On the Domains of Japanese Verbal Compounds: *Su*-insertion, Sequential Voicing and Compound Ellipsis

TAKAYUKI AKIMOTO
Kogakuin University

1   Introduction

This paper investigates two types of verbal compounds in Japanese, thematic V-Vs (Kageyama 2016) and adjunct X-Vs (Sugioka 2002). Relevant examples are given in (1) and (2).

(1)   kane-o   **nuki-tor**-u
      money-ACC pull-take-PRS
      'to skim money'   [Thematic V-Vs]

(2)   kane-o   **yoko-dori**-su-ru
      money-ACC side-take-do-PRS
      'to steal money'   [Adjunct X-Vs]

Thematic V-Vs consist of a non-head verb stem in its conjunctive form (i.e., *nuki*) and a head verb stem (i.e., *tor*). Adjunct X-Vs are formed with a non-head stem (i.e., *yoko*) and a head verb stem that appears in its conjunctive form (i.e., *dori*). Although the non-head stem of adjunct X-Vs in (2) is nominal, various elements can be in the non-head stem position in adjunct X-Vs, as exemplified in (3).

(3) a. *tati*-giki (stand-listen)   [X = Verb]
     b. *haya*-oki (early-wake.up)   [X = Adjective]
     c. *ko*-wake (small-divide)   [X = Prefix]
     d. *nagara*-giki (while-listen)   [X = Conjunct]
     e. *gabu*-nomi (swig-drink)   [X = A part of Adverb]

These two types of verbal compounds function as verbal predicates in that they can license an accusative object, as shown in (1) and (2). However, they show different behaviors in terms of the insertion of the verbal morpheme *su* and sequential voicing (SV) (a.k.a. *rendaku*), as we will see below. In this paper, I propose that these differences can be explained through a difference in the spell-out domains of the two compound structures. In particular, I argue that the non-head elements in thematic V-Vs are independently spelled out (Piggott and Travis 2013), but the ones in adjunct X-Vs are spelled out together with the head elements (Harðarson 2021). It is also shown that the present proposal is further supported by the possibility of compound ellipsis between the two verbal compounds.

2   Two Types of Verbal Compounds in Japanese

This section examines different behaviors between thematic V-Vs and adjunct X-Vs in terms of *su*-insertion and SV.

First of all, adjunct X-Vs cannot be directly followed by grammatical morphemes such as tense, negative, modality, and aspectual markers. In order for them to be followed by such grammatical markers, the verbal morpheme *su* must be located to the right of the adjunct X-Vs. This is evidenced by (4a), where the X-V *yoko-dori* cannot be followed by the past tense marker *-ta*, the negative marker *nai*, the modality marker *sooda*, and the aspectual marker *tuzuke* without the interposition of *si*, the conjunctive form of *su*, between them.

(4) a. kane-o   **yoko-dor(i)**-*(si)-{ta / nai   / sooda / tuzuketa}
         money-ACC side-take-*(do)-{PST / NEG / seem   / continued}
         '{stole / not to steal / seem to steal / continued stealing} money'
     b. kane-o   **nuki-tor(i)**-(*si)-{ta / anai / sooda / tuzuketa}
         money-ACC pull-take-(*do)-{PST / NEG / seem   / continued}
         '{skimmed / not to skim / continued skimming} money'

This restriction is not observed in thematic V-Vs, however, as shown in (4b), where the V-V *niki-tor* can be directly followed by the grammatical markers and does not allow the interposition of *su* between the V-V and the grammatical morphemes.

Next, it has been observed that adjunct X-Vs undergo SV (Ito and Sugioka 2002; Sugioka 2002). As shown in (5), the first consonants of the head verb

stems are voiced.

