

# ON THE EVENT ARGUMENT AND ANTI-QUANTIFIER *ZUTSU* IN JAPANESE\*

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## 1. Introduction

This paper examines the syntax of the distributive affix *zutsu* in Japanese, which attaches to a numeral quantifier (NQ), as exemplified in (1a–c):<sup>1</sup>

- (1) a. **Taroo-to-Hanako-ga** [ni-satsu-zutsu-no hon] -o katta (-koto)  
Taroo-and-Hanako-nom two-cl -dist -gen book-acc bought(-fact)  
‘Taroo and Hanako bought two books each.’
- b. **Taroo-to-Hanako-ga** [hon ni-satsu-zutsu] -o katta (-koto)  
Taroo-and-Hanako-nom book two-cl -dist -acc bought(-fact)
- c. **Taroo-to-Hanako-ga** hon-o ni-satsu-zutsu katta (-koto)  
Taroo-and-Hanako-nom book-acc two-cl -dist bought(-fact)

It is well known that three positions are available for NQs; accordingly, the same three options are also available for NQs with *zutsu* (see Gil (1990) for relevant discussion). One of the readings available in (1a–c) is that Taroo bought two books and Hanako also bought two books.

When it comes to the position of *zutsu*, the distributive affix in question is not

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<sup>1</sup> Abbreviations used in this paper are as follows:

acc = accusative, cl = classifier, dat = dative, dist = distributive affix, e = event argument, e.c. = empty category [= elided argument], gen = genitive, nom = nominative, pl = plural.

In addition, binominal *each* (Safir and Stowell 1988) is used in English translation throughout the paper without any theoretical significance. See Section 7.

necessarily attached to an NQ modifying the object, but can also be attached to an NQ modifying other elements such as the subject, as shown in (2a–c):

- (2) a. ??[futa-ri -zutsu-no gakusei] -ga furansugo-to-doitsugo-o  
 two-cl-dist -gen student -nom French-and-German-acc  
 benkyooshiteiru (-koto)  
 be studying (-fact)  
 ‘Two students each are studying French and German.’
- b. ??[gakusei futa-ri -zutsu] -ga furansugo-to-doitsugo-o benkyooshiteiru (-koto)  
 student two-cl-dist -nom French-and-German-acc be studying (-fact)  
 ‘Two students each are studying French and German.’
- c. ??gakusei-ga futa-ri -zutsu furansugo-to-doitsugo-o benkyooshiteiru (-koto)  
 student-nom two-cl-dist French-and-German-acc be studying (-fact)  
 ‘Two students each are studying French and German.’

Although slightly degraded, these examples can describe the situation in which two students are studying French and another two students are studying German.

For terminology, following Safir and Stowell (1988), I call the element over which distribution takes place “Range NP (R-NP hereafter).” In (1a–c), *Taroo-to-Hanako* acts as an R-NP under the reading that Taroo bought two books and Hanako also bought two books. In (2a–c), the object NP appears to serve as an R-NP.

The paper is organized as follows. In Section 2, I introduce Oh’s (2006) QR-based approach to Korean distributive affix *ssik*, the Korean counterpart of *zutsu*, which sets a stage for the present study. Of interest is his claim that the proper relationship between *ssik* and its R-NP is established in LF via Quantifier Raising (May 1977, 1985: QR hereafter) of the R-NP. In Section 3, I argue against Oh’s proposal, and show that the relationship in point must be obtained in overt syntax. This in turn calls for an alternative to Oh’s LF-based analysis. Section 4 is then devoted to my proposal, based on the movement of the distributive operator, adopting the essence of Heim, Lasnik and May’s (1991) analysis of the reciprocal *each other*. In Section 5, based on the current proposal on the distributive affix in point, I clarify the context in which an object NP containing an NQ with *zutsu* can be elided. In Section 6, I examine cases where ellipsis of a subject NP containing an NQ with *zutsu* is intended. This section shows that not only LF-copying but also PF-deletion should be available to “elide” subjects in Japanese, and suggests a hybrid hypothesis for so-called “argument ellipsis” (AE hereafter) in Japanese. Finally, Section 7 concludes the paper.

## 2. Oh’s (2006) QR-based Approach to Anti-Quantifiers

This section briefly introduces Oh’s (2006) proposal on the Korean distributive affix *ssik*

in order to set the stage for the discussion to follow. The affix in question is attached to an NQ, parallel to its Japanese counterpart in (2a–c), as illustrated in (3):

- (3) namca twu-myeng-i sangca sey-kay-ssik-ul wunpanhayssta.  
 man two-cl -nom box three-cl-dist -acc carried

‘Two men carried three boxes each.’

(Oh 2006: 26)

One of the readings available in (3) is that the two men each carried three boxes. He assumes that under this reading, (3) has the structure in (4) in overt syntax:<sup>2</sup>

- (4) [<sub>TP</sub> D [<sub>TP</sub> namca wu-myeng-i<sub>1</sub> [<sub>T'</sub> [<sub>VP</sub> sangca sey-kay-ssik-ul<sub>2</sub> [<sub>VP</sub> e [<sub>VP</sub> t<sub>1</sub> t<sub>2</sub> wunpanhayssta]]]]]]]

In (4), D represents the distributive operator, and *e* is the event argument. A crucial ingredient for Oh’s analysis is the QR of an R-NP in LF to a position c-commanding this distributive operator. In LF, the subject NP, the intended R-NP, is raised above D, as shown in (5):

- (5) [<sub>TP</sub> namca twu-myeng-i<sub>1</sub> [<sub>TP</sub> D [<sub>TP</sub> t<sub>1</sub> [<sub>T'</sub> [<sub>VP</sub> sangca sey-kay-ssik-ul<sub>2</sub> [<sub>VP</sub> e [<sub>VP</sub> t<sub>1</sub> t<sub>2</sub> wunpanhayssta]]]]]]]]]
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For Oh, the structure in (5) makes the intended distribution of the subject NP, described above, available.<sup>3</sup>

Of particular interest is Oh’s statement that (6) is ambiguous between the two readings shown in (7) (see also Choe (1987) for related discussion):

- (6) namca twu-myeng-ssik-i sangca sey-kay-lul wunpanhayssta.  
 man two-cl-dist -nom box three-cl-acc carried

(Oh 2006: 25)

- (7) a. Men in pairs carried each of a set of three boxes.  
 b. Two men together carried three boxes (where happened more than one instance of this, simultaneously or one after another).

