of the V-V compounds in Japanese are subject to the Right-hand Head Rule (RHR: Williams (1981)). In this paper, I will investigate the structure of Dvandva V-V
compounds in Japanese, and provide three pieces of evidence to show that the V2 of a Dvandva V-V compound is the head, and thus providing a piece of evidence for the syntactic treatment of the lexical V-V compounds in Japanese (see also Hasegawa (1999), Saito (2001), Fujita and Matsumoto (2005), Niinuma (2009a, b), and Nishiyama and Ogawa (2014) for the syntactic treatment of lexical V-V compounds in Japanese).

The organization of this paper is as follows. In Section 2, I will briefly review the previous analyses of Dvandva V-V compounds in Japanese. In Section 3, I will point out two conceptual problems with the previous analyses, the double-headed structure and RHR. In Section 4, I will provide three pieces of empirical evidence which none of the previous analyses is able to capture. In Section 5, I will propose the syntactic structure of a Dvandva V-V compound. In Section 6, I will reconsider the issue of double-headed structures, and provide two pieces of evidence from Old Japanese, showing that its structure has been lost in Modern Japanese. Section 7 is a summary of this paper.

2. Previous Analyses

It has been recognized that compound verbs can be divided into at least two classes with respect to the relationship between their constituents. The first class is called subordinative in the sense that one of the verbs in a V-V compound modifies the other. The second class is called copulative, coordinative, co-compound, or Dvandva (following Sanskrit tradition) in the sense that this kind of modification relationship does not occur in this compound verb. Thus, it is often argued in the literature that we cannot determine which verb is the head. For instance, Kageyama (1993) notes that both the V1 and the V2 function as a head in a Dvandva V-V compound (see also Kageyama (1993: 99), Fukushima (2005), cf. Li (1990: 190)). Furthermore, Matsumoto (1996) notes that the argument structure of the two verbs in this compound should be the same.

Ho (2010) points out that the number of Dvandva V-V compounds is so limited, compared with other lexical V-V compounds. The examples of Dvandva V-V compounds are shown below.

(1) Dvandva V-V compounds in Japanese
a. awate-futameku panic-make.a.commotion ‘get into a panic’
b. imi-kirau avoid-hate ‘abhor’
c. ukare-sawagu be.very.happy-make.noise ‘have a spree’
d. odoroki-akireru be.surprised-be.surprised ‘be surprised’
e. naki-sakebu cry-shout ‘cry and shout’
f. bare-sitasimu be.used.to-be.familiar.with ‘become familiar with’
g. hikari-kagayaku shine-shine ‘shine’
h. omoi-egaku think-draw ‘imagine’

What is interesting in this class of compounds is that the events denoted by the V1 and the V2 take place simultaneously (Kageyama (1999: 195)), and thus, there is no causal relationship
between the two events. Thus, the sentence in (2a) means that John cried and shouted at the same time, not that John cried and (as a result) he shouted. On the contrary, the compound in (2b) is a resultative V-V compound, and the correct interpretation of (2b) is that the snow fell and (as a result) it accumulated.

(2) a. John-ga naki-saken-da
    John-NOM cry-shout-PAST
    ‘John cried and shouted’
    ‘John cried and (as a result) he shouted’

b. Yuki-ga furi-tsumot-ta
    Snow-NOM fall-accumulate-PAST
    ‘The snow fell and (as a result) it accumulated’

It is often noted in the literature that the meanings of the V1 and the V2 in a Dvandva V-V compound are quite similar (cf. Kageyama (1999: 195), Yumoto (2005)). Thus, the unacceptable combination of the verbs in (3) indicates that the meanings of the each verb in these examples are not similar.

(3) a. *omoi-hiramek-u
    think-come to-PRES

b. *naki-odorok-u
    cry-surprise-PRES

c. *iki-kur-u
    go-come-PRES

d. *kasi-karir-u
    lend-borrow-PRES

More interestingly, Matsumoto (1996, 1998) notes that the argument structures of the V1 and the V2 have to be identical. For instance, the verbs tou ‘ask’ and tazuneru ‘ask’ are ditransitives in Japanese, and thus these verbs can combine together and they are able to become a Dvandva V-V compound.

