

Particle Stranding Ellipsis Involves PF-Deletion

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Abstract: This paper develops a new phonological analysis of Particle Stranding Ellipsis (PSE) in Japanese as an alternative to the recent, purely structural analysis of the phenomenon (Sato 2012; Goto 2014). Drawing on Shibata’s (2014) observations, we propose that PSE results from a string-based deletion in the phonological component (see Mukai 2003 and An 2016), which has the function of aligning the left edge of the first intermediate phrase to that of the utterance phrase. We then turn to investigate the relationship between PSE and other better-studied cases of ellipsis in Japanese. We present various arguments, based on sloppy identity readings, wide scope negation, disjunction, and parallelism, to show that PSE may well involve so-called argument ellipsis, one of the most intensively investigated constructions in the latest generative literature on Japanese syntax (Oku 1998; Saito 2007; Takahashi 2008), arguing against the conceivable *pro*-drop alternative. The two results derived here strongly suggest that the derivation of PSE involves PF-deletion.

Keywords: particle stranding ellipsis, phase theory, strict linear sensitivity, string deletion, non-constituent deletion, argument ellipsis, Japanese

1. Introduction

In this paper, we develop a new phonological analysis of the so-called Particle Stranding Ellipsis (henceforth, PSE) in Japanese as an alternative to the recent, purely structural analysis of the phenomenon espoused by Sato (2012) and Goto (2014). PSE is illustrated by Speaker B’s utterance in (1), which involves the ellipsis of the topic element – *Tanaka-kun* ‘Tanaka’ – but leaves the overt topic particle behind.¹

- (1) Speaker A: Tanaka-kun-wa?
Tanaka-TITLE-TOP
‘How about Tanaka?’
Speaker B: **wa**-ne, kaisya-o yameta-yo.
TOP-PRT company-ACC quit-PRT
‘He quit his company.’ (Hattori 1960:452)

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¹ The list of abbreviations used in this paper is as follows: ACC, accusative; CAUS, causative; CL, classifier; COMP, complementizer; CONJ, conjunction; COP, copula; DAT, dative; DIM, diminutive; GEN, genitive; HON, honorification; LOC, locative; NEG, negation; NOM, nominative; PAST, past tense; POL, politeness marker; PRES, present tense; PRT, particle; Q, question; TITLE, title; TOP, topic.

Sato (2012) proposes a phase-theoretic analysis of PSE, which consists of optional Spell-Out of the Top' projection containing the overt topic head *-wa* and its TP complement to PF for phonological interpretation while transferring the entire TopP to LF for semantic interpretation. In a similar vein, Goto (2014) suggests that PSE results when the topic marker within the topicalized material undergoes overt movement to the specifier of an FP, which encodes speaker-hearer interactions and their linguistic reflexes in conversational contexts (Nasu 2012), followed by the optional Spell-Out of the TopP complement to PF for phonological interpretation.

We have two goals in this paper. One goal is to demonstrate that the purely structural analysis for PSE of the sort put forth by Sato (2012) and Goto (2014) are built on a number of descriptively inadequate generalizations about PSE. More concretely, in sections 2 and 3, we will point out that PSE applies within an embedded clause, targets a wide variety of particles and particle-like expressions beyond the topic marker *-wa*, and exhibits strict linear sensitivity for its application. We will use these three properties to uncover the limits and problems of a purely structural analysis of PSE. We propose instead that these properties are straightforwardly captured by a phonological ellipsis approach to PSE along the lines of the recent claim made by Shibata (2014), according to which PSE is licensed as long as the stranded particle stands on the left edge of the first intermediate phrase which aligns with that of the utterance phrase. We implement the ellipsis approach along the lines of *String Deletion* (Mukai 2003), motivated on independent grounds. This task is undertaken in sections 2 and 3.

The other goal of this paper is investigate possible connections between PSE and other better-studied cases of ellipsis in Japanese. In section 4, we will present various arguments on the basis of sloppy identity readings (Oku 1998), wide scope negation, disjunction (Sakamoto 2016), and parallelism (Fiengo and May 1994; Takahashi 2013a; Takita to appear) to show that PSE may well take the form of Argument Ellipsis (AE) (Oku 1998; Saito 2007; Takahashi 2008). In doing so, we will argue against the conceivable alternative *pro*-based analysis of PSE. This result, then, lends further supporting evidence for our view that PSE involves PF-deletion, contrary to structure-oriented analyses thereof espoused by Sato (2012), Goto (2014) and others.

2. Particle Stranding Ellipsis in Japanese and Phase Theory

Sato's (2012) phase-theoretic analysis of PSE is designed to account for three structural properties of the construction. First of all, PSE must target a sentence-initial topic element (Yoshida 2004; Sato 2012; Nasu 2012). The first utterance by Speaker B in (2a) is grammatical because PSE applies to the sentence-initial topic phrase *John-wa*. Indeed, when PSE applies to non-initial topic expressions, as shown in (2b, c), the result is ungrammatical.