(Oh 2006: 33)

According to Oh, these two readings are realized by the following LF representations respectively:

<sup>2</sup> The structures given in this section are simplified from Oh’s (2006) proposed structures based on Heim and Kratzer’s (1998) framework, but the structures provided in the text are sufficient to show that QR plays an important role in his proposal. Readers are referred to Oh (2006) for the precise representations of (3) in overt syntax and LF.

<sup>3</sup> See Oh (2006) for his semantic mechanism to interpret the distributive affix in question.

- (8) a. [TP sangca sey-kay-lul<sub>2</sub> [TP D [TP namca twu-myeng-ssik-i<sub>1</sub> [T' [VP e [VP t<sub>1</sub> t<sub>2</sub>  
↑  
wunpanhayssta]]]]]]]
- b. [TP e<sub>3</sub> [TP D [TP namca twu-myeng-ssik-i<sub>1</sub> [T' [VP sangca sey-kay-lul<sub>2</sub> [VP t<sub>3</sub>  
↑  
[VP t<sub>1</sub> t<sub>2</sub> wunpanhayssta]]]]]]]]]

(Oh 2006: 61)

In (8a), the object NP *sangca sey-kay-lul* ‘three box-acc’, the intended R-NP, is raised above D via QR, resulting in the reading in (7a). On the other hand, the event argument *e* is QR-ed to the position above D in (8b), and the reading in (7b) results.

To sum up, we have seen that QR plays a crucial role in Oh’s analysis of the Korean distributive affix in question. His proposal indicates that QR is available even in Korean, which is claimed to exhibit scope rigidity (e.g., Ahn 1990, Ha 2008, and Sohn 1995, amongst others). To the extent that Oh’s analysis is correct, we are forced to clarify the context in which QR is available in so-called scope-rigid languages. Provided that Oh’s analysis extends to the Japanese distributive affix *zutsu*, we need to determine why QR is unavailable in sentences such as (9) in Japanese (Kuroda 1971, Hoji 1985, amongst others):

- (9) dareka-ga daremo-ni atta (-koto)  
 someone-nom everyone-dat met (-fact)  
 ‘Someone met everyone.’

With these questions in mind, I turn to examine how the type of predicate affects the grammaticality of sentences with an NQ with *ssik* and *zutsu* in the next section. Yet, readers might immediately recognize my answer to the questions raised here.

### 3. C-Command Requirement on Anti-Quantifiers

The paradigm with which this section deals is given in (10a–d) (Duk-Ho An, p.c.):

- (10) a. ??twu-myeng-ssik -uy haksayng -i sey-kwen-uy chayk-ul sassta.  
 two-cl -dist -gen student -nom three-cl-gen book-acc bought  
 ‘Two students each bought (the) three books.’
- b. sey-kwen-uy chayk-ul twu-myeng-ssik -uy haksayng -i sassta.  
 three-cl -gen book -acc two-cl -dist -gen student -nom bought  
 ‘(the) three books, two students each bought.’

- c. #*twu-myeng-ssik-uy haksayng-i sey-kay-uy oykwuke -lul anta.*  
 two-cl -dist -gen student -nom three-cl-gen foreign language-acc know  
 ‘Two students each know (the) three foreign languages.’
- d. *sey-kay-uy oykwuke -lul twu-myeng-ssik-uy haksayng-i anta.*  
 three-cl-gen foreign language-acc two-cl -dist -gen student -nom know  
 ‘(the) three foreign languages, two students each know.’

We obtain the same type of paradigm with sentences containing an NQ with *zutsu* in Japanese, as shown in (11a–d):

- (11) a. ??*gakusei futa-ri-zutsu-ga furansugo-to-doitsugo-o benkyooshiteiru(-koto)*  
 student two-cl-dist -nom French-and-German-acc be studying (-fact)  
 ‘Two students each are studying French and German.’
- b. [*furansugo-to-doitsugo-o<sub>1</sub> [gakusei futa-ri-zutsu-ga [t<sub>1</sub> benkyooshiteiru]]]*  
 French-and-German-acc student two-cl-dist -nom be studying  
 (-koto)  
 (-fact)  
 ‘French and German, two students each are studying.’
- c. #*gakusei futa-ri-zutsu-ga furansugo-to-doitsugo-o yoku shitteiru(-koto)*  
 student two-cl-dist -nom French-and-German-acc well know (-fact)  
 ‘Two students each know French and German well.’
- d. ?[*furansugo-to-doitsugo-o<sub>1</sub> [gakusei futa-ri-zutsu-ga [t<sub>1</sub> yoku shitteiru]]]*(-koto)  
 French-and-German-acc student two-cl-dist -nom well know (-fact)  
 ‘French and German, two students each know well.’

The difference between (10a, b) and (11a, b) on the one hand, and (10c, d) and (11c, d) on the other, is that the former contain the stage-level predicates, *sassta* ‘bought’ and *benkyoo-shiteiru* ‘be studying,’ and the latter involve the individual-level predicate *anta* ‘know’ and *shitteiru* ‘know.’ In the discussion which follows, I focus on the Japanese paradigm in (11), and assume that my argument extends to the Korean paradigm in (10).