(4) a. Watasi-wa gimon-o sensei-ni tou-ta/tazune-ta
    I-TOP question-ACC teacher-DAT ask-PAST/ask-PAST
    ‘I asked a question of the teacher’

b. Watasi-wa gimon-o sensei-ni toi-tazune-ta
    I-TOP question-ACC teacher-DAT ask-ask-PAST
    ‘I asked a question of the teacher’

Also, the verbs hikaru and kagayaku ‘shine’ are both intransitive verbs, and they can become a Dvandva compound, as illustrated in (5b). On the other hand, the example (5c) indicates that the verb hikaraseru ‘shine,’ which is a transitive verb, cannot be combined with the verb kagayaku.
which is an intransitive verb, as shown in (5d) and (5e).

(5)  
   a. hosi-ga  hikat-ta/kagayai-ta  
      Star-NOM  shine-PAST/shine-PAST
      ‘The star shined’
   b. hosi-ga  hikari-kagayai-ta  
      Star-NOM  shine-shine-PAST
      ‘The star shined’
   c. Taro-ga  hosi-o  hikarase-ta/*hikat-ta  
      Taro-NOM  star-ACC  shine-PAST/shine-PAST
      ‘Taro polished the star’
   d. *Taro-ga  hosi-o  hikarase-kagayai-ta  
      Taro-NOM  star-ACC  shine-shine-PAST
   e. *Hosi-ga  hikarase-kagayai-ta  
      Star-NOM  shine-shine-PAST

Yumoto (2005) argues that an adverb must modify both the V1 and the V2 in a Dvandva V-V compound. As shown in (6), the adverb asayuu ‘morning and evening’ cannot modify the V1 or the V2 separately.

(6)  
      Hanako-wa  asayuu  nageki-kanasin-da  
      Hanako-TOP  morning and evening  grieve-feelsorry-PAST
      ‘Hanako grieved and felt sorry in the morning and evening’
      ‘Hanako grieved in the morning and felt sorry in the evening’

Finally, Yumoto (2005) notes that the internal argument of the Dvandva V-V compounds must be shared, as illustrated in (7). This clearly indicates that the two objects in a Dvandva V-V compound act as a single head.

(7)  
      The object NP must be shared (Yumoto (2005)).  
      Ken-to Hanako-wa  sinkyo-o  omoi-egai-ta  
      Ken-and Hanako-TOP  new house-ACC  think-draw-PAST
      ‘Ken and Hanako imagined their new house’
      ‘Ken thought about their new house, and Hanako draw their new house’

To conclude this section, it is shown that in addition to the semantic meanings, argument structure of the two verbs in Dvandva V-V compounds in Japanese should be identical or nearly so. However, because of their semantic nature, it is not clear what the internal structure of the Dvandva V-V compound is. In fact, Matsumoto (1996: 202) mentions that “… accordingly such compounds are potentially ambiguous in terms of headedness, though they are likely to be right-headed, given the lack of evidence to the contrary.” In other words, the internal structure of this compound has not been investigated seriously, and therefore we have no answer as to which
verb of a Dvandva V-V compound is the head of the compound. In the next section, I will first discuss two conceptual problems with the previous analyses mentioned above, and in the section 4, I will provide three pieces of evidence showing that Dvandva V-V compounds are right-headed.

3. Problems with the treatment of Dvandva V-V Compounds in Japanese

3.1. Double-headedness

Kageyama (1993) notes that it is really hard to determine the head in a Dvandva V-V compound in Japanese, simply because the meaning of the two verbs in the compound is quite similar. Thus, he concludes that both verbs are heads for the syntactic structure of the Dvandva V-V compounds in Japanese, i.e., Dvandva V-V compounds in Japanese are double-headed (see also Matsumoto (1996, 1998), Fukushima (2005) and Yumoto (2005), among others).