(5) X-Vs undergo SV
  a. yoko-**d**ori 'sidel-take' (cf. *yoko-tori)
  b. mae-**d**aosi 'front-topple' (cf. *mae-taosi)
  c. ne-**g**atame 'root-harden' (cf. *ne-katame)
  d. nori-**z**uke 'glue-attach' (cf. *nori-tuke)

On the other hand, thematic V-Vs resist SV with very few exceptions, as illustrated in (6), where the same verb stems are used as the adjunct X-Vs in (5) but they are never voiced.[1]

(6) V-Vs never undergo SV
  a. *nuki-**d**or 'pull-take' (cf. nuki-tor)
  b. *osi-**d**aos 'push-topple' (cf. osi-taos)
  c. *fumi-**g**atame 'step-harden' (cf. fumi-katame)
  d. *hari-**z**uke 'paste-attach' (cf. hari-tuke)

The question that immediately arises is why the thematic V-Vs and the adjunct X-Vs behave differently with respect to *su*-insertion and SV, even though their second head stems are both verbs. One might argue that this is due to the categorical difference between them: thematic V-Vs are categorically verbs, whereas adjunct X-Vs are categorically nouns and verbalized by the suffixation of *su*. Actually, adjunct X-Vs can function not only as predicates but as nouns, followed by case markers:

(7) a. Seifu-ga   keikaku-o   mae-daosi-si-ta.
         government-NOM project-ACC front-topple-do-PST
         'The government has moved the project forward.'
     b. Seifu-ga   [keikaku-no mae-daosi]-o   kimeta.
         government-NOM project-GEN front-topple-ACC decided
         'The government has decided an advance on the project.'

In (7a), the X-V *mae-daosi* can be used as a predicate, while in (7b), it serves as a nominal object marked with accusative case and takes the genitive complement *keikaku* 'project', which is marked with accusative in (7a). However, it is dubious to consider the adjunct X-Vs in the predicative use to be nominal as well, based on (at least) two aspects.

---

[1] One of the examples of thematic V-Vs undergoing SV is *ki-gae-ru* (wear-change) 'to change one's clothes'. This compound consists of two verb stems *ki(ru)* and *kae(ru)* with the second verb stem being voiced. Since such compounds have their nominal counterparts (i.e., *ki-gae-ru*(V) ↔ *ki-gae*(N)), Ito and Sugioka (2002) propose that V-V compounds with SV are derived from their nominal counterparts by way of back-formation.

First, nominal adjectives in Japanese, when used as modifiers, are followed by either *-ni*, the adverbial form of the copula, or *-na*, the adnominal form of the copula. As (8a) indicates, for the nominal adjective *nyuunen* 'careful' must appear in the adverbial form to modify the verb *araw* 'wash'. What is of importance here is that the same pattern holds for (8b), where the X-V *te-arai* 'hand-wash' is construed as a predicate, but not for (8c), where the X-V functions as a nominal followed by the case particle *ga*.

(8) a. Sono fuku-wa *nyuunen-*{ni/*na} **araw-**u hityoo-ga aru.
         that   cloth-TOP carefully/careful   wash-PRS need-NOM be
         'It is necessary to {carefully/*careful} wash that cloth.'
     b. Sono fuku-wa *nyuunen-*{ni/*na} **te-arai-**su-ru
         that   cloth-TOP carefully/careful   hand-wash-do-PRS

         hityoo-ga aru.
         need-NOM be
         'It is necessary to {carefully/*careful} hand-wash that cloth.'
     c. Sono fuku-wa *nyuunen-*{na/*ni} **te-arai-**ga   hityoo-da.
         that   cloth-TOP careful/carefully   hand-wash-NOM need-COP
         'That cloth needs {careful / *carefully} hand washing.'

Still, the fact that (8b) patterns with (8a), not with (8c), may be a result of the verbalization by the suffixation of *su*. But this is not the case.

(9) irui-o   (*nyuunen-*{ni/*na}) te-arai-{no-sai   / tyu)}
     clothes-ACC carefully/careful   hand-wash-{GEN-when / while}
     '{when / while} hand-washing clothes carefully ...'

As (9) shows, the adjunct X-V can be followed by temporal suffixes such as *-no-sai* 'GEN-when' and *-tyuu* 'while' without the interposition of *su*.[2] In spite of this, it can take the accusative object and be modified by the adverbial form of nominal adjectives. I take these facts to suggest that adjunct X-Vs are nominal when followed by case markers but verbal predicates on their own.