First, notice that in parallel to (2), (11a) is slightly degraded. This slight deviance, if it is genuine, may be difficult, if not impossible, to account for under the QR-based approach since nothing seems to go wrong with the QR of the object NP in LF in this example. In addition, this deviance is not observed in (11b) in which the object NP is scrambled to the sentence-initial position in overt syntax. This asymmetry between (11a) and (11b), then, already suggests that what is relevant in licensing *zutsu* is the proper relationship between the distributive affix and the R-NP in overt syntax. Let us turn to the contrast between (11a) and

(11c), which shows that the distinction between stage-level and individual-level predicates must be taken into consideration. This dichotomy confirms that it is in overt syntax that the distributive affix *zutsu* is licensed (contra Oh 2006). Notice that if *zutsu* were licensed in LF, the object NP would be able to move to the sentence-initial position not only in (11a) but also in (11c). Accordingly, under the QR-based approach, (11a) and (11c) are expected to be equally grammatical, contrary to fact. Furthermore, the contrast between (11c) and (11d) provides additional support for the relevance of a relationship between the affix in question and the R-NP in overt syntax. The obvious difference between these two examples is the position of the intended R-NP in overt syntax. In (11d), the object NP is overtly raised to the sentence-initial position via scrambling in this example. In short, the paradigm in (11) shows that the intended R-NP must be located higher than an NP containing an NQ with *zutsu* in overt syntax. The question remains as to how to account for the contrast between (11a) and (11c); in particular, which element functions as an R-NP in (11a)? This contrast ought to be tied to the distinction between stage-level and individual-level predicates.

The contrast between (11a) and (11c) reminds us of Oh's (2006) proposal on the Korean distributive affix in Section 2, based on the existence of an event argument in syntax (see also Basilico 2003 for the existence of an event argument in syntax). If an event argument is available only with stage-level predicates (Kratzer 1995), the element in point seems to be the only possible candidate for the R-NP in (11a) since the object NP cannot act as such. If the event argument is indeed an R-NP in (11a), we are also able to account for why (11c) remains ungrammatical since individual-level predicates lack such an argument.

Before closing this section, I need to add that given the conclusion that the distributive affix should be structurally lower than the R-NP in overt syntax, we do not need to answer the question of when QR is available in scope-rigid languages since no QR is necessitated for the licensing of the distributive affixes under question. I take this as a welcome consequence. In the next section, I proceed to an alternative analysis which necessitates a proper relationship between the R-NP and the distributive affix in question in overt syntax as well as the existence of the event argument in sentences with a stage-level predicate.

#### 4. Proposal: Distributor-Based Approach to Anti-Quantifiers

As noted in the end of the previous section, one important ingredient for the licensing of the affix in question in subject position is the presence of an event argument in syntax which is available only when the predicate is stage-level (Kratzer 1995). I assume that the event argument occupies SPEC of Event Phrase (Harley 1995, Travis 1994, among others: EvP, hereafter), as illustrated in (12):

(12) [<sub>EvP</sub> Event Argument [<sub>Ev'</sub> [<sub>vP</sub> ... ] Ev]]

As for the structure of the distributive affix, I assume the structure in (13):

(13) [<sub>DistP</sub> Distributive Op [<sub>Dist'</sub> [<sub>NQ</sub> Num+Cl] Dist ]]

The distributive affix heads Distributive Phrase (DistP, hereafter), and its SPEC is occupied by the distributive operator (D-Op hereafter), which I assume corresponds to covert *each*. In this structure, the sole function of the distributive affix is to provide a position for the D-Op.

When it comes to the Op-movement in question, adopting Heim, Lasnik and May's (1991) proposal on English reciprocal, I assume that the Op in question is raised and adjoined to the R-NP. According to Heim, Lasnik and May (1991), *each* of the reciprocal *each other* is raised and adjoined to the antecedent. For instance, (14a) has the LF representation given in (14b) via the movement of *each*.<sup>4</sup>

- (14) a. Taroo and Hanako praised each other.  
 b. [<sub>TP</sub> [[Taroo and Hanako] each<sub>1</sub>]<sub>1</sub> [<sub>VP</sub> praised [<sub>t</sub><sub>1</sub> other]]]

Likewise, in (15) for example, the D-Op is raised and adjoined to the intended R-NP *Taroo-to-Hanako* 'Taroo and Hanako' under the reading that Taroo bought two books and Hanako also bought another two books.

- (15) Taroo-to-Hanako-ga hon ni-satsu-zutsu-o katta (-koto)  
 Taroo-and-Hanako-nom book two-cl -dist -acc bought(-fact)  
 'Taroo and Hanako bought two books each.'

The movement in point is illustrated in (16):

- (16) [<sub>TP</sub> [<sub>EVP</sub> e [<sub>VP</sub> [[Taroo-to-Hanako] D-Op<sub>1</sub>]-ga [<sub>VP</sub> [<sub>DistP</sub> t<sub>1</sub> [<sub>NQ</sub> hon ni-satsu]-zutsu]-o  
 katta]]]](-koto)
- 

Now, the unavailability of the object NP acting as the R-NP in (11c), repeated here as (17), naturally follows:

- (17) #gakusei futa-ri -zutsu-ga furansugo-to-doitsugo-o yoku shitteiru(-koto)  
 student two-cl-dist -nom French-and-German-acc well know (-fact)  
 'Two students each know French and German well.'

Of importance here, is the well-known restriction on movement which states that movement cannot be downward.

<sup>4</sup> I do not illustrate the movement related to [<sub>t</sub> other] since it is not crucial for the present purpose. The reader is referred to Heim, Lasnik and May (1991).

- (18) [TP [VP [DistP t<sub>1</sub> [NQ gakusei futa-ri]-zutsu]-ga [VP [[furansugo-to-doitsugo] D-Op<sub>1</sub>]-o  
 yoku shitteiru]]] (-koto)
- 

In (18), since the predicate is individual-level, no event argument is present, and the only potential R-NP is the object NP. However, if the D-Op targets this object NP, the movement in point becomes downward. As a result, the structure in (18) is not tenable; consequently, (17) is not acceptable.

Remarkably, if the object NP is scrambled to the sentence-initial position, (17) becomes acceptable, as shown in (11d), repeated here as (19):

- (19) <sup>2</sup>[TP [VP furansugo-to-doitsugo-o<sub>1</sub> [VP gakusei futa-ri -zutsu-ga [VP t<sub>1</sub> yoku  
 French-and-German-acc student two-cl-dist -nom well  
 shitteiru]]]] (-koto)  
 know (-fact)

‘French and German, two students each know well.’