However, the status of double-headedness is theoretically problematic. According to Chomsky’s (1994) bare phrase structure, Merge concatenates two objects to form a constituent and there are three options for the label of the new object. Suppose that X and Y are merged and Z is created. Then, Z may be either X or Y, which is a headed structure. Also, it could be the union of X and Y or the intersection of X and Y. Chomsky argues that the last two options cannot be allowed because the merged object does not allow for further computation. When two phrases with different feature values are merged, Union produces a phrase with conflicting feature values, while Intersection creates a phrase with few or no features. Thus, it is concluded that double-headed structure is not allowed in the syntactic computation. On the other hand, Baker and Stewart (1999) explicitly argue that double-headedness is allowed only if the features of the two concatenated objects are identical or nearly so. If the two objects with the identical features are merged, union or intersection will produce a phrase with no conflicting feature values (see also Hiraiwa and Bodomo (2009)).

From the theoretical point of view, it is worth considering the division of labor between syntax and morphology. As explicitly discussed by Kageyama (1993, 1996, 2009, 2010), the morphological structures are governed by principles which are similar but different from principles for the syntactic structures (see also Yumoto (2005)). So, we may say that double-headed structure is permitted in the morphological structure, but not in the syntactic structure. In fact, there is empirical evidence for the double-headed structure in Japanese. For instance, it has been argued that the subordinative N-N compound such as nae-`gi ‘nursery,plant-tree’ undergo rendaku, where the initial [-voiced] consonant of the second element become [+voiced], whereas the Dvandva N-N compound kusa-ki ‘grass-tree’ never allows rendaku. This is explained if we assume the morphological structure of the Dvandva N-N compound and the subordinative compound is different (see also Ueda (1985)).

In this sense, it seems that Dvandva V-V compounds in Japanese may allow double-headedness because the meanings as well as the argument structures of the two verbs are identical or nearly so. Let us first consider hikari-kagayaku ‘shine-shine.’ In this compound, both the verbs are classified as verbs of emission (Levin (1993)) and thus the meanings of the
two verbs are almost identical. Also, both verbs are unaccusative verbs. Hence, there are good reasons to believe that *hikari-hagayaku* is an example of a Dvandva V-V compound in Japanese.

However, I would like to point out that in Dvandva V-V compounds in Japanese, coordination with antonyms is not permitted and thus the following combination is not allowed (cf. Kageyama (1993)):

(8)  
a. *iki-ki* ‘go-come’  *iki-kuru*  
(cf. *iki-iki-suru* ‘go-come-light verb’)  
b. *de-iri* ‘go-out-come.in’  *de-iru*  
(cf. *deiri-suru* ‘go.out-come.in-light verb’)  
c. *nomi-kui* ‘drink-eat’  *nomi-kuu*  
(cf. *nomikui-suru* ‘drink-eat-light verb’)  

As shown in (8), the simple combination of verbs with opposite meanings is not allowed, and in this case, the N-N compound with a light verb *suru* must be selected. Notice that in N-N compounds in Japanese, coordination with antonyms is extensively observed, such as *sirou-kuro* ‘white-black,’ *oya-ko* ‘parent-child,’ and *migi-hidari* ‘right-left.’ If a Dvandva V-V compound is double-headed, as discussed in the previous analyses, we would expect that coordination of antonyms be allowed in V-V compounds as well, contrary to fact. Thus, it is skeptical whether the syntactic structure of Dvandva V-V compounds is double-headed. I will discuss this issue in section 6.

### 3.2. Right-hand Head Rule

The second problem, which is related to the double-headed structure, is Right-hand Head Rule (RHR). Williams (1981) argues that the right-hand member of a morphologically complex word is the head of that word. This entails that the right-most constituent provides all the syntactic and semantic properties of the whole. Notice that Kageyama (1993) explicitly mentions that lexical V-V compounds in Japanese are subject to RHR. Let us consider the following examples.

