

Do-support and be-support as defective movements

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1 Introduction

This study examines morphological variation in the Japanese do-support/be-support system. Unlike the traditional view that do-support is an “inserted” meaningless substance to solve the stranded affix problem (Chomsky 1957; Lasnik 1981, 1995; Halle & Mallantz 1993, 1995; Bobaljik 1995; Embick & Noyer 2001; Grimshaw 2013), it argues that what looks like a “dummy” element is, in fact, a defective copy of a lower head.

Since Emonds (1978), it has been established that there is a contrast between French and English regarding V-to-T movement. Consider the sentences in (1). While in French, the verb *mange* undergoes head movement with the higher copy pronounced at T (= (1)a), such V-to-T movement is prohibited in English, as in (1)b. Instead, the “dummy” element *do* must be “inserted,” which bears the inflectional features, while the verb stem remains in situ, as in (1)c.

- (1) a. Je ne **mange**_{*i*} [_{NegP} pas *t_i* du phoque].
I ne eat NEG of seal
'I don't eat seal. (Bobaljik 1994: 3)
- b. * I **eat**_{*i*} [_{NegP} not *t_i* seal].
- c. I **do** [_{NegP} not eat seal].
↑ DO

The question that this study attempts to address is why *do* is selected as the “dummy” element. In other words, why are *have*, *make*, and *take* not inserted to T (= (2)a)? Perhaps, one might say, “because they are too ‘contentful’ to be used as dummy elements”: while it is true that these verbs have a light verb use (e.g., *take a look*), they are not abstract enough to be used as “dummy” elements. But, if so, what about *be*? *Be* seems to be the least contentful lexical item that is able to bear inflectional features, but be-support is not permitted in English, as in (2)b.

- (2) a. * I **have/make/take** [_{NegP} not eat seal].
↑ HAVE/MAKE/TAKE
- b. * I **am** [_{NegP} not eat seal].
↑ BE

Since the verb *eat* takes the bare form, we do not confuse (2)b with a passive sentence. Thus, the ungrammaticality of the sentence in (2)b should not be attributed to a blocking effect or avoidance of homonymous constructions. Of course, we are allowed to assume that this is just a historical coincidence: English employs

As is shown in (5)a, the past tense marker cannot be directly preceded by this focus particle. Instead, the semantically vacuous material *si-* ‘do’ must be placed right in front of the past tense marker, as in (5)b. Since the bare form of *si-* is *sur-*, I call it *sur*-support. A comparable phenomenon is, of course, observed in English do-support, in which when a verb phrase is focalized, *do* is “inserted” into the tense suffix, as in (6).

- (6) a. *[Jump], I -ed.
b. [Jump], I did.

Some properties of *sur*-support. A few remarks are in order. First, this *sur*-support shows the LAST-RESORT property. Observe the sentence in (7).

- (7) * Watasi-wa hane **si**-ta.
I-TOP jump do-PST
‘I jumped (intended).’

As seen in (4), the past tense suffix can be directly preceded by the verb. Example (7) shows that *sur*-support is illicit in such an already well-formed sentence. Given the contrast between this and (5)b, it is reasonable to conclude that *sur*-support is only licit in a context where the sentence would otherwise be ungrammatical.

Second, *sur*-support cannot be attributed to an idiosyncratic property of *-wa*. Other focus-oriented particles, such as *-koso* ‘FOC,’ *-sae* ‘even,’ *-sura* ‘even,’ and *-mo* ‘also,’ systematically require *sur-* to be present before the past tense marker.

- | | |
|--|--|
| (8) a. [Hane-koso] *(si)-ta.
jump-FOC do-PST
‘[Jump], I did.’ | c. [Hane-sae] *(si)-ta.
jump-FOC do-PST
‘I even ran.’ |
| b. [Hane-sura] *(si)-nak at-ta.
jump-FOC do-NEG be-PST
‘I did not even jump.’ | d. [Hane-mo] *(si)-ta.
jump-also do-PST
‘I also ran.’ |

Third, it is important to note why *sur-* corresponds to *do* in English, and not, for example, to *make* or *be*. The reason is related to its lexical use. In English, *do* is considered the least contentful verb. As the conversation in (9), the verb *do* is selected when the speaker refers to a general action/event. If we replaced it with *make* or *take*, Y’s responses would not be considered felicitous.

