"Antecedent-Contained" Sluicing

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''ANTECEDENT-CONTAINED''
    SLUICING
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1 Introduction

Sluicing (e.g., (1a)) is generally analyzed as ellipsis of an IP under identity with a preceding IP (e.g., Chung, Ladusaw, and McCloskey 1995, Lasnik 2001, Lobeck 1995, Merchant 2001, Ross 1969) as in (1b).

(1) a. John loves someone, but he does not know who [$_{IP}$ Δ].
   b. $\boxed{[_{IP} \text{John} [_{VP} \text{loves someone}]]}$, but he does not know [$_{CP}$ who [$_{IP}$ ~~he loves~~ t$_{who}$]]

However, there seem to be cases where the antecedent for the elided IP in sluicing is smaller than an IP. Something similar has been observed by Merchant (2001, 2002). In this squib, I argue that the *sluicing in adjunct* (*SIA*) construction exemplified by (2) and (3) is one such case.
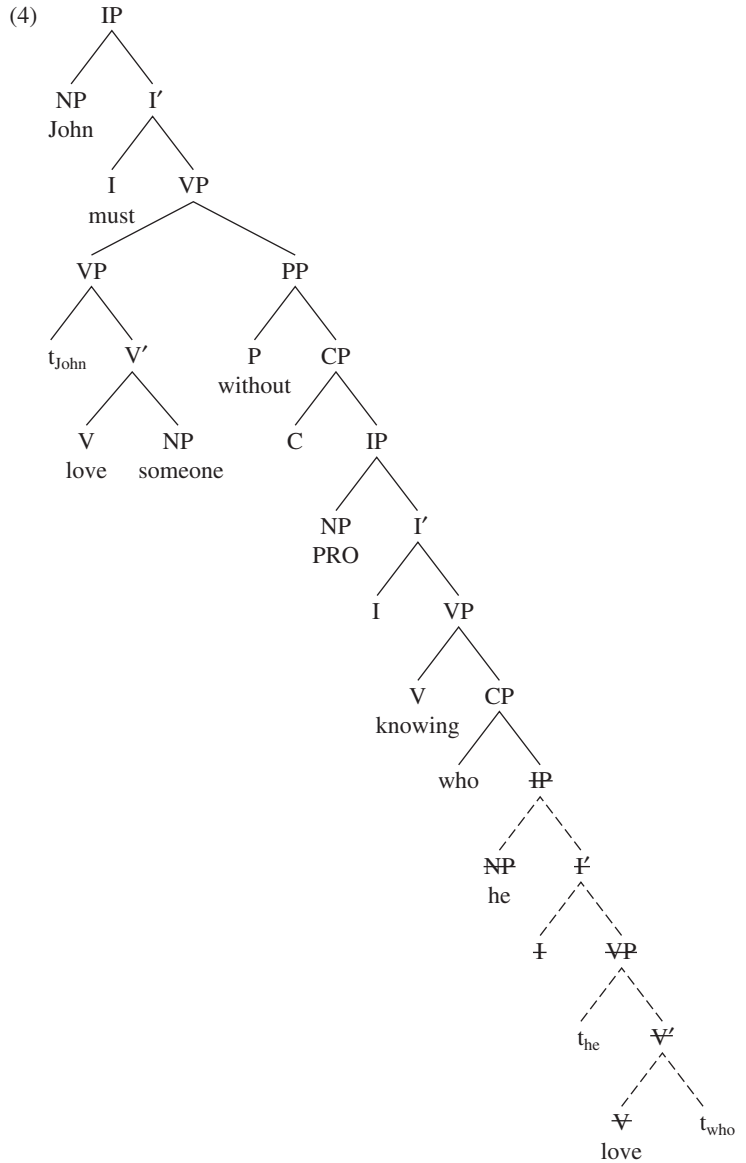
(2) a. John does not love anyone without knowing who [$_{IP}$ Δ].
   b. [$_{IP}$ John does not [$_{VP}$ $\boxed{[_{VP} \text{t}_{John} \text{ love anyone}]}$ [$_{PP}$ without [$_{CP}$[$_{IP}$ PRO [$_{VP}$ knowing [$_{CP}$ who [$_{IP}$ Δ]]]]]]]]