Notice that the movement in question, now, becomes upward, as shown in (20):

- (20) [TP [VP [[furansugo-to-doitsugo] D-Op<sub>2</sub>]-o<sub>1</sub> [VP [DistP t<sub>2</sub> [NQ gakusei futa-ri]-zutsu]-ga  
 [VP t<sub>1</sub> yoku shitteiru]]]] (-koto)
- 

In (11b) also, repeated here as (21a), the scrambling of the object NP is followed by the upward movement of the D-Op, as illustrated in (21b):

- (21) a. [TP [EVP e [VP furansugo-to-doitsugo-o<sub>1</sub> [VP gakusei futa-ri -zutsu-ga [VP t<sub>1</sub>  
 French-and-German-acc student two-cl-dist -nom  
 benkyooshiteiru]]]]] (-koto)  
 be studying (-fact)

‘Two students each are studying French and German.’

- b. [TP [EVP e [VP [[furansugo-to-doitsugo] D-Op<sub>2</sub>]-o<sub>1</sub> [VP [DistP t<sub>2</sub> [NQ gakusei  
 futa-ri]-zutsu]-ga [VP t<sub>1</sub> benkyooshiteiru]]]]] (-koto)
- 

The present proposal therefore correctly predicts without any additional, speculative assumptions, that there is no grammatical contrast between (19) and (21a).

Finally, we have to return to (11a), repeated here as (22):



(22)<sup>??</sup> [TP [EVP *e* [VP *gakusei futa-ri -zutsu-ga* [VP *furansugo-to-doitsugo-o*  
 student two-cl-dist -nom French-and-German-acc  
*benkyooshiteiru*]]]] (-koto)  
 be studying (-fact)

‘Two students each are studying French and German.’

The current approach based on the D-Op forces the conclusion that the object NP is not an R-NP in this example. Yet, the example in question is not as deviant as (17). The contrast between (17) and (22) therefore indicates that in the latter example, *zutsu* successfully finds an R-NP, which c-commands this distributive affix and that the slight marginality of this example comes from reasons independent of the licensing of the distributive affix under question. In (22), the only element which c-commands the distributive affix is the event argument. Therefore, we are forced to conclude that the R-NP is this event argument in this example. Under the assumption that the event argument can be plural if it contains sub-events (Krifka 1992, Lasersohn 1995, among others), I propose that the movement of the D-Op is as in (23):

(23) [TP [EVP [[*e*] D-Op<sub>1</sub>] [VP [DistP t<sub>1</sub> [NQ *gakusei futa-ri*]-*zutsu*]-ga  
 ↑  
 [VP *furansugo-to-doitsugo-o benkyooshiteiru*]]]] (-koto)

Recall at this point that Oh (2006) proposes that (6), repeated here as (24), allows the two distributive readings in (7), repeated here as (25a, b):

(24) *namca twu-myeng-ssik -i sangca sey-kay-lul wunpanhayssta.*  
 man two-cl -dist -nom box three-cl-acc carried

(Oh 2006: 25)

- (25) a. Men in pairs carried each of a set of three boxes.  
 b. Two men together carried three boxes (where happened more than one instance of this, simultaneously or one after another).

(Oh 2006: 33)

Of importance for the present purpose is Oh’s claim that these two readings require the following two distinct LF representations:

- (26) a. [TP *sangca sey-kay-lul*<sub>2</sub> [TP D [TP *namca twu-myeng-ssik -i*<sub>1</sub> [T' [VP *e* [VP t<sub>1</sub>  
 t<sub>2</sub> *wunpanhayssta*]]]]]]]]  
 b. [TP *e*<sub>3</sub> [TP D [TP *namca twu-myeng-ssik -i*<sub>1</sub> [T' [VP *sangca sey-kay-lul*<sub>2</sub> [VP t<sub>3</sub>  
 [VP t<sub>1</sub> t<sub>2</sub> *wunpanhayssta*]]]]]]]]]]

Oh specifically argues that the reading in (26a) does not involve distribution over the event argument; rather, the QR-ed object NP is acting as the R-NP. However, I have concluded that the reading in question results from the D-Op taking the event argument as the R-NP.

Accordingly, there is an obvious tension between Oh (2006) and the current proposal.

This tension reminds us of Balusu's (2006) proposal on duplicated numerals in Telugu. In Dravidian languages such as Telugu, when numerals are duplicated as in (27a, b), a distributive reading is forced.

- (27) a. ii pilla-lu renDu renDu kootu-lu-ni cuus-ee-ru.  
 these kid-pl two two monkey-pl-acc see-past-3p/pl

'Lit. These kids saw two two monkeys.'

(Balusu 2006: 39)

- b. iddaru iddaru pilla-lu kootu-lu-ni cuus-ee-ru.  
 two two kid-pl monkey-pl-acc see-past-3p/pl

'Lit. Two two kids saw (the) monkeys.'

(Balusu 2006: 43)

In (27a), the distribution appears to be over the subject NP, and in (27b), the object NP appears to be distributed. The latter example shows that as in the case of Japanese distributive affix, the duplicated numeral in question can accompany the subject NP. Examining examples such as (27a, b), Balusu claims that duplicated numerals always take the event argument as an R-NP in semantics.<sup>5</sup> Informally put, (27b) means that there is an event consisting of sub-events involving two kids seeing each monkey. The function of the duplicated numeral in this example is to guarantee that each sub-event involves two kids. This paper adopts his proposal in essence with one modification: The distributive operation in point is a syntactic operation. If this modification is correct, it is not a problem for the present approach which requires the distribution over the event argument in (22) to realize the apparent distributive reading over the object NP.

The current proposal may also provide an answer to the question of why (22) is slightly degraded. Notice that the intended distribution is "indirect": The distributive affix in question takes the event argument as its R-NP, and the distribution of the object NP is due to the base-generated covert *each*, dubbed as D (Heim, Lasnik and May 1991), as shown in (28):

- (28) [TP [EVP [ [e] D-Op<sub>1</sub>] [vP [DistP t<sub>1</sub> [gakusei futa-ri]-zutsu]-ga  
 ↑ student two-cl -dist -nom  
 [vP [[furansugo-to-doitsugo] D]-o benkyooshiteiru]]](-koto)  
 French-and-German -acc be studying (-fact)

The existence of the D on the object NP guarantees that the event in question consists of two sub-events, namely, studying French and studying German. This indirect association of the D-Op and the object NP via the event argument may yield some processing difficulty in (22).

<sup>5</sup> See Balusu (2006, 2010) for the details of his semantic analysis.