(9)  
a. *sakanao*  *turi-age-ta*  
fish-ACC  fish-go.up-PAST  
‘(Someone) caught the fish’  
b. *sakana-ga/-o*  *turi-agat-ta*  
fish-NOM/-ACC  fish-go.up-PAST  
‘The fish was caught’

The verb *tsuru* ‘fish’ in (9) is a transitive verb, but in (9b) it cannot have the accusative object, because the V2 *agaru* ‘go up’ is an unaccusative verb in Japanese. In this sense, we can say that the V2 determines the properties of the whole compound, which follows from the RHR. Furthermore, as explicitly mentioned by Kageyama (2010), even though the second element
in some V-V compounds such as *hare-wataru* ‘clear up go across’ is semantically bleached (cf. Matsumoto (1996)), its category status is determined by the second element, which indicates that V-V compound in Japanese is subject to the RHR.

It has often been noted in the literature that there are some instances of Japanese lexical V-V compounds which are not subject to RHR. For instance, Nishiyama and Ogawa (2014) and Ogawa and Niinuma (2011) argue that in some cases, the V2 may undergo grammaticalization and as a result it becomes a functional element, which suggests that the V1 is a head of the whole compound (see also Fukuda (2009) and Yashima (2008)). Even though the second element in some V-V compound is functional, we may say that these examples discussed by Nishiyama and Ogawa (2014) and Ogawa and Niinuma (2011) are problematic since it seems that the category status of the V-V compound is determined by the second element, just like regular V-V compounds in Japanese.

However, I would like to point out that Dvandva V-V compounds are exceptions as well, if previous analyses are correct. Note that in the previous analyses, the syntactic structure of Dvandva V-V compounds is double-headed. If this is the case, the Dvandva V-V compound in Japanese has a special status which is completely different from other V-V compounds in Japanese. In this paper, I claim that Dvandva V-V compounds in Japanese are also subject to the RHR, and thus we can dispense with the special status of Dvandva V-V compounds from the syntactic point of view. In the next section, I will provide three pieces of evidence against the double-headed structure.

4. Other Properties of Dvandva V-V Compounds in Japanese

4.1. Adverbials

As observed in Yumoto (2005), an adverbial must modify the V1 and the V2 simultaneously. However, there are several counterexamples to this observation. The mimetic adverb *sikusiku* may be able to modify the verb *naku* ‘cry’, not the verb *sakebu* ‘shout’. However, if we combine the two verbs to form a Dvandva V-V compound, the adverb cannot co-occur with the compound, as shown in (10c):

(10) a. Mary-ga sikusiku nai-ta
Mary-NOM Mimetic cry-PAST
‘Mary cried’
b. *Mary-ga sikusiku saken-da
Mary-NOM Mimetic shout-PAST
‘Mary shouted’
c. *Mary-ga sikusiku naki-saken-da
Mary-NOM Mimetic cry-shout-PAST
‘Mary cried and shouted’
On the other hand, the adverb _ikiikito_ ‘lively’ is able to modify the verb _kagayak-u_ ‘shine,’ not the verb _hikaru_ ‘shine,’ as illustrated in (11a). However, the whole compound can appear with the adverb, even though the both verbs cannot be modified by the adverb, as shown in (11b):

(11) a. *ikiikito kagayak-u/*hikar-u*
    Mimetic         shine-
    shin-pres/shine-
    shin-pres

b. *Wakamono-ga ikiikito hikari-kagayak-u*
    Young people-nom *ikiikito* Mimetic         shine-shine-
    shin-pres

‘Young people sparkle lively’

The data above clearly suggest that there is a clear asymmetry in terms of licensing an adverbial in a Dvandva V-V compound. The generalization here is that if an adverbial can modify the V2 of this compound, it can appear in a sentence with the compound. This asymmetry cannot be captured by the double-headed structure discussed in the previous section. If the two verbs in a Dvandva V-V compound function as a single head, we would expect that the occurrence of adverbials with this compound must be restricted to the adverbials which can modify the two verbs at the same time. Furthermore, none of the previous analyses can capture the fact that the V2 of this compound is responsible for the selection of an adverbial.