- (9) X: What did you {do/*make/*take} yesterday?
Y: I **went shopping/visited a museum/studied a lot/...**

In Japanese, if the speaker wishes to choose the most general predicate to ask a similar question, *sur-* is chosen, as shown in (10).

- | | |
|--|--|
| (10) Kinoo nani-o si -ta-no?
yesterday what-ACC do-PST-Q
‘What did you do yesterday?’ | (11) Watasi-wa tootyaku si -ta.
I-TOP arrival do-PST
‘I did my homework.’ |
|--|--|

Another piece of linguistic evidence that supports *sur-*'s “meaninglessness” comes from the light verb construction. As (11) suggests, *sur-* is used together with a nominal expression to refer to an event. The nature of that event is specified by this nominal element, just as *do* in *do the cleaning* and *do a good job* plays little role in semantics. Given these phenomena, the similarity between the English *do* and the Japanese *sur-* is evident.

2.2 Be-support I

We know that do-support is also used beyond the VP-preposing in English. For example, a negation marker triggers do-support, as shown in (12)a. What is “inserted” is *do*, not *be*, as shown in (12)b and (12)c.

- (12) a. *He [not ran]. b. *He was [not jump]. c. He did [not jump].

In Japanese, it is true that a negation phrase requires a “dummy” element in T, as the unacceptability of the sentence in (13)a suggests.¹ However, *sur-* ‘do’ is not the right choice (= (13)b). As (13)c shows, it is *ar-* ‘be’ that must be “inserted” (note that due to back assimilation, it is pronounced *at-*). This suggests that the form of the “dummy” element is sensitive to what it c-commands. If it c-commands just a verb, *sur-* is selected whereas *ar-* is chosen if it also c-commands Head, NegP.

- (13) a. * [Hane-nat]-ta.
 jump-NEG-PST
 ‘I did not jump (intended).’
- b. * [Hane-nak] **si**-ta.
 jump-NEG do-PST
 ‘I did not jump (intended).’
- c. [Hane-nak] **at**-ta.
 jump-NEG be-PST
 ‘I did not jump.’

In this paper, I refer to this phenomenon as *ar*-support (or be-support), to highlight the difference from *sur*-support (or do-support), and I use MATERIAL INSERTION as a cover term that encompasses both cases. To recapitulate, we can make the following generalization:

- (14) **Material insertion in Japanese** (First version)
- a. *sur-* is “inserted” if a focus particle intervenes between T and the verb.
- b. *ar-* is “inserted” if a negation marker intervenes between T and the verb.

¹**Historical development:** In the past, *-ta* could be used without do-support/be-support (Yamada to appear); unlike in contemporary Japanese, the sentence in (i) was acceptable. It is also known that do-support in English is a relatively new phenomenon (Görlach 1991; Lightfoot 1999, 2006; Roberts 1999, 2007).

(i) Hane-nan-da. (ii) if I gave not this account to you
 jump-NEG-PST ‘if I didn’t give this account to you’ (1557: J. Cheke, Letter to Hoby;
 ‘I did not jump.’ Görlach 1991, Roberts 1999, 2007)

In addition to the usage of material insertion, *ar-* is used in environments where the English *be* is observed. First, it appears in an existential construction, as in (15); *the key *(was) in the room*. Second, when an adjective is used as a predicate, this *ar-* must also be present, as in (16); *she *(was) smart*. With respect to distribution, *ar-* is the same as the English *be*, except that it also has the usage of material insertion with NegP (= (13)b): *she did/*was not jump*.

- (15) Kagi-wa heya-ni *(**ar**)-i, sugu mituke-rare-ta.
 key-TOP room-at be-and immediately find-can-PST
 ‘The key was in the room and I could find it immediately.’
- (16) Kanozyo-wa utukusik-u sosite kasikok *(**at**)-ta.
 she-TOP beautiful-and besides smart be-PST
 ‘She was beautiful and, besides, smart.’

2.3 Be-support II

The split between do-support and be-support is an intriguing fact. But there is another layer of complexity in the Japanese material insertion system, as the sentences in (17) illustrate. When the addressee-honorific marker *-mas* is present, none of the forms in (17)a through c is licit. The past tense suffix cannot be attached to the negation phrase (= (17)a); neither *ar-* support nor *sur-* support ameliorates the grammaticality (= (17)b, (17)c).