To summarize this section, I have proposed that the c-command requirement posed on the distributive affix *zutsu*, described in Section 3, arises as a consequence of the movement of the D-Op in overt syntax. Given the well-motivated assumption that movement must be upward, the R-NP then must c-command the D-Op in question in overt syntax. In addition, armed with the assumption that the event argument is present only with stage-level predicates, I have accounted for the fact that the distributive affix in question can be part of the subject NP only when the predicate is stage-level.

## 5. Argument Ellipsis of an NQ with *Zutsu* in Object Position

Under the current proposal, this section discusses the availability of argument ellipsis (AE) of an NP with *zutsu* in object position. The purpose of this section is to show that the current proposal provides a means to solve a puzzle concerning the AE of an NP containing an NQ with *zutsu*.

In his pioneering work on AE, Oku (1998) observes that subjects can be elided in Japanese, as in (29b), following (29a):

- (29) a. Taroo-ga [[jibun-no ronbun]-ga saiyou-sareru] -to omotteiru.  
 Taroo-nom self-gen paper -nom will be accepted -that think  
 ‘Taroo thinks that his paper will be accepted.’
- b. Hanako-mo [*e.c.* saiyou-sareru] -to omotteiru.  
 Hanako-also will be accepted -that think  
 ‘Hanako also thinks that (his paper/her paper) will be accepted.’

Importantly, (29b) is ambiguous between strict and sloppy readings. Under the strict reading, this sentence means that Hanako also thinks that Taroo’s paper will be accepted. On the other hand, under the sloppy reading, it means that Hanako also thinks that her own paper will be accepted.

Notice that (29b) cannot be analyzed as an instance of VP-deletion since the (embedded) subject NP is elided. Furthermore, this covert subject cannot be *pro* since the sloppy reading is available for this elided subject. Oku’s proposal is that in LF, the embedded subject NP of (29a) is copied to *e.c.* in (29b).<sup>6</sup>

Given Oku’s LF-copying approach to AE, let us examine (30b, c) following (30a):

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<sup>6</sup> See Saito (2007), Shinohara (2006), and Takahashi (2008) for supporting evidence for this LF-copying analysis of AE.

- (30) a. Taroo-to-Hanako-ga **hon ni-satsu-zutsu-o** katta.  
 Taroo-and-Hanako-nom book two-cl -dist -acc bought

‘Taroo and Hanako bought two books each.’

- b. Jiroo-to-Yuuko-mo *e.c.* katta.  
 Jiroo-and-Yuuko-also bought

‘Jiroo and Yuuko also bought (two books (each)).’

- c. <sup>(?)</sup>Jiroo-mo *e.c.* katta.  
 Jiroo-also bought

‘Jiroo also bought (two books)’

In (30b-c), the object NP is elided, as indicated as *e.c.* The intended reading of (30a) is that Taroo and Hanako each bought two books. In this context, (30b) can mean Jiroo and Yuuko each also bought two books. Of significance is the fact that not only (30b) but also (30c) can follow (30a) although it may be slightly degraded. (30c) can describe the situation in which Jiroo also bought two books.

If the bold-faced underlined NP with the D-Op were copied to *e.c.* in (30c), the sentence should have the LF representation with the D-Op movement in point, as illustrated in (31):<sup>7</sup>

- (31) [TP [EVP *e* [VP [[Jiroo] D-Op<sub>I</sub>]-mo [VP [DistP **t<sub>I</sub>** [NQ **hon ni-satsu-zutsu-o** katta]]]]]  
 ↑ ×

By definition, the D-Op must be adjoined to a plural R-NP. However, *Jiroo* is singular, and thus, it should not be able to function as an R-NP. The fact that (30c) can follow (30a), therefore, indicates that (31) should not be the correct LF representation of (30c). Since a cause of the problem lies in the D-Op movement, what is copied to *e.c.* in (30c) must be the DistP without the D-Op. This is exactly what we obtain under LF-copying.

Under the Single Output Syntax model (Bablijik 1995, 2002), by the time the copying operation is to take place in LF, the D-Op is already raised and adjoined to the R-NP. This in turn indicates that what is copied to *e.c.* in (30b) from (30a) is the DistP without the D-Op in question. Given the assumption that the D-Op movement is an instance of A-movement, in parallel to *each*-movement (Heim, Lasnik and May 1991), and that A-movement does not leave any trace (Lasnik 1999, Saito and Hoshi 2000), the LF representation of (30c) after the intended copying operation, must be as in (32):

- (32) [TP [EVP *e* [VP Jiroo-mo [VP [DistP [NQ **hon ni-satsu-zutsu-o** katta]]]]]  
 Jiroo-also book two-cl -dist -acc bought

<sup>7</sup> I leave aside questions concerning the status of particles in AE in this paper. See Saito (2007) for relevant discussion.

Under the current assumption that *zutsu* itself does not have any significant semantic import, (32) is then basically equated with (33):

- (33) [TP [EVP *e* [VP Jiroo-mo [VP [NQ **hon ni-satsu**]-o katta]]]  
           Jiroo-also           book two-cl -acc bought  
       ‘Jiroo also bought two books.’

As a result, even under the copying-based approach to AE, it is naturally expected that (30c) can follow (30a), and it means that Jiroo also bought two books.

Accordingly, (30b) should have either of the LF representations given in (34a, b):<sup>8</sup>

- (34) a. [TP [EVP *e* [VP Jiroo-to-Yuuko-mo [VP [DistP [NQ **hon ni-satsu**]-zutsu]-o  
                           Jiroo-and-Yuuko-also                           book two-cl -dist -acc  
                           katta]]]](-koto)  
           bought (-fact)
- b. [TP [EVP *e* [VP [[Jiroo-to-Yuuko] **D**]-mo [VP [DistP [NQ **hon ni-satsu**]-zutsu]-o  
                           Jiroo-and-Yuuko       -also                           book two-cl -dist -acc  
                           katta]]]](-koto)  
           bought (-fact)

(34a) should allow the reading that Jiroo and Yuuko also bought two books together whereas (34b) should yield the reading that Jiroo and Yuuko also bought two books each, due to the presence of **D**, the base-generated covert *each*. The current proposal therefore predicts that following (30a), (30b) can be interpreted either collectively or distributively. This prediction is borne out. The collective reading in question becomes more salient if appropriate context is given, such as the one in (35):

- (35) Jiroo-to-Yuuko-mo   okane-o   awasete           issyō-ni *e.c.* katta.  
       Jiroo-and-Yuuko-also money-acc putting together together       bought  
       ‘Jiroo and Yuuko also bought (two books) together, putting their money together.’