(3) a. John must love someone without knowing who [$_{IP}$ Δ].
   b. [$_{IP}$ John must [$_{VP}$[$_{VP}$ love someone][$_{PP}$ without [$_{CP}$[$_{IP}$ PRO [$_{VP}$ knowing [$_{CP}$ who [$_{IP}$ Δ]]]]]]]]

   I show that the SIA construction raises two puzzles if the matrix IP serves as the antecedent for the elided IP. First, negation and modal operators in the matrix IP are not interpreted in the elided clause. Second, if the matrix IP were the antecedent of the elided IP, an infinite regress would result because the PP containing the sluiced structure is generated in a VP-adjoined position as shown in (4) and the elided IP must be contained in the antecedent IP.[1]

    [1] I came to realize these points through discussion with Tomohiro Fujii and Takuya Goro.

(4)

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                    IP
                  /    \
                NP      I′
                John   /  \
                      I    VP
                     must /  \
                        VP     PP
                       /  \    /  \
                   t_John  V′  P    CP
                         /  \  without / \
                        V    NP       C   IP
                      love someone       /  \
                                       NP    I′
                                       PRO  /  \
                                           I    VP
                                              /    \
                                             V      CP
                                          knowing  /  \
                                                 who   I̶P̶
                                                      /  \
                                                   N̶P̶    I̶′̶
                                                    he   /  \
                                                       I̶    V̶P̶
                                                           /   \
                                                        t_he    V̶′̶
                                                               /  \
                                                              V̶    t_who
                                                            love
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The infinite regress problem for antecedent-contained deletion is usually resolved through such transformations as quantifier raising (QR; May 1985, among many others). However, none of these transformations are plausible in these cases. I argue instead that the elided IP following the *wh*-phrase is recovered not by the matrix IP but by the matrix VP, adopting Merchant's (2001, 2002) semantic identity hypothesis on sluicing and swiping; that is, the antecedent containment is only apparent.

2 Puzzle 1: Negation and Modals

The first puzzle with respect to the SIA construction concerns the interpretation of negation and modals in the elided site. In both (5a) and (6a), functional categories above VP, such as negation and modals, are not interpreted in the elided IP. Thus, only the interpretations presented in (5b) and (6b) are available for these examples. Those available for (7a–c), which show that negation and modals can appear in the PP headed by *without* in the nonellipsis counterparts of (5a) and (6a), are not available for (5a) and (6a); that is, (7a–c) cannot be the underlying structure of SIA sentences.

(5) a. John is*n't* inviting anyone/someone without saying who.
    b. = . . . without saying who *he is inviting*.

(6) a. You *must* select a color without knowing which one.
    b. = . . . without knowing which one *you select*.[2]

(7) a. ?John is*n't* inviting anyone without saying who is*n't* inviting.[3]
    b. John is*n't* inviting someone without saying who he is*n't* inviting.
    c. John *must* select a color without knowing which one he *must* select.

With respect to negation and modals, the SIA construction contrasts sharply with the standard sluicing constructions cited in (8) and (9). In the standard sluicing construction, negation and modals are normally interpreted in the ellipsis sites, and thus (8a) and (9a) are the only available interpretations.[4]

(8) John isn't inviting someone, but I don't know who [$_{IP}$ Δ].
    a. John isn't inviting someone, but I don't know who *he isn't inviting t*.
    b. John isn't inviting someone, but I don't know who *he is inviting t*.

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[2] Crucially, in this example the modal operator *must* cannot have the interpretation 'being aware of the obligation of selecting a color'.

[3] Some of the native speakers of English I interviewed have difficulty interpreting an example like (7a). Howard Lasnik (pers. comm.) notes that the contrast between (7a) and (7b) may arise because the parallelism between the scope of the antecedent indefinite NP and the *wh*-operator (see Fox 2000, Fox and Lasnik 2003, Merchant 2001, Romero 1998 for related discussion) is not maintained in (7a); that is, the negative polarity item *anyone* takes scope under the negation but the *wh*-operator takes scope over it. On the other hand, (7b) respects scope parallelism because the specific indefinite *someone* takes scope over the negation.