- (17) a. * [Hane-mas-en]-ta.
 jump-HON_A-NEG-PST
 ‘I did not jump; polite (intended).’
- b. * [Hane-mas-en] **at**-ta.
 jump-HON_A-NEG be-PST
 ‘I did not jump; polite (intended).’
- c. * [Hane-mas-en] **si**-ta.
 jump-HON_A-NEG do-PST
 ‘I did not jump; polite (intended).’

The correct form, which is obtained when we replace *at-* with *desi-* in (17)b, is given in (18). In Japanese, the “dummy” element interacts with an honorific element.

- (18) [Hane-mas-en] **desi**-ta.
 jump-NEG be.HON_A-PST
 ‘I did not jump; polite.’

Copula constructions. This *desi-* is an addressee-honorific, copula element. To understand this, it is necessary to familiarize ourselves with two different types of copula constructions in Japanese. The first is what we saw in (16), where an adjective phrase is followed by the semantically vacuous supporting verb *ar-*. The second is a copula construction where the predicate is a noun phrase. In the latter construction, an additional linker *de* must be present in front of *ar-*, as the sentences in (19) show.

- (19) a. * Kare-wa [amerikazin] **at**-ta.
 he-TOP American be-PST
 ‘He was an American.’
 b. Kare-wa [amerikazin] **de at**-ta.
 he-TOP American COP be-PST
 ‘He was an American.’

As shown in (19)a, unlike an adjective phrase, a noun phrase cannot be immediately followed by *ar*-support. The correct form employs an additional linker *de*, which indicates that the preceding noun phrase is the predicate of the sentence (= (19)b). For ease of interpretation, I used COP as the gloss of *de*.

Addressee-honorification. When linearly adjacent, *de* and *ar*- can be collapsed into *da/dat* as shown in (20)a. *Desi*- is a replacement for this *dat*-. As in the case of (Souletin) Basque, Punjabi, Tamil, Magahi, Burmese, and Korean, Japanese has a morpho-syntactic distinction related to the speaker’s respect for the addressee (McFadden 2017; Portner et al. 2019; Kaur 2017, to appear; Baker & Alok 2019; Kaur & Yamada 2019; Yamada to appear). Consider the following sentences:

- (20) a. Kare-wa amerikazin **dat**-ta. Plain form
 he-TOP American be-PST
 ‘He was an American.’
 b. Kare-wa amerikazin **desi**-ta. Polite form
 he-TOP American be.HON_A-PST
 ‘He was an American; polite.’

Although *desi*- is an addressee-honorific marker, it cannot be used with a verb. In non-copula contexts, *-mas* is used in the vP periphery to encode the speaker’s respect, as shown below.

- (21) a. * Hane **desi**-ta. b. Hane-**masi**-ta.
 jump be.HON_A-PST jump-HON_A-PST
 ‘I ran; polite (intended).’ ‘I ran; polite.’

The sentence in (20)a is called the plain form, which is the form used when the speaker is talking to a friend or to his juniors. When the speaker wants to encode his or her respect for the addressee, *dat*- is replaced with *desi*-. For this reason, *desi*- is considered not only a copula, but also an addressee-honorific marker.

Now, let us return to the example in (18). When a negation marker *-en* ‘NEG’ is added to the sentence in (21)b, a “dummy” element is needed. A negation marker requires this “dummy” element to be be-support, not do-support, as seen in (14). However, the presence of the addressee-honorific marker *-mas* requires *ar*- to be replaced with *desi*-.² In other words, there is a concord between the be-support element and *-mas*.

²**Politeness level:** Even though the sentence in (18) has two addressee-honorific markers, the level of politeness is the same as that in (20)b and (21)b.

Resurrecting the ideas of Chomsky (1955 [1975]), the leading idea is that the dummy verb do is inserted to support an inflectional affix which cannot be legitimately associated with the verb either through overt verb-raising (auxiliaries) or through affixation under adjacency [...] (Bobaljik 1995: 76).

In the Minimalist Program, this kind of “insertion” has become a problem in the pursuit of the perfect system in language due to its clear violation of the Inclusiveness Condition (Chomsky 2000, 2001). Although one may try to maintain this kind of insertion analysis by assuming that do-insertion takes place in the morphology, not in the narrow syntax (but see Embick & Noyer 2001), the following question still remains unanswered: why is *do*, and not *make* or *be*, selected in English? In view of this, it is even more difficult to explain the complicated “dummy” element selection system in Japanese.