The question to be raised now is whether the same copying operation is also responsible for AE in subject position. This is the issue to be dealt with in Section 6.

## 6. Argument Ellipsis of an NQ with *Zutsu* in Subject Position

The cases discussed in Section 5 are all accommodated under the LF-copying approach. In this section, however, examining the availability of sloppy reading in cases involving an NQ with *zutsu* in subject position, we will see that not only LF-copying but also PF-deletion is necessary in order to fully account for AE in Japanese. This leads to the suggestion that in

<sup>8</sup> In Section 6, I will show that AE can also be obtained via PF-deletion in (30b).

principle, AE can be created by either PF-deletion or LF-copying: the “hybrid” hypothesis of AE.

Let us start with (36). Suppose that some student representatives and teachers are about to have a meeting to decide who will bring what to the coming potluck party:<sup>9</sup>

- (36) a. <sup>??</sup>Tanaka-sensei-wa [**[(jibun-no) gakusei futa-ri-zutsu-ga**  
 Tanaka-teacher-top self-gen student two-cl -dist -nom  
 suupu-to-sarada-o tsukuru]-to] omotteiru.  
 soup-and-salad-acc make -that think  
 ‘Prof. Tanaka thinks that two students each will make soup and salad.’
- b. <sup>???</sup>Yamada-sensei-wa [[ *e.c.* sushi-to-dezaato-o tsukuru]-to] omotteiru.  
 Yamada-teacher-top sushi-and-dessert-acc make] -that think  
 ‘Prof. Yamada thinks that (two students (each)) will make sushi and dessert.’
- c. <sup>?/??</sup>Yamada-sensei-wa [[ *e.c.* dezaato-o tsukuru]-to] omotteiru.  
 Yamada-teacher-top dessert-acc make] -that think  
 ‘Prof. Yamada thinks that (two students) will make dessert.’

(36b) as well as (36c) can follow (36a) although the former two sentences are degraded, along with the latter.

Under the LF-copying approach to AE adopted in Section 5, (37) would be the LF representation of (36b):

- (37) Yamada-sensei-wa [CP [EVP *e* [VP [**DistP** [**NO** **gakusei futa-ri-zutsu-ga**  
 Yamada-teacher-top student two-cl -dist -nom  
 sushi-to-dezaato-o tsukuru]]-to] omotteiru  
 sushi-and-dessert-acc make -that think

Of importance here is the claim that what is copied in (37) is the DistP without the D-Op. Thus, (37) should be equated with (38):

- (38) Yamada-sensei-wa [CP [EVP *e* [VP [**NO** **gakusei futa-ri-ga** sushi-to-dezaato-o  
 Yamada-teacher-top student two-cl -nom sushi-and-dessert-acc  
 tsukuru]]-to] omotteiru  
 make -that think

In (38), and thus (37), since the subject QP is structurally higher than the plural object, the

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<sup>9</sup> There is dialectal/idiolectal variation among native speakers of Japanese about their judgment of (36a–c), (42a–c), and (47a–c). I leave this issue for future research to examine why such variation exists.

former necessarily takes scope over the latter given the assumption that Japanese exhibits scope rigidity (Kuroda 1971, Hoji 1985). This scope relation between the two QPs leads to one of the possible, though not salient, readings available in (36b); that is, Prof. Yamada thinks that two students (of his) will make sushi and dessert.

Importantly, (36b) also permits the reading that Prof. Yamada thinks that two students (of his) will make sushi, and another two students (of his) will make dessert. In order to obtain this reading, parallel to (36a), we need the D-Op in (36b). Under the current proposal, given the assumption that covert *each*, dubbed as D, can directly adjoin to a plural element, it is not unnatural that in (36b), the event argument is directly adjoined by D, and the DistP without the D-Op is copied to *e.c.*, as shown in (39):

- (39) Yamada-sensei-wa [CP [EVP [[e] D] [vP NO gakusei futa-ri]-ga  
 Yamada-teacher-top student two-cl -nom  
 [[sushi-to-dezaato] D]-o tsukuru]-to] omotteiru  
 sushi-and-dessert -acc make -that think

Notice that in the relevant respect, this LF representation is basically the same as the one in (40b), which is the LF representation of (11a), repeated here as (40a),

- (40) a. ??[TP [EVP e [vP gakusei futa-ri -zutsu-ga [vP furansugo-to-doitsugo-o  
 student two-cl-dist -nom French-and-German-acc  
 benkyooshiteiru]]]] (-koto)  
 be studying (-fact)

‘Two students each are studying French and German.’

- b. [TP [EVP [[e] D-Op<sub>1</sub>] [vP [DistP t<sub>1</sub> [NQ gakusei futa-ri]-zutsu]-ga  
 ↑ ✓  
 [vP [[furansugo-to-doitsugo] D]-o benkyooshiteiru]]]] (-koto)

Then, it is not surprising that (39) realizes the type of reading available with (36a) and (40a): (36b) means that a group of two students would make sushi and another group of two students would make dessert. In addition, the slight marginality of (36b) might also be expected since the apparent distribution of the students over sushi and dessert is in fact “indirect” (see Section 4).

In contrast to (36b), (36c) following (36a) can describe the situation in which Prof. Yamada thinks that two students will make some dessert. Under the LF-copying, (41) is the LF-representation of (36c):

- (41) Yamada-sensei-wa [CP [TP [EVP e [vP DistP [NO gakusei futa-ri]-zutsu]-ga  
 Yamada-teacher-top student two-cl -dist -nom  
 [vP dezaato-o tsukuru]]]-to] omotteiru  
 dessert-acc make -that think

This representation correctly substantiates the reading in point.