3 Proposal

In the previous section, I pointed out the following two peculiarities of Japanese verbal compounds in terms of *su*-insertion and SV.

(10) a. Thematic V-Vs resist *su*-insertion and SV.
      b. Adjunct X-Vs allow both *su*-insertion and SV.

---

[2] The reason why *su* is not inserted in this case might be due to the nominal status of temporal suffixes. I leave for future research how *su*-insertion can be blocked under our proposal that will be given in Section 3.

I argue that this difference can be explained through a difference in the spell-out domains of the two compound structures.

3.1 Compound Structure and Spell-Out Domains

This study adopts a version of Distributed Morphology (Halle and Marantz 1993) for the structure of compounds, assuming that compounds are formed by two categorized stems (i.e., the combination of a $\sqrt{\text{ROOT}}$ and a categorizer) (see Harðarson 2016, 2021). As such, both V-Vs and X-Vs in question consist of two categorized stems. I propose, however, that they differ in terms of spell-out domain, as schematized in (11a) and (11b): in V-Vs, a non-head element is spelled-out independently (Piggott and Travis 2013); in X-Vs, non-head and head elements are spelled-out together (Harðarson 2021).

(11)   a.   Thematic V-Vs   b.   Adjunct X-Vs
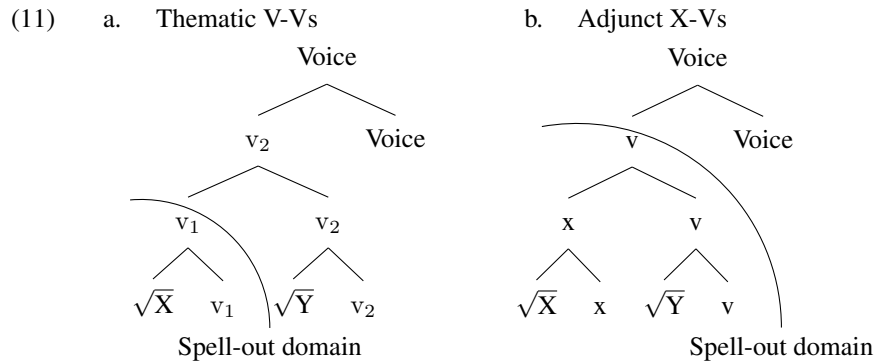
In the following sections, I demonstrate how the difference in spell-out domains can account for the difference in the availability of *su*-insertion and SV.

3.2 *Su*-insertion

To begin with, I identify the morpheme *su* that follows adjunct X-Vs is the light verb on the basis that adjunct X-Vs can take an internal argument without *su*, as in (12a), and that *su* cannot license the internal argument without the X-V (Grimshaw and Mester 1988).

(12)   a.   irui-o   te-arai-{nosai(-wa)   / tyu-(ni)} ...
             clothes-ACC hand-wash-{when-TOP / while-in}
             '{when / while} hand-washing clothes ...'
         b.   irui-o   *(te-arai)   su-ru
             clothes-ACC hand-wash do-PRS
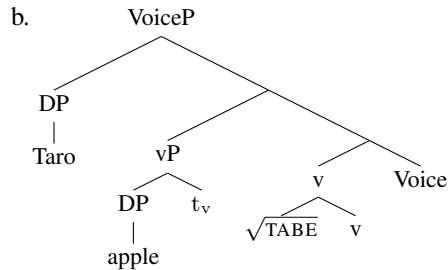   'to {hand-wash/*do} clothes'

The question is why it is that the light verb *su* is preceded by adjunct X-Vs, but not by thematic V-Vs. I attribute this difference to the morphological realization of the Voice head in Japanese. Specifically, I propose the following vocabulary insertion rules for Voice.

(13)   a.   Voice $\leftrightarrow$ Ø / _$\sqrt{\text{ROOT}}$
       b.   Voice $\leftrightarrow$ *su* (elsewhere)

These rules say that Voice is realized with Ø in the context of a verbal $\sqrt{\text{ROOT}}$ being 'visible' from Voice, but otherwise with *-su* as an elsewhere form.