Alternatively, in what follows, I would like to propose the analysis in (26)a, in which *do* is interpreted as a consequence of an internal merge of the verb *eat*. More specifically, I argue that *do* is a defective copy of the lower element *eat*. “Defective” copy means that not all the features of *eat* are pronounced in T. The do-supported T is a reflex of phi-features and the category feature that *eat* indicates and the lower copy (*eat*) is a morphological realization of the rest of the features. Since there is movement from V to T, the intervening heads are affected.

3.1 Technical implementation of defective movement

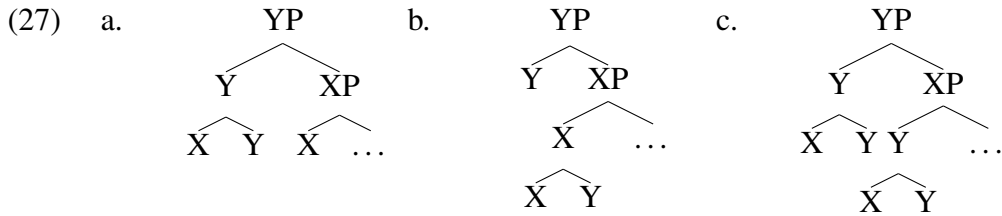
This defective movement analysis can be implemented in different ways and I would like to be agnostic about the technical details, leaving the technical characterization to future studies. Instead, let us consider some possible directions. One possibility is to assume that only the category feature of V moves to T, i.e., feature movement (Chomsky 1995; Bernstein 1997; Pesetsky 2000; Takano 2000; Lasnik 2002; Guerzoni 2006; Yuan 2015; Hsiao 2017). In order to capture the contrast between French and English, we do not want to characterize this as a head movement; if we assume that English employs V-to-T movement, the sentence in (1)b should be acceptable. To maximally capture the difference between head movement and do-support/be-support, it can be proposed that only a subset of features — the category feature V — undergoes movement to T. The possibility of this kind of feature movement is mentioned in the inception of the Minimalist Program (Chomsky 1995):

I have kept to the standard assumption that the operation Move selects α and raises it, targeting K, where α and K are categories constructed from one or more lexical items. But on general minimalist assumptions, that is an unnatural interpretation of the operation. The underlying intuitive idea is that the operation Move is driven by morphological considerations: the requirement that some feature F must be checked. The minimal operation, then, should raise just the feature F: we should restrict α in the operation Move α to lexical features (ibid.: 262).

Of course, feature movement has not been extensively discussed in previous studies, as the very phenomena that Chomsky tried to explain using feature movement have

been accounted for by different syntactic operations. However, given the architecture of minimalist syntax, this should still be an important point to make: if features are the basic units that we manipulate in computation, there is no conceptual reason to deny the possibility of feature movement. However, as the division of labor between head movement and feature movement is currently unclear, if one wishes to explore this possibility, one must carefully clarify the condition determining when we move a subset of features and when we move the entire feature set.

Another promising framework worth mentioning is the theory of Generalized Head Movement, proposed by Arregi & Pietraszko (2018). While it has been argued that head movement and Lowering are two different operations (Halle & Marantz 1993; Bobaljik 1995; Embick & Noyer 2001), they draw our attention to the fact that these operations are both “cyclic, resulting in complex heads with the same type of internal structure, and both can feed further instances of head movement (*ibid.*: 2)” and unify these operations by proposing that what looks like Lowering is the pronunciation of the lower copy. To see this, compare the structures in (27). Traditionally, it has been argued that head movements result in the structure in (27)a, where the lower head (X) adjoins the higher head (Y). In contrast, Lowering results in the structure in (27)b. What they propose is that the two heads are related, as a result of which the same complex head is present in both positions, as in (27)c.



If we adopt Arregi & Pietraszko’s theory, the “defective” movement in (26) is seen as a case where we pronounce a subset of the features in T (= *do*) and realize the rest in V (= *eat*). Under this model, the problem is attributed to the decision on which copy to pronounce, a problem already familiar in the discussion of multiple spellout, as in (28)a, and scattered deletion, as in (28)b.