To summarize the discussion so far, I have shown that in addition to the cases discussed in Section 5, AE of a subject NP containing an NQ with *zutsu* can also make use of LF-copying. Thus, the examples examined so far can be taken as supporting evidence for the LF-copying approach to AE in Japanese.

However, there are cases where PF-deletion is necessitated. First, recall from the discussion in Section 4 that when the object R-NP is scrambled and c-commands the subject NP with the NQ with *zutsu*, the sentence becomes fully acceptable. Accordingly, it is not surprising that no significant deviance results in (36a) if the scrambling of the object NP takes place, as shown in (42a). However, although (36c) and (42c) do not exhibit any grammatical contrast, it comes as a surprise that (36b) appears to improve, following (42a), as shown in (42b):

- (42) a. Tanaka-sensei-wa [[suupu-to-sarada-o<sub>1</sub> [(**jibun-no**) **gakusei**  
Tanaka-teacher-top soup-and-salad-acc self -gen student  
**futa-ri-zutsu-ga** t<sub>1</sub> tsukuru]]-to] omotteiru.  
two-cl -dist -nom make -that think  
'Prof. Tanaka thinks that soup and salad, two students each will make.'
- b. <sup>?</sup>Yamada-sensei-wa [[sushi-to-dezaato-o tsukuru]-to] omotteiru.  
Yamada-teacher-top sushi-and-dessert-acc make -that think  
'Prof. Yamada thinks that (two students (each)) will make sushi and dessert.'
- c. <sup>?/??</sup>Yamada-sensei-wa [[dezaato-o tsukuru]-to] omotteiru.  
Yamada-teacher-top dessert-acc make -that think  
'Prof. Yamada thinks that (two students) will make dessert.'

Under the LF-copying approach to AE, the contrast between (36b) and (42b), if it is genuine, is very difficult, if not impossible to explain since the copying of the subject NP to *e.c.* in (42b) should yield the LF-representation in (38) above, given the assumption that no string vacuous scrambling is allowed (Hoji 1985) and the object NP stays in situ. Accordingly, no contrast between (36b) and (42b) is expected, contrary to fact.

In contrast, under the PF-deletion approach, the LF-representation of (42b) ought to be distinct from the one in (38). Given the reasonable assumption that PF-deletion requires identity in PF, (36b), which follows (36a), should have the LF representation in (38) above, while the LF representation of (42b), which is preceded by (42a), should be as in (43):

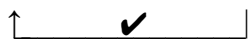
- (43) Yamada-sensei-wa [CP [TP [EVP *e* [vP sushi-to-dezaato-o [vP [<sub>DistP</sub> **D-Op**  
↑ ✓ ]]  
**[NQ gakusei futa-ri]-zutsu-ga** tsukuru]]]]-to] omotteiru



Crucially, the object NP has been scrambled, which makes it an appropriate R-NP for the D-Op in overt syntax. With the upward movement of the D-Op to the scrambled object NP, the sentence is fully acceptable, as predicted, parallel to (11b), repeated here as (44a), with the derivational steps in (44b):

- (44) a. [TP [EVP *e* [VP furansugo-to-doitsugo-o<sub>1</sub> [VP gakusei futa-ri-zutsu-ga [VP t<sub>1</sub> French-and-German-acc student two-cl-dist -nom benkyooshiteiru]]]]] (-koto)  
be studying (-fact)


‘Two students each are studying French and German.’

- b. [TP [EVP *e* [VP [[furansugo-to-doitsugo] D-Op<sub>2</sub>]-o<sub>1</sub> [VP [DistP t<sub>2</sub> [NQ gakusei futa-ri]-zutsu]-ga [VP t<sub>1</sub> benkyooshiteiru]]]]] (-koto)
- 

Turning to (42c) in relation to (36c), however, I find no significant contrast between these two examples. The fact that the reading in question is permitted in (42c) follows from the LF representation in (41), repeated here as (45), under LF-copying:

- (45) Yamada-sensei-wa [CP [TP [EVP *e* [VP DistP [NQ gakusei futa-ri]-zutsu]-ga Yamada-teacher-top student two-cl -dist -nom [VP dezaato-o tsukuru]]]-to] omotteiru  
dessert-acc make -that think

Of importance is the fact that there is no potential R-NP c-commanding the D-Op in (46), which would be the LF-representation of (42c) under PF-deletion:

- (46) Yamada-sensei-wa [CP [TP [EVP *e* [VP dezaato-o [VP DistP D-Op [NQ gakusei futa-ri]-zutsu]-ga tsukuru]]]-to] omotteiru
- 

The D-Op cannot be adjoined to the scrambled object NP since it is singular. In addition, there is an event consisting of one sub-event of making dessert in (42c), and thus, the event argument is not a potential R-NP in (43), either.

In short, it is not clear how the contrasts between (36a–c) and (42a–c) with respect to readings available in (36b, c) and (42b, c) can be accommodated without adopting both LF-copying and PF-deletion. I therefore take these data as supporting evidence for the hypothesis that not only LF-copying but also PF-deletion must be an option available for AE in Japanese: the hybrid hypothesis for AE in Japanese.

Second, I have shown in Section 3 that there is a contrast between stage-level and individual-level predicates with respect to the licensing of an NQ with *zutsu* contained in the subject NP. When the predicate is individual-level, the object NP ought to be scrambled to a position c-commanding the subject so that it can act as the R-NP. Bearing this point in mind,

let's consider (47a-c):

- (47) a. <sup>?</sup>Tanaka-sensei-wa [[doitsugo-to-furansugo-o<sub>1</sub> [(jibun-no) gakusei  
Tanaka-teacher-top German-and-French-acc self-gen student  
futa-ri-zutsu-ga t<sub>1</sub> yoku shitteiru]]-to] omotteiru.  
two-cl -dist -nom well know -that think  
'Prof. Tanaka thinks that German and French, two students each know well.'
- b. <sup>?</sup>Yamada-sensei-wa [[supeingo-to-itariago-o yoku shitteiru]-to] omotteiru.  
Yamada-teacher-top Spanish-and-Italian-acc well know -that think  
'Prof. Yamada thinks that (two students (each)) know Spanish and Italian well.'
- c. <sup>?/??</sup>Yamada-sensei-wa [[supeingo-o yoku shitteiru]-to] omotteiru.  
Yamada-teacher-top Spanish-acc well know -that think  
'Prof. Yamada thinks that (two students) know Spanish well.'