[4] Note, however, that there are similar cases in standard sluicing constructions too. See Merchant 2001:22 for discussion of such cases in relation to the syntactic identity hypothesis.

(9) You must select a color, but I can't tell you which one
[$_{\text{IP}}$ Δ].
a. You must select a color, but I can't tell you which one
you must select t.
b. You must select a color, but I can't tell you which one
you select.

3 Puzzle 2: An Infinite Regress Problem

The second puzzle with respect to the SIA construction comes from its apparent antecedent containment. Various constituency tests suggest that the PP containing the elided IP is generated in a VP-adjoined position. (10) summarizes three types of VP constituency tests, all of which suggest that the PP is adjoined to VP.

(10) a. *VP-preposing*
I thought John loves someone without knowing who
[$_{\text{IP}}$ Δ] and [$_{\text{VP}}$[$_{\text{VP}}$ love someone] [$_{\text{PP}}$ without knowing
who [$_{\text{IP}}$ Δ]]], he does t$_{\text{VP}}$ indeed.
b. Do so *substitution*
John [$_{\text{VP}}$[$_{\text{VP}}$ loves someone][$_{\text{PP}}$ without knowing who
[$_{\text{IP}}$ Δ]]], and Mary does so (= [$_{\text{VP}}$[$_{\text{VP}}$ loves someone]
[$_{\text{PP}}$ without knowing who [$_{\text{IP}}$ Δ]]]), too.
c. *VP-deletion*
John [$_{\text{VP}}$[$_{\text{VP}}$ loves someone][$_{\text{PP}}$ without knowing who
[$_{\text{IP}}$ Δ]]], and Mary does [$_{\text{VP}}$ Δ], too.

The VP-preposing example in (10a) shows that the PP containing the sluiced IP can be fronted together with the VP. The *do so* substitution example (e.g., Lakoff and Ross 1976) in (10b) shows that *do so* (a proform for VPs) ''substitutes for'' the PP, together with the VP. Finally, the VP-deletion example in (10c) shows that the PP can be deleted together with the VP. All of these constituency tests suggest that the PP is attached to the VP. If the PP were adjoined to IP, it could not move together with the VP and it could not be included in the scope of *do so* substitution or VP-deletion.

Since the PP containing the elided IP is adjoined to VP, analyses of sluicing incorporating strict syntactic identity predict that there will be an infinite regress as shown in (11), because the elided IP is contained in the antecedent IP (see (4) also).

(11) a. [$_{\text{IP}}$ John [$_{\text{VP}}$[$_{\text{VP}}$ t$_{\text{John}}$ loves someone [$_{\text{PP}}$ without
[$_{\text{CP}}$[$_{\text{IP}}$ PRO [$_{\text{VP}}$ knowing [$_{\text{CP}}$ who [$_{\text{IP}}$ Δ]]]]]]]]].
b. [$_{\text{IP}}$ John [$_{\text{VP}}$[$_{\text{VP}}$ t$_{\text{John}}$ loves someone][$_{\text{PP}}$ without
[$_{\text{CP}}$[$_{\text{IP}}$ PRO [$_{\text{VP}}$ knowing [$_{\text{CP}}$ who [$_{\text{IP}}$ John [$_{\text{VP}}$[$_{\text{VP}}$ t$_{\text{John}}$
loves someone][$_{\text{PP}}$ without [$_{\text{CP}}$[$_{\text{IP}}$ PRO [$_{\text{VP}}$ knowing
[$_{\text{CP}}$ who [$_{\text{IP}}$ Δ]]]]]]]]]]]]]]].

Given the acceptability of the SIA construction, there must be a way to avoid the infinite regress problem.

4 The Resolution of the Puzzles: Semantic Identity

To resolve the puzzles, I would like to propose that the antecedent of the elided IP in the SIA construction is the matrix VP rather than the matrix IP. I argue that this is possible under Merchant's (2001) semantic identity approach to ellipsis. Merchant (p. 38) proposes (12).

(12) *Focus condition on ellipsis*
     A constituent α can be deleted only if α is e-GIVEN.