     Before going into an explanation of *su*-insertion in adjunct X-Vs, not in thematic V-Vs, I show how the above vocabulary insertion rules explain the fact that *su*-insertion is not allowed in Japanese native verbs, as given in (14a).

(14)   a.   Taroo-ga ringo-o   tabe(*-su)-ru.
          T.-NOM   apple-ACC eat-do-PRS
          'Taro eats an apple.'

       b.

```
                VoiceP
          _____|_____
        DP            _____|_____
        |            vP          ____|____
       Taro      ___|___        v      Voice
                DP    t_v     __|__
                |            √TABE   v
              apple
```

A basic structure of VoiceP for Japanese native verbs is given in (14b), where $\sqrt{\text{TABE}}$ is verbalized by a merger with v, and the $\sqrt{\text{TABE}}$-v complex head-moves to Voice. I assume with Embick (2010) that a categorizing head is a phase/cyclic head but the spell-out of its complement is not triggered until a second cyclic head merges. As such, in (14b), the verbal root $\sqrt{\text{TABE}}$ is visible from Voice, which leads Voice to be realized with Ø by (13a).

     Let us then move on to an explanation of the presence or absence of *su*-insertion in V-Vs and X-Vs. In the structure of thematic V-Vs proposed in (11a), the non-head V1 (i.e., $\sqrt{\text{X}}$) is independently spelled-out, which means it is invisible from Voice. However, $\sqrt{\text{Y}}$ is visible from Voice since v₂ does not trigger the spell-out of $\sqrt{\text{Y}}$ (Embick 2010), which results in the realization of Ø on Voice and correctly predicts the absence of *su*-insertion in V-Vs. In the structure of adjunct X-Vs proposed in (11b), on the other hand, both the non-head $\sqrt{\text{X}}$ and the head $\sqrt{\text{Y}}$ are spelled-out simultaneously, which suggests that Voice can no longer see either. Therefore, Voice in X-Vs is realized with *su* by (13b), which leads to the *su*-insertion.

3.3 Sequential Voicing

We then consider the fact that adjunct X-Vs can, but thematic V-Vs cannot, undergo SV. In order to explain this difference, I follow Tatsumi (2022) in assuming that SV is subject to a locality restriction (see also Nishiyama and Nagano (2020) for a similar proposal). The gist of Tatsumi's analysis is that when two $\sqrt{\text{ROOT}}$s constituting a compound are separated by an intervening phase head (i.e., categorizers; Arad (2003)), compounds with such a structure are non-local and cannot exhibit SV. Although his analysis can explain the distribution of SV in N-V compounds, it is too restrictive to account for a wider range of data. Taking the V-N compound *nemu-**ri**-**g**usuri* (sleep-medicine) for instance, SV is possible even if two $\sqrt{\text{ROOT}}$s are intervened by an intervening phrase head *v*, which is realized as *r(i)*. Thus, I depart from Tatsumi's analysis and propose a more moderate condition for the locality of SV, as in (15).

(15) a. A compound is local iff its non-head and head elements are in the same locality/spell-out domain.
      b. SV is allowed in local compounds.

In this proposal, SV is conditioned not by whether an intervening head is located between two $\sqrt{\text{ROOT}}$s or not, but by whether they are in the same spell-out domain or not. Recall here that thematic V-Vs and adjunct X-Vs differ in terms of spell-out domain: in V-Vs, a non-head element is spelled-out independently, while in X-Vs, a non-head and a head are spelled-out together (see (11a) and (11b)). This means that thematic V-Vs are non-local compounds and adjunct X-Vs are local compounds by the definition of (15). Thus, SV is allowed in local adjunct X-Vs, but not in non-local thematic V-Vs.

4   Compound Ellipsis

This section shows that the current proposal in (11a) and (11b) is further supported by the availability of compound ellipsis, which traces back to Yatabe (2001) and is recently discussed by Tatsumi (2019). As Yatabe points out, when two thematic V-Vs are coordinated by a particle such as *to* and *ka*, the first verb stem of the V-V in the second conjunct can be elided. This is illustrated by (16), where the first verb stem of the V-Vs *kui-tome* (eat-stop) and *tati-kir* (sever-cut) can be elided with their meanings unchanged.