(47a) means Prof. Tanaka thinks that two students (of his) know German well and another two students (of his) know French well. Of significance is the fact that following (47a), (47b) can mean that Prof. Yamada thinks that two students (of his) know Spanish well and another two students (of his) know Italian well.

Under the LF-copying option, the LF representation of (47b) should be as in (48):

- (48) Yamada-sensei-wa [CP [TP [DistP [NO gakusei futa-ri]-zutsu]-ga  
Yamada-teacher-top student two-cl -dist -nom  
supeingo-to-itariago-o yoku shitteiru]-to] omotteiru  
Spanish-and-Italian-acc well know -that think

(48) allows the reading that Prof. Yamada thinks that each of the two students know both Spanish and Italian well. However, this LF representation does not permit the reading that associates two students (of his) with Spanish and another two students (of his) with Italian. The fact that this particular reading is available in (47b), therefore, indicates that in this example, the D-Op is present and the object NP is situated in a position c-commanding the subject QP. This state of affairs is exactly what we obtain under the PF-deletion option. The PF-parallelism requires the LF-representation of (47b) to be as in (49):

- (49) Yamada-sensei-wa [[supeingo-to-itariago-o [[DistP D-Op [NO gakusei  
↑ ✓ ]  
futa-ri]-zutsu]-ga yoku shitteiru]]-to] omotteiru

The adjunction of the D-Op to the scrambled object QP makes the intended reading available in (47b), parallel to (47a).

Yet, the fact that (47c) can also follow (47a) must be dealt with in a different way.

Notice that under the PF-deletion option, (47c) would have the LF-representation given in (50):

- (50) Yamada-sensei-wa [[supeingo-o [[DistP **D-Op** [NO gakusei futa-ri]-zutsu]-ga  
↑                    ✕                    ↓  
yoku shitteiru]]-to] omotteiru

The problem is that since the scrambled object NP is singular, it cannot act as the R-NP for the D-Op. This means that the D-Op in question cannot be properly licensed in (50). Accordingly, the PF-deletion option is not the one to be adopted in (47c). (47c) must, therefore, employ the LF-copying option. Under the LF-copying option, (47c) will have (51) as its LF-representation.

- (51) Yamada-sensei-wa [[DistP [NO gakusei futa-ri]-zutsu]-ga supeingo-o  
Yamada-teacher-top                    student two-cl -dist    -nom Spanish-acc  
yoku shitteiru]-to] omotteiru  
well know    -that think

Accordingly, (47c) can be interpreted as Prof. Yamada thinking that two students of his know Spanish.

To summarize, I have suggested that in principle, both LF-copying and PF-deletion are options available for AE in Japanese. However, due to independent factors such as the licensing of the D-Op, these two options are not always equally applicable. In the cases discussed in this section, when there is no potential candidate for an R-NP c-commanding the D-Op, PF-deletion cannot be chosen. Accordingly, the LF-copying option is forced.

Recall that I have shown in Section 5 that (30b), repeated here as (52b), involves LF-copying. However, under the present hybrid hypothesis, we now have another option; this example can also make use of PF-deletion, observing PF-identity with (30a), repeated here as (52a):

- (52) a. Taroo-to-Hanako-ga    hon ni-satsu-zutsu-o    katta.  
Taroo-and-Hanako-nom book two-cl    -dist    -acc bought  
‘Taroo and Hanako bought two books each.’
- b. Jiroo-to-Yuuko-mo    *e.c.* katta.  
Jiroo-and-Yuuko-also    bought  
‘Jiroo and Yuuko also bought *e.c.*’

Under the PF-deletion option, the LF-representation of (52b) is as shown in (53):

(53) [TP [EVP *e* [VP [[Jiroo-to-Yuuko] D-Op<sub>1</sub>]-mo [VP [DistP t<sub>1</sub> [NQ hon ni-satsu]-zutsu]-o katta]]]] (-koto)

Since the NP *Jiroo-to-Yuuko* is plural, nothing would go wrong with the D-Op movement in (53). (52b) is thus one case in which either of the two options, LF-copying or PF-deletion, can be selected, due to there being no intervening factor prohibiting either of the options from applying.

## 7. Concluding Remarks

This paper has shown that the distributive affix *zutsu* and its Korean counterpart *ssik* are licensed by a plural NP c-commanding an NP containing an NQ with the affix in point in overt syntax. In order to capture this structural requirement, I have proposed an analysis of the affix in point, based on the (distributive) operator-movement. The proposed analysis enables us to derive the structural requirement in point from the general ban on downward movement. Furthermore, based on the contrast between stage-level and individual-level predicates in licensing the affix in point in subject position, I have argued that the event argument, which occupies SPEC EvP when the predicate is stage-level, can act as an R-NP in overt syntax. This paper has provided further support for the hypothesis that the event argument can act as an R-NP (Balusu 2006, 2010). However, I have suggested two modifications to his proposal. First, the event argument can, but not always, act as an R-NP. Second, the distributive operation involves D-Op movement in syntax.

Based on this Op-based approach to the distributive affix *zutsu*, I examined cases where an NP containing an NQ with *zutsu* is elided. I have suggested that in principle, so-called argument ellipsis results from either LF-copying or PF-deletion. However, due to independent reasons such as the licensing of the distributive operator, these two options are not always equally available.

This paper leaves significant questions open for future research such as why English binominal *each* cannot take the event argument as the R-NP, as observed in (54) (Safir and Stowell 1988):

(54) \*Two students each read LGB and Barriers.

Given the assumption that the event argument is uniformly available across natural languages, it should also be available in English. One way to deal with this dichotomy is provided in Balusu's (2006) proposal on duplicated numerals in Telugu, certainly tied to a question of whether the current proposal extends to duplicated numerals in Dravidian languages such as Telugu (Balusu 2006, 2010): The duplicated numeral projects DistP whose SPEC is occupied by the D-Op. In spite of such unresolved issues to this point, my intention is to broaden future research relating to distributive affixes and their relation to AE in East Asian languages.

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