E-GIVENness is defined as follows (p. 31):

(13) *E-GIVENness*
     An expression E counts as e-GIVEN iff E has a salient antecedent A and, modulo ∃-type shifting,
     a. A entails F-clo[5](E), and
     b. E entails F-clo(A)

In a case like (14), the lower segment of the matrix VP and the elided IP give the representations (14a) and (14b), assuming the VP-internal subject hypothesis (Fukui and Speas 1986, Kitagawa 1986, Koopman and Sportiche 1991, Kuroda 1988, Zagona 1982).

(14) John $[_{VP}[_{VP}$ t$_{John}$ loves someone]$[_{PP}$ without knowing who $[_{IP}$ e]]].
     a. F-clo(VP$_A$) = ∃x. John loves x
     b. F-clo(IP$_E$) = ∃x. he loves x

The propositional contents of the VP$_A$ and the IP$_E$ are identical, and the VP$_A$ entails F-clo IP$_E$ and the IP$_E$ entails the F-clo VP$_A$; that is, the mutual entailment requirement is satisfied between the matrix lower VP segment and the elided IP. Therefore, the IP-ellipsis can be licensed.[6]

This semantic identity approach naturally resolves the puzzles with respect to the SIA construction. First of all, as illustrated in (4), a modal or negation in the SIA construction is not interpreted in the sluiced site because the antecedent for the elided IP—that is, the lower segment of the matrix VP (see Hornstein 1994, Merchant 2000, 2001, 2002, Sag 1976 for related discussion)—does not contain these elements. Furthermore, the construction does not give rise to an infinite regress because the matrix lower VP-segment does not contain the PP that contains the elided IP, either.

This approach can also account for the contrast between (5) and (7a), mentioned earlier. (5) does not show the degradation seen in (7a); that is, compared with (7b), (7a) is less acceptable. I have suggested that this difficulty is due to the violation of scope parallelism (see footnote 3). Given the contrast between (7a) and (7b), it seems prob-

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[5] *F-clo* abbreviates *Focus-closure*. See Merchant 2001:14 for detailed discussion and for the definition of Focus-closure.
[6] This holds true for the similar cases in Merchant 2001:223–226, as Merchant (2005) argues in detail.

lematic that the same difficulty does not arise in the SIA example in (5) that contains a negative polarity item, *any*. Under the proposed analysis, however, the negation is not recovered in the ellipsis site; hence, the relative scope of the *wh*-operator and negation cannot be calculated. Thus, it follows that either the scope parallelism requirement is vacuously satisfied or it does not apply at all, resulting in the acceptability of these examples.

I must note that there is a potential alternative to the proposed approach: namely, to say that only VP is represented in the SIA construction when the *without*-phrase is attached to VP, as illustrated in (15).[7]

(15) John must kiss someone without knowing [$_{CP}$ who$_1$ [$_{C'}$ C [$_{VP}$ ~~he kiss~~ t$_1$]]].

Within such an analysis, neither the infinite regress problem nor the modal/negation problem arises. This is so because it is VP but not IP that is represented in the ellipsis site; thus, neither negation nor modals are present in the ellipsis site in the first place. Though appealing, there is a problem with this VP analysis of the SIA construction. In representation (15), C directly takes VP as its complement. This does not satisfy the c-selection requirement of the complementizer. In environments other than the SIA construction, C does not take VP as its complement. Therefore, it is not plausible to assume that such a c-selection violation is possible only in the SIA construction. For reasons of c-selection, then, the VP analysis is not desirable.

5 Theoretical Implications

The proposed account has two theoretical implications. First, if this account is on the right track, it provides considerable support for semantic identity approaches to ellipsis (Merchant 2001). This is so because VP can be ''identical'' to IP only semantically, not syntactically. Second, this parallelism between VP and IP is possible only if the VP-internal subject hypothesis (Fukui and Speas 1986, Kitagawa 1986, Koopman and Sportiche 1991, Kuroda 1988, Zagona 1982) is assumed. Therefore, if the proposed analysis of the SIA construction is on the right track, it strongly suggests that the subject originates inside VP.