4.2. Case Marker Mismatch

Let us now turn to the other cases where the V2 of a Dvandva V-V compound determines the grammatical status of the whole compound. As shown in (12a), the verb _osor eru_ ‘be afraid of’ takes the accusative NP as its internal argument. On the other hand, (12b) indicates the verb _ononoku_ ‘tramble’ must have the dative NP as its internal argument. What is interesting here is that when the two verbs form a Dvandva V-V compound, the case marker of the internal argument of this compound must be Dative, not Accusative, as illustrated in (12c):

(12) a. *John-ga sippai-o osore-ta*
    John-nom mistakes-acc be.afraid.of-past

b. *John-ga kyoofu-ni ononoi-ta*
    John-nom fear-dat tremble-past

c. *John-ga kyoofu-ni/*o osore-ononoi-ta*
    John-nom fear-dat/-acc be.afraid.of-tremble-past

‘John is afraid of mistakes’

‘John trembled with fear’

‘John is afraid and trembled with fear’

The following examples also show that the V2 of a Dvandva V-V compound is responsible for licensing the Case of its internal argument. The verb in (13a) may take a NP with the dative Case marker _-ni_ while the verb in (13b) takes a NP with an accusative Case marker _-o_. If the two verbs are combined to form a Dvandva V-V compound, the Case marker of the internal
argument must be Accusative, not Dative, as shown in (13c):

(13) a. John-ga haji-ni tae-ta
    John-NOM shame-DAT stand-PAST
    ‘John bore with the shame’
b. John-ga haji-o sinon-da
    John-NOM shame-ACC bear-PAST
    ‘John bore bore his pride’
c. John-ga haji-o/*-ni tae-sinon-da
    John-NOM trouble-ACC/-DAT stand-bear-PAST
    ‘John bore with his pride’

Again, none of the previous analyses can correctly capture the fact that the Case information of the V2 in a Dvandva V-V compound determines the Case of the internal argument of the whole compound.

4.3. Idioms

The third piece of evidence to show that a Dvandva V-V compound in Japanese is right-headed comes from idioms. The sentence in (14a) has two readings, one of which is a literal reading. What is relevant for our concern is that it also has an idiomatic reading. For instance, the sentence in (14b) does not have the idiomatic reading, even though the meaning of kagayaku ‘shine’ is quite similar to that of hikaru ‘shine’ in (14a). Interestingly, the idiomatic reading is lost when the verbs in (14a) and (14b) form a Dvandva V-V compound, as illustrated in (14c):

(14) a. Oya-no me-ga hikaru
    Parent-GEN eye-NOM shine-PAST
    ‘My parents watched (somebody)’
    ‘My parent’s eyes shined’
b. Oya-no me-ga kagayaku
    Parent-GEN eye-NOM shine-PAST
    ‘My parent’s eyes shined’
    ‘My parents watched (somebody)’
c. Oya-no me-ga hikari-kagayai-ta
    Parent-GEN eye-NOM shine-shine-PAST
    ‘My parents’ eyes shined’
    ‘My parent watched (somebody)’

The same situation can be seen in (15) as well. The sentence in (15a) has the idiomatic interpretation, but the sentence in (15b) does not. When the two verbs in (15a) and (15b) form a Dvandva V-V compound, the idiomatic reading is lost, and sentence is unacceptable, as shown in (15c)²:

—61—
4.4. Summary

To summarize this section, the data discussed above constitute a piece of evidence against the double-headed structure of Dvandva V-V compounds in Japanese, since it seems that the V2, not the V1, plays a key role in determining the grammatical status of the whole compound. If the two objects are like a single head, then we would expect that the union of the grammatical status of the V1 and the V2 be the grammatical status of the whole compound, contrary to fact. In the next section, I will provide an analysis to explain the data above.