- (28) a. **Ké(ek)**, áa-cíí Áyèn [ké(ek) tíí].
 them 3P-PRF.OV Ayen.GEN them see.NF
 ‘Them, Ayen has seen.’ (Dinka, Van Urk 2015: 195)
- b. [**Mit was für Frauen**] hast du [mit was **für Frauen**] gesprochen?
 with what for women have you with what for women spoken
 ‘With what kind of women did you speak?’ (German, Faneselow & Čavar 2002: 66)

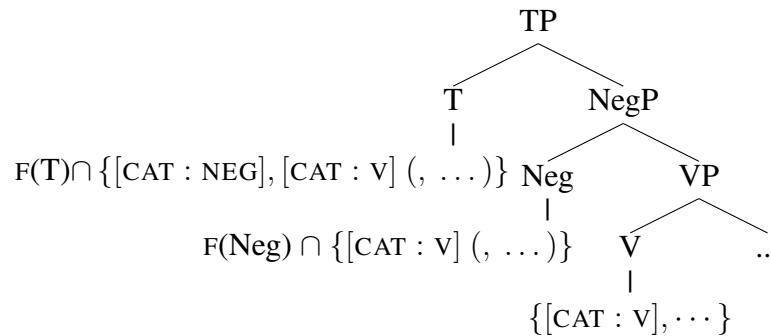
The discussion in the remainder of this paper does not hinge upon the choice of these theories on condition that it is assumed that some features from the lower head moves to T through intervening heads.

3.2 English

The idea that material insertion involves a head-chain is not new. For example, Arregi & Pietraszko (to appear) argue that *do*-support is a consequence of chain splitting. When there is a deletion or an intervenor, a head-chain is split. In the case of (26)a, the Head, TP and the Head, VP form a chain. However, the intervenor *not* cuts the chain, which results in two subchains: (i) a chain that contains the lexical verb and (ii) a chain that does not, which Arregi and Pietraszko call the “orphan chain.” The “dummy” *do* is interpreted as the spellout of an orphan chain.

I assume that their analysis is on the right track: (i) *do* and *eat* form a chain and (ii) material insertion is triggered in certain structural contexts. However, this study goes one step further: the relevant feature spelled out in T is the category feature of the lower head. For example, in the case of (26), I propose that this sentence involves the structure in (29).

(29)



First, each terminal node consists of a set of features. To clarify which node contains what features, I define F as a function from a terminal node to the set of features of that node (e.g., $F(T)$ and $F(\text{Neg})$ refer to the set of features of these nodes). I assume that each node has a category feature and some more feature(s). For example, the T node contains a tense feature, a person feature and a number feature as well as a category feature, as shown in (30)a.³ Likewise, the Neg node consists of an uninterpretable category feature and an interpretable polarity feature, as in (30)b. Under Head, Low-AddrP, we have the category feature as well as the feature for the honorific meaning, as in (30)c. Head, VP also contain a category feature and the feature that brings about the idiosyncratic properties of *jump*, which I refer to as JUMP; this is shown in (30)d. Following the tradition of Set Theory, I use curly brackets to denote a set.

- (30)
- a. $F(T) = \{_u[\text{CAT} : \text{T}], [\text{TNS} : \text{PST}], [\text{PN} : 1], [\text{NR} : \text{PL}]\}$
 - b. $F(\text{Neg}) = \{_u[\text{CAT} : \text{NEG}], _i[\text{NEG} : +]\}$
 - c. $F(\text{Low-Addr}) = \{_u[\text{CAT} : \text{LOW-ADDR}], [\text{HON}_A]\}$
 - d. $F(V) = \{_u[\text{CAT} : \text{V}], \text{JUMP}\}$

Second, there is a requirement that Head, TP must be spelled out together with the category feature $[\text{CAT} : \text{V}]$. The grammar must take some action to meet this

³**Case feature:** Due to space limitations, I ignore Case features, which are not relevant to this discussion.

criterion (e.g., the “stranded affix” filter; Lasnik 1981, 1995). As proposed in Halle & Marantz (1993: 137-138), I also assume that the nature of do-support is attributed to the need for the category feature of V.

(31) **PF-requirement on T:** $[CAT : V] \in F(T)$

Third, in an affirmative sentence, this requirement is usually satisfied by the postsyntactic Lowering operation. However, in our case, Neg intervenes between T and V, which prevents the postsyntactic Lowering, as Arregi & Pietraszko (to appear) discuss. Therefore, we need an alternative way to satisfy the requirement.