6 Problems and Possible Solutions

The proposed approach faces two major problems. The first concerns the licensing condition on sluicing—namely, why VP cannot always license IP-ellipsis. Under the proposed approach, it is predicted that VP can license IP-ellipsis in a regular sluicing context as well as in

[7] Thanks to Tomohiro Fujii and an anonymous reviewer for pointing out this possibility.

an SIA context. However that does not seem to be the case, as we saw in (8), for example. Here, I would like to suggest the following: whenever possible, IP—the constituent larger than VP—is selected as the antecedent for sluicing.[8] If we adopt this hypothesis, IP will normally be available as an antecedent for the elided IP in the regular sluicing context and therefore IP is always selected as the antecedent. In the SIA construction, on the other hand, selecting IP gives rise to an infinite regress, as discussed earlier. Therefore, VP is selected as its antecedent, in a last resort fashion. But there is a potential problem with this last resort approach. The SIA construction sometimes shows an ambiguity with respect to the antecedent of the ellipsis, as in (16).

(16) You must kiss someone today without knowing who.
    a. . . . without knowing who [you are kissing].
    b. . . . without knowing who [you must kiss].

In (16), the adjunct PP containing the IP-ellipsis is located after the adverb *today* and presumably adjoined to the IP rather than the VP. The availability of *must* in the ellipsis indicates that the whole IP can be the antecedent of the elided IP in the SIA construction. Given that the PP is adjoined to the IP and the lower IP-segment is available for ellipsis resolution, the infinite regress problem does not arise. Therefore, the fact that the IP can be the antecedent is not problematic. However, the last resort approach does not predict this ambiguity, because if the PP is adjoined to the IP, the IP becomes available as the antecedent of the elided IP, and the VP cannot be selected as the antecedent.

However, this ambiguity problem can be handled appropriately, as follows. There are two possible analyses for the PP after the temporal adverb: (a) the PP is base-generated as an IP adjunct; and (b) the PP is base-generated as a VP adjunct and extraposed to the IP-adjoined position. Let us assume that both derivations are available in principle. Assume further that an extraposed PP is interpreted as a VP adjunct even though it is adjoined to IP. In the first derivation, IP becomes available as an antecedent for the elided IP, and last resort only allows IP to be the antecedent. In the second derivation, the PP is extraposed, but it is still interpreted as a VP adjunct, despite the surface order. Therefore, antecedent containment forces the VP interpretation and excludes the IP interpretation. One might argue that the extraposition allows for the IP interpretation. However, if the elided portion is recovered from the representation resulting from extraposition, the unbound trace of the extraposed PP must be reconstructed inside the IP-ellipsis site.[9]

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[8] Norbert Hornstein (pers. comm.) suggests that a type of constraint such as the A-over-A Constraint (Chomsky 1964; cf. Ross 1967) could be at work behind selection of the antecedent for IP-ellipsis.

[9] This was suggested by an anonymous reviewer.

(17) $[_{IP}[_{IP}$ John must $[_{VP}$ kiss someone $\boxed{t_{PP}}$]]] $[_{PP}$ without knowing who $[_{IP}$ he must $[_{VP}$ kiss t_{who} $\boxed{t_{PP}}$]]]]

Therefore, it is necessary to assume that the extraposed PP is interpreted as a VP adjunct, and with this assumption, the last resort approach can handle the ambiguity.

   The second problem concerns the interpretation of tense in SIA constructions. If the elided constituent in an SIA construction is truly an IP that has tense as in regular sluicing, then recoverability would seem to preclude a VP antecedent. I would like to suggest that the elided IP contained in the adjunct PP does not have an independent tense and that the tense information depends on the matrix tense like an anaphor, much as in the sequence-of-tense phenomenon (e.g., Dowty 1982, Hornstein 1990, Stowell 1996). If this is the case, it could also be the case that the environment where VP can license IP is restricted to the environment where the tense dependency holds. This point requires further research. A note is in order. If the semantic identity condition on ellipsis can be satisfied independently of how much structure is projected and if the tense information is not crucial for the licensing condition on sluicing, following Merchant's (2001, 2005) suggestion,[10] then the proposed treatment of tense does not interfere with the licensing of sluicing.

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[10] See Merchant's analysis of the Coordinate Structure Constraint under sluicing (Merchant 2001:223–226) for a similar point.

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