5. An Analysis

As discussed in the previous section, it was shown that Dvandva V-V compounds in Japanese are right-headed. In this section, I will provide a syntactic analysis for the structure of the compounds.

It has often been discussed in the literature that the position of an adjunct is so restricted. For instance, Koizumi (1995) argues that an adjunct must adjoin to a maximal projection. If so, the fact that the adverbials that is able to modify the V1 cannot appear in a Dvandva V-V compound suggest that the V1 cannot project itself, and thus it fails to license the adverbials. In other words, if the V1 is adjoined to the V2 in overt syntax and if the V2 always projects, the data in section 3.1 is explained.

Furthermore, the fact that the Case marker of the internal argument of a whole compound is determined by the V2, not the V1, suggests that the V2 always projects a maximal projection, and as a result the V2 has a power to decide the Case marker of the internal argument of this compound. Finally, the loss of the idiomatic interpretation discussed in section 3.3 also follows if Marantz’s (1997) argument for idioms is on the right track. Marantz (1997) argues that for a certain constituent to have an idiomatic interpretation, it must have a certain syntactic configuration. For instance, the reason that a subject NP cannot participate in an idiomatic interpretation is because it is outside of VP. If this line of reasoning is correct, the fact that the V1 in a Dvandva V-V compound cannot participate in the idiomatic interpretation follows if the
V2, not the V1, does take the internal argument. In other words, the V1 in the Dvandva V-V compounds in Japanese is intransitive (i.e. intransitive) (cf. McIntyre (2004)). Therefore, I will propose the following structure of Dvandva V-V compounds in Japanese, where the root of the V1 is adjoined to the root of the V2 in overt syntax.

\[(16) \quad \begin{array}{c}
\text{vP} \\
\text{NP} \\
\text{v'} \\
\sqrt{\text{V2}} \\
\sqrt{\text{V1}} \\
\sqrt{\text{V2}}
\end{array}\]

In this structure, I assume Marantz’s (1997) proposal that categorical status of a root is determined by a functional head v. Furthermore, I assume, following Basilico (2008), that the functional head v licenses the Case of an internal argument, and thus, an external argument would be licensed by Voice (cf. Kratzer (1996)), which is a higher than v.

Notice that the structure is exactly what Saito (2001) proposes (see also Saito and Hoshi (2000)). However, I will depart from Saito (2001) in that the V1, which is adjoined to the V2, is not able to assign any theta role to the NPs. The reason why the V1 doesn’t have an ability to assign any theta role comes from the fact that the internal argument of the V2, not of the V1 must be licensed, as discussed in the previous section. Furthermore, the following data show that the V1 also fails to license its external argument:

\[(17) \quad \begin{array}{l}
a. \quad \text{Roketto-ga} \quad \text{uti-agat-ta} \\
\quad \text{rocket-NOM} \quad \text{hit-go.up-PAST} \\
\quad \text{’The rocket flew up’} \\
b. \quad *\text{roketto-ga} \quad (\text{nanika-o}) \quad \text{ut-ta} \\
\quad \text{Rocket-NOM} \quad \text{something-ACC} \quad \text{hit-PAST} \\
c. \quad (\text{dareka-ga}) \quad \text{roketto-o} \quad \text{ut-ta} \\
\quad \text{Someone-NOM} \quad \text{rocket-ACC} \quad \text{hit-PAST}
\end{array}\]

As shown in (17b), the V1 ufu ‘hit’ does not assign a theta role to the external argument, either. Even though (17c) is acceptable, the meaning of this sentence is completely different from the meaning of (17a), i.e. in (17c), someone must have something to hit the rocket, not fly it. Thus, I conclude that the V1, which is in an adjoined position, does not assign any theta role to the NPs. Notice that this is exactly what McIntyre (2004) proposes (cf. Nishiyama and Ogawa (2014))

This analysis is conceptually superior since we can dispense with Theta Identification proposed by Kageyama (1993) and Li (1990). For instance, Kageyama (1993) argues that Theta Identification must take place to form a Dvandva V-V compound in Japanese (and Chinese). However, it is no longer necessary since the root of the V1 is adjoined to the root of the V2, and thus it fails to assign theta roles to the internal arguments.
To conclude this section, I have proposed the syntactic structure of the Dvandva V-V compounds in Japanese, which is in conformity with the RHR proposed by Williams (1980), and thus Dvandva V-V compounds in Japanese is not exceptional at all, contrary to Kageyama (1993), Matsumoto (1996, 1998), Fukushima (2005) and Yumoto (2005), among others.