Fourth, in order to fulfill the requirement, the verb sends the category feature upward through heads, so T can gain the category feature $[CAT : V]$; this can be done via feature movement or generalized head movement. Since the feature(s) must drop by at Neg before T, the set of features at the node Neg becomes a collection of all the features originally associated with this node (i.e., $F(Neg)$) and the moved feature(s). The set of features associated with the Head, TP is also updated to $F(T) \cap \{[CAT : NEG], [CAT : V] (\dots)\}$. In the case of (26), the Head, TP consists of the features in (32). Since $[CAT : V]$ is a member of this set, the requirement in (31) is satisfied.

(32) $F(T) \cap \{[CAT : NEG], [CAT : V], (\dots)\}$
 $= \{[CAT : T], [TNS : PST], [PN : 1], [NR : SG], [CAT : NEG], [CAT : V] (\dots)\}$

Finally, due to the subset principle and the vocabulary items in (33), what surfaces at T is the most abstract verbal element in English, namely *do*; unlike *jump*, *do* lacks specific semantic properties.⁴ *Jump* cannot be selected, because JUMP is not included in the set in (32).

(33) **Vocabulary Insertion Rule for T (English)**

- a. $\{[TNS : PRS], [PRS : 3], [CAT : V]\} \leftrightarrow \textit{does}$
- b. $\{[TNS : PRS], [CAT : V]\} \leftrightarrow \textit{do}$
- c. $\{[TNS : PST], [CAT : V]\} \leftrightarrow \textit{did}$
- d. $\{[TNS : PRS], [CAT : V], JUMP\} \leftrightarrow \textit{jump}$
- e. $\{[TNS : PST], [CAT : V], JUMP\} \leftrightarrow \textit{jumped}$

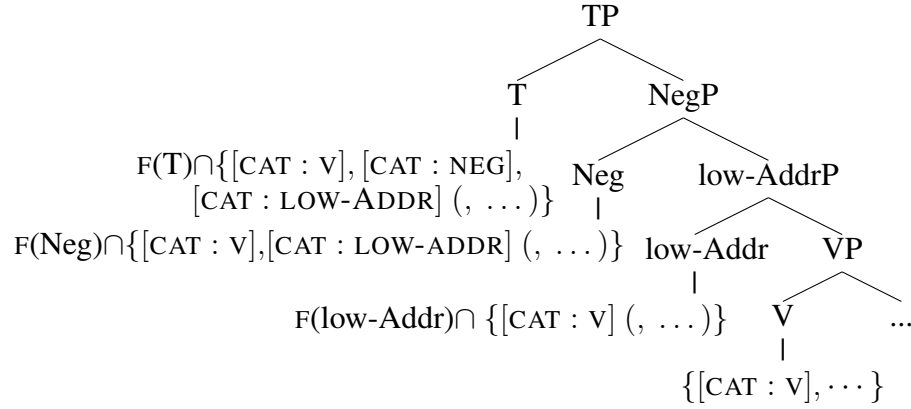
3.3 Japanese

Let us return to the Japanese example in (23)b. The structure in (34) is assumed, which is exactly the same as English except that Japanese employs an additional functional projection, low-AddrP for the addressee-honorific marker *-mas*; for the sake of comparison, I present a tree in which all heads precede complements (assume that this is the structure before linearization).⁵

⁴**Deletion:** If one wishes to take the Generalized Head Movement approach, JUMP must be contained in the complex T head. Thus, it is necessary to delete this feature before Vocabulary Insertion; otherwise, it is assumed that JUMP is inserted in T.

⁵**Low-AddrP:** Addressee-honorific markers and allocutive elements in other languages have been interpreted as an expression related to AddrP, a functional projection above/around CP. Since the position of *-mas* is not as high as T, it is difficult to place it in Head, AddrP. To highlight the

(34)



First, Neg intervenes between T and V, triggering feature movement/generalized head movement; in either view, at least the category feature undergoes upward movement. As a result, the T head gains the following feature set, which satisfies the requirement in (31):

$$\begin{aligned}
 (35) \quad & \text{F(T)} \cap \{ [\text{CAT} : \text{V}], [\text{CAT} : \text{NEG}], [\text{CAT} : \text{LOW-ADDR}] (, \dots) \} \\
 & = \left\{ \begin{array}{l} [\text{CAT} : \text{T}], [\text{TNS} : \text{PST}], [\text{PN} : 1], [\text{NR} : \text{SG}], \\ [\text{CAT} : \text{NEG}], [\text{CAT} : \text{LOW-ADDR}], [\text{CAT} : \text{V}] (, \dots) \end{array} \right\}
 \end{aligned}$$

If we assume the Vocabulary Insertion rules shown in (36), the peculiar pattern in (22) is easily explained. Unlike English, Japanese morphology is not sensitive to the person feature or the number feature;⁶ however, the vocabulary insertion is sensitive to the categories of the heads through which the V feature moves to T.