(16) a. [kui-tomeru] ka [{kui-tome / Δ-tome}-nai] ka-ga
          eat-stop   or {eat-stop   / Δ-stop}-NEG or-NOM
          mondai-da
          problem-COP
          'The problem is whether (we) will stop (it) or not.'

b. [tati-kiru] ka [{tati-kir / Δ-kir}-anai] ka-ga mondai-da
   sever-cut or {sever-cut / Δ-cut}-NEG or-NOM problem-COP
   'The problem is whether (we) will cut off (it) or not.'

By contrast, this compound ellipsis is never applied in adjunct X-Vs:

(17) a. [kuti-dome-suru] ka [{kuti-dome / *Δ-dome / Δ}-si-nai]
        mouth-stop-do   or {mouth-stop / Δ-stop   / Δ}-do-NEG
        ka-ga   mondai-da
        or-NOM problem-COP
        'The problem is whether (we) buy someone silence or not.'
     b. [son-giri-suru] ka [{son-giri / *Δ-giri / Δ}-si-nai]   ka-ga
        loss-cut-do   or {loss-cut / Δ-cut   / Δ}-do-NEG or-NOM
        mondai-da
        problem-COP
        'The problem is whether (we) will cut our losses or not.'

(17) suggests that when two adjunct X-Vs are coordinated by the particle *ka*, only the first stem of the X-V in the second conjunct cannot be elided, but rather the whole X-V must be elided.

I will not address in this paper how the compound ellipsis like (16) is derived, but given that ellipsis targets spell-out domains (Bošković 2016), the stark contrast between (16) and (17) suggests that the first non-head element of thematic V-Vs undergoes spell-out independently, but that of adjunct X-Vs does not, which is a further piece of evidence for the present proposal of different spell-out domains for two types of verbal compounds.[3]

5   Concluding Remarks

I have examined two types of verbal compounds in Japanese, thematic V-Vs and adjunct X-Vs, and proposed that the non-head elements in thematic V-Vs are independently spelled out, while the ones in adjunct X-Vs are spelled together with the head elements. I have shown that the availability of *su*-insertion and SV between thematic V-Vs and adjunct X-Vs can be explained through the present proposal. Furthermore, the availability of compound ellipsis is taken to be another piece of evidence for different spell-out domains in V-Vs and X-Vs.

Before concluding, I briefly discuss a remaining issue in the present anal-

---

[3] Tatsumi (2019) discusses two possible approaches to the V-V compound ellipsis: (a) head ex-corporation followed by VP-ellipsis and (b) across-the-board movement of VP. Whichever approach is taken to the analysis, it must be the one that can explain the contrast between (16) and (17), which I assume is closely related to the difference in spell-out domains.

ysis: why it is that the spell-out domains of the two types of verbal compounds are different. A possible direction to pursue is regarding the argument structure of the head verb stem. I proposed in Akimoto (2023) that the compounding of thematic V-Vs takes place after the second verb stem introduces its internal argument, on ground that the first verb stem is inert to select the V-V's object (see also Nishiyama and Ogawa 2014). On the other hand, the internal argument of an adjunct X-V seems to be selected by the entire compound, not just the head verb stem, as illustrated in (18).

(18)   a.   keikaku-o   {mae-daosi-su-ru   / #taos-u}
              project-ACC front-topple-do-PRS / topple-PRS
              'to {bring forward/#topple} the plan'
    b.   uwasa-ga   {hitori-aruki-su-ru   / #aruk-u}
              rumor-NOM one.person-walk-do-PRS / walk-PRS
              'The rumor {is spreading on its own / #walks}.'