6. Double-headedness Revisited

What I have discussed in Section 3.1 is that a compound with double-headed structure is in fact possible in Japanese. For instance, as discussed by Kageyama (2009, 2010), the compounds such as oya-ko ‘parent-child’ or siro-kuro ‘white-black’ have a double-headed structure. However, what I have discussed in the previous sections is that the Dvandva V-V compounds in Japanese have right-headed, which is subject to the RHR. The question that immediately arises is why Dvandva V-V compounds in Japanese do not allow double-headed structure even though N-N compound in Japanese such as oya-ko seems to allow double-headed structure. In this section, I will provide two pieces of evidence suggesting that V-V compound with double-headed structure was possible in Old Japanese, but that it has been lost in Modern Japanese.

Let us first consider what Dvandva compound (or co-compound) is. Semantically, Dvandva compounds can be divided into two types: coordination with synonyms (or similar meaning), and coordination with antonyms. For instance, the V-V compound naki-sakebu ‘cry-shout’ is an example of coordination with synonyms, and the N-N compound siro-kuro ‘white-black’ is an example of coordination with antonyms. Notice that we cannot decide which element is the head in the compounds with coordination with antonyms, since both elements are equally important. On the other hand, when the two elements have the same meaning, there is a possibility that one of the elements is inert, or just functions as an emphatic element. Thus, I assume that the compounds with antonyms are true examples of Dvandva compounds.

With this in mind, let us reconsider V-V compounds in Japanese. Kageyama (1993) points out that V-V compounds in Japanese lack coordination of antonyms as shown in (8), which is repeated here for convenience:

(18) a. iki-ki ‘go-come’ *iki-kuru
    (cf. ikiiki-suru ‘go-come-light verb’)
b. de-iri ‘go-out-come.in’ *de-iru
    (cf. deiri-suru ‘go.out-come.in-light verb’)
c. nomi-kui ‘drink-eat’ *nomi-kuu
    (cf. nomikui-suru ‘drink-eat-light verb’)

On the other hand, it has been reported that Modern Greek and Chinese allows this type of Dvandva V-V compounds (see Kiparsky (2009) and Nicholas and Joseph (2009) for Modern Greek, and Li (1990) for Chinese). Thus, it can be concluded that the structure of the Dvandva V-V compounds in these languages is double-headed.
(19) a. kliō-abaroni* ‘lock and bolt’  
b. anevo-kateveni* ‘go up and go down’  

(Nicholas and Joseph (2009))

(20) Taman changchang lai-wang  
They sometimes come-go  
‘They sometimes visit each other’  

(Li (1990))

(21) a. chu-ru ‘go.out-come.in’  
b. qi-fu ‘go.up-go.down’  

(Chao Zhang (personal communication))

Interestingly enough, this type of Dyandva V-V compounds seems possible in Old Japanese as shown in the following examples. This indicates that double-headed V-V compounds were allowed in Old Japanese.