(36) **Vocabulary Insertion Rule for T (Japanese)**

- a. $\{ [\text{TNS} : \text{PST}], [\text{CAT} : \text{V}] \} \leftrightarrow \textit{si-ta}$
- b. $\{ [\text{TNS} : \text{PST}], [\text{CAT} : \text{V}], [\text{CAT} : \text{NEG}] \} \leftrightarrow \textit{at-ta}$
- c. $\{ [\text{TNS} : \text{PST}], [\text{CAT} : \text{V}], [\text{CAT} : \text{NEG}], [\text{CAT} : \text{LOW-ADDR}] \} \leftrightarrow \textit{desi-ta}$

4 Conclusion and implication

In Japanese, material insertion is sensitive to the heads that it c-commands. In order to explain this sensitivity, I have proposed that material insertion is indeed a defective copy of the lower element. Neg and low-Addr are in the middle of the movement. Thus, the T morphology reflects such intervening elements.

A question that remains unanswered and should be discussed in future studies is why natural language has such a PF-requirement as shown in (31). Although a detailed analysis is beyond the scope of this study, one possibility worth considering

difference, I assume that *-mas* projects low-AddrP, which lies between Neg and V (more specifically Neg and Asp) and enters into the agreement relation with the HEARER in Spec, AddrP.

(i) $[_{\text{SpP}} \text{Sp} [_{\text{AddrP}} \text{HEARER}_i [\text{HON} : +] \text{Addr} \dots [_{\text{low-AddrP}} \dots \textit{mas}_u [\text{HON} : _]]]]$

⁶**An alternative:** One can assume that F(T) does not contain a person feature or a number feature. I would like to refrain from discussing which view is superior. Here, for ease of comparison, I placed these features in (36). Elimination of these features does not affect this study's conclusion.

is that the places where material insertion takes place are designed to summarize the domain that they c-command. To understand this, observe the ellipsis phenomena in (37). As in the case of English VP-deletion, in Japanese, omission of a repeated segment from the sentence is permitted, as shown in (37)a; however, the deletable phrase is not the VP, but the NegP, i.e., the sister node of T, where material insertion takes place.

- (37) a. A: [Hane-mas-en] desi-ta. b. A: *[Hane-mas-en] at-ta.
 jump-HON_A-NEG be.HON_A-PST jump-HON_A-NEG be-PST
 B: **Desi**-ta-ne. B: ***At**-ta-ne.
 be.HON_A-PST-SFP be-PST-SFP
 ‘A: I did not jump; polite. B: You didn’t; polite.’

Since the morphological realization of the T head reflects the category of its c-commanding heads, we can recover the unpronounced segment by observing what kind of T head the speaker uses. For example, in (37)a, we know that the unpronounced segment contains at least an addressee-honorific marker (low-Addr), as well as a verb (V), by observing what kind of T head the speaker chooses. Even though *-mas* is not pronounced, *desi-* recovers the information that the sentence contains an honorific feature. In contrast, suppose that (37)b were the correct sentence in Japanese. When an ellipsis occurs in B’s line, the addressee might mistakenly think that B is not polite at all, as the addressee-honorific marker *-mas* is not pronounced. In (37)a, the T head is designed to summarize the bracketed component, so that a misunderstanding is avoided. With this in mind, we can reason that the PF-requirement in (31) derives from a natural condition that missing information must be recoverable from the pronounced linguistic elements.

If this reasoning is correct, it is conceivable that material insertion takes place in a head whose sister node is deletable or, at least, forms a particular unit (e.g., a phrase that can be fronted). Perhaps, this is a phase; however, if it is a phase, it is plausible that qualifies as one may vary depending on whether it is an affirmative sentence or not; for in an affirmative sentence, do-support does not take place (either in Japanese or in English). I leave these issues to future studies.

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