Given this, I speculate that for compounds derived after the head verb stem introduces an internal argument, the non-head stem is spelled out independently. This hypothesis has a consequence for the analysis of argument N-Vs. In this type of N-Vs, the noun stem serves as the internal argument of the head verb stem, so it is not unreasonable to assume that argument N-Vs are derived after the head verb stem introduces an internal argument, which undergoes noun incorporation to the head (Baker 1988). If so, the non-head stem is spelled out independently, and argument N-Vs are predicted to resist SV on par with thematic V-Vs. This prediction is borne out. Ito and Sugioka (2002) report that argument N-Vs may resist SV (e.g., *isi-keri* vs. **isi-geri* (stone-kick 'kicking rocks'). This hypothesis, if correct, would shed new light on the relationship between verbal compounding and argument structure, but I will leave a detailed discussion of this issue for future research.

Acknowledgments

References

Akimoto, T. 2023. Deriving Atransitivity and Agentivity in Japanese V-V Compounds. Paper presented at the workshop on Theoretical East Asian Linguistics 13, National Taiwan Normal University, May 13 2023.

Arad, M. 2003. Locality Constraints on the Interpretation of Roots: The Case of Hebrew Denominal Verbs. *Natural Language & Linguistic Theory* 21:737–778.

Baker, M.C. 1988. *Incorporation: A Theory of Grammatical Function Changing*. Chicago: University of Chicago Press.

Bošković, Ž. 2016. What is Sent to Spell-out is Phases, not Phasal Complements. *Linguistica* 56:25–66.

Embick, D. 2010. *Localism versus Globalism in Morphology and Phonology*. Cambridge, MA: MIT Press.

Grimshaw, J. and Mester, A. 1988. Light Verbs and θ-Marking. *Linguistic inquiry* 19:205–232.

Halle, M. and Marantz, A. 1993. Distributed Morphology and the Pieces of Inflection. *The View from Building 20*, ed. K. Hale, S.J. Keyser, 111–176. Cambridge, MA: MIT Press.

Harðarson, G.R. 2016. Peeling Away the Layers of the Onion: On Layers, Inflection and Domains in Icelandic Compounds. *Journal of Comparative Germanic Linguistics* 19:1–47.

Harðarson, G.R. 2021. On the Domains of Allomorphy, Allosemy and Morphophonology in Compounds. *Natural Language & Linguistic Theory* 39:1173–1193.

Ito, T. and Sugioka, Y. 2002. *Go no Sikumi to Gokeisei (Structure of Words and Word Formation)*. Tokyo: Kenkyusha.

Kageyama, T. 2016. Verb-compounding and Verb-incorporation. *Handbook of Japanese Lexicon and Word Formation*, ed. T. Kageyama, H. Kishimoto, 273–310. Berlin, Boston: De Gruyter Mouton.

Nishiyama, K. and Nagano, A. 2020. *Keitairon to Rekisikon (Morphology and the Lexicon)*. Tokyo: Kaitakusha.

Nishiyama, K. and Ogawa, Y. 2014. Auxiliation, Atransitivity, and Transitivity Harmony in Japanese V-V Compounds. *Interdisciplinary Information Sciences* 20:71–101.

Piggott, G. and Travis, L. 2013. Adjuncts within Words and Complex Heads. *Syntax and its Limits*, ed. R. Folli et al., 157–174. Oxford: Oxford University Press.

Sugioka, Y. 2002. Incorporation vs. Modification in Deverbal Compounds. *Japanese/Korean Linguistics 10*, ed. N.M. Akatsuka, S. Strauss, 495–508. Stanford, CA: CSLI Publications.

Tatsumi, Y. 2019. Excorporation and V-V Compound Ellipsis in Japanese. *Proceedings of the Fifty-fourth Annual Meeting of the Chicago Linguistic Society*, ed. E. Ronai et al., 503–517. Chicago Linguistic Society.

Tatsumi, Y. 2022. Structural Restrictions on Sequential Voicing in Japanese N-V Compounds. *Japanese/Korean Linguistics 29*, ed. K. Horie et al., 99–112. Stanford: CSLI Publications.

Yatabe, S. 2001. The Syntax and Semantics of Left-node Raising in Japanese. *Proceedings of the 7th International Conference on Head-Driven Phrase Structure Grammar*, ed. D. Flickinger, A. Kathol, 325–344. Stanford: CSLI Publications.