(22) a. Matutiyama yuki-ku to miramu kihitomosimo  
Mt. Matutiyama come-go C watch people at Ki country  
‘I am envious of people at Ki country who can watch Mt. Matutiyama when they come and go’  

(Manyoo Shuu 1-55)

b. yukuyuku nomi-kufu  
When going eat-drink  
‘(we) eat and drink when going to (somewhere)’  

(Tosa Nikki)

Let us next consider the cases where the order of the verbs in a Dyandva V-V compound can be switched in Modern Greek and Chinese, as shown below:

(23) a. lai-wang ‘come-go’  
b. wang-lai ‘go-come’  

Zhang Chao (personal communication)

(24) a. trovo-pini ‘eats and drinks’  
b. pino-troi ‘drinks and eats’  
c. prosjio-apojionete ‘lands and takes off’  
d. apojio-prosjonete ‘takes off and lands’  

(Kiparsky (2009))

Notice that this type of verb-switching may be explained by the fact that both of the two verbs in the compound are heads. Since the structure of the Dyandva V-V compounds in these
languages are double-headed, the verb-switching is permitted, and it does not affect any change in meaning as well as in syntactic structure.

Interestingly, this type of verb switching can be often observed in Old Japanese, as noted by Seki (1977):

\[(25)\]  
\[\begin{array}{ll}
\text{a.} & \text{mogaki-kurusim} \quad '\text{struggle-suffer'} \quad \text{kurisimi-mogaku} \\
\text{b.} & \text{warai-azakeru} \quad '\text{laugh-scold'} \quad \text{azakeri-warau} \\
\text{c.} & \text{koi-omou} \quad '\text{love-think'} \quad \text{omoi-kou}
\end{array}\]

Seki (1977: 96) notes that even though the order of the two verbs changes, there is little difference in meaning. Furthermore, Seki (1977: 99-100) takes the compound sugi-iku ‘pass-go’ and iki-sugu ‘go-pass’ as an example, and argues that in 8th century, the both forms have the same meaning, but by the 11th century, iki-sugu means ‘come through’ and sugi-iku means ‘(time) goes by.’ This indicates that in Old Japanese, the double-headed structure is certainly permitted, but it has been lost by 11th century, and the right-headed structure has been dominant ever since then.

The examples above clearly indicate that Dvandva V-V compounds with the antonyms are indeed possible in Old Japanese, which suggests that Old Japanese had V-V compounds with double-headed structure. But for some reasons, which are unclear to me, the V-V compounds with double-headed structure are lost in Modern Japanese, so that Dvandva V-V compounds in Modern Japanese are always right-headed. At this moment, I don’t have definite answers as to when this historical change started to happen, or how this change was triggered, which I will thus leave open for future research.

7. Conclusion

In this paper, I have provided three pieces of evidence, showing that Dvandva V-V compounds in Japanese have right-headed structure, contrary to the previous analyses, which argue for the double-headed structure without any discussion. This indicates that from the syntactic point of view, Dvandva V-V compounds in Japanese do not differ from resultative V-V compounds. I have also shown that V-V compounds with the double-headed structure were permitted in Old Japanese, but have been lost in Modern Japanese. If this analysis is on the right track, it constitutes a piece of additional evidence for Kageyama (1993), who argues that all lexical V-V compounds in Japanese are right-headed, which obey the RHR, as well as the syntactic treatment of lexical V-V compounds in Japanese (cf. Nishiyama (1998), Hasegawa (1998), Saito (2001), Nishiyama and Ogawa (2014), Ogawa and Niinuma (2011), among others).

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Notes
1) One of the anonymous reviewers wondered if the antonym of the verb nomu ‘to drink’ is kuu ‘to eat.’ In Sinshu Hantaigo Jiten, the antonym of nomu is haku ‘to vomit,’ but in Hantaigo Taishogo Jiten, kuu (or taberu) ‘to eat’ is listed as an antonym of nomu. In addition to haku. Thus, in this paper, I regard the V-V compound nomi-kuu as a compound of antonyms. See also in section 6 for more discussion.
2) As pointed out by an anonymous reviewer, it would be more desirable if one could find an example where the internal argument and the V2 has the idiomatic interpretation. Unfortunately, as far as I have searched, a relevant example cannot be found, probably due to the limited number of Dvandva V-V compounds in Japanese.
3) I am indebted to Yoshiki Ogawa (personal communication) for reminding me of Saito’s (2001) work.

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**Texts**


**Dictionary**