- (2) Speaker A: John-wa kyoo nani-o siteiru-no?
 John-TOP today what-ACC doing-Q
 'What is John doing today?'
 Speaker B: a. **wa**, Mary-ni daigaku-de atteiru-ne.
 TOP Mary-DAT university-LOC meeting-PRT
 'John is meeting Mary at a university.'
 b. * Mary-ni **wa**, daigaku-de atteiru-ne.
 Mary-DAT TOP university-LOC meeting-PRT
 'John is meeting Mary at a university.'
 c. * Mary-ni daigaku-de **wa**, atteiru-ne.
 Mary-DAT university-LOC TOP meeting-PRT
 'John is meeting Mary at a university.' (Sato 2012:496)

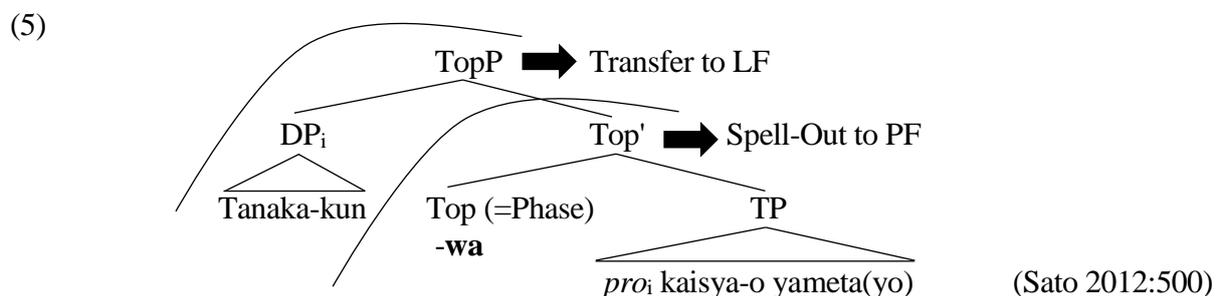
Second, PSE is a root phenomenon (Sato 2012; Nasu 2012; Goto 2014), as attested by the ill-formedness of PSE in Speaker B’s utterance in (3) (see section 3.3, however). Note that the ungrammaticality of this example cannot be attributed to the impossibility of embedded topicalization since the utterance is grammatical with the overt embedded topic subject *Taroo-wa* ‘Taro-TOP’.

- (3) Speaker A: John-wa sono toki [_{CP} Taroo-o dare-ga hometa-to] omotta-no?
 John-TOP that time Taro-ACC who-NOM praised-COMP thought-Q
 ‘Who did John think at that time praised Taro?’
 Speaker B: John-wa sono toki [_{CP}*(Taroo)-wa, Mary-ga hometa-to] omotta-yo.
 John-TOP that time Taro-TOP Mary-NOM praised-COMP thought-PRT
 ‘John thought at that time that Taro, Mary praised.’
 (adopted from Sato 2012:496, with a minor modification)

Finally, PSE cannot apply more than once in a clause (Sato 2012), as shown in (4). In (4a), the two topicalized elements – *Suzuki-sensei-wa* ‘Prof. Suzuki-TOP’ and *Takahashi-kun-wa* ‘Takahashi-TITLE-TOP’ – undergo PSE, rendering the sentence ungrammatical. However, when the second application of PSE is removed by overtly repeating the second topic DP, the sentence is regarded as more acceptable than (4a), as shown in (4b).

- (4) Speaker A: Suzuki-sensei-wa Takahasi-kun-o doko-ni suisensuru-tumori-na-no?
 Suzuki-TITLE-TOP Takahashi-TITLE-ACC where-LOC recommend-intend-COP-Q
 ‘Where does Prof. Suzuki intend to recommend Takahashi?’
 Speaker B: a. *wa-ne, wa, MIT-ni suisensuru-tumori-mitai-da-ne.
 TOP-PRT TOP MIT-LOC recommend-intend-seem-COP-PRT
 ‘It seems that Prof. Suzuki intends to recommend Takahashi to MIT.’
 b.? wa-ne, Takahasi-kun-wa, MIT-ni
 TOP-PRT Takahashi-TITLE-TOP MIT-LOC
 suisensuru-tumori-mitai-da-ne.
 recommend-intend-seem-COP-PRT
 ‘It seems that Prof. Suzuki intends to recommend Takahashi to MIT.’
 (Sato 2012:497)

Sato (2012) proposes that the derivation of the PSE example in (1) proceeds as depicted in (5).



In this derivation, the Top head and its complement TP are Spelled-Out to PF for phonological interpretation whereas the entire TopP, including its specifier, is transferred to LF for semantic interpretation. The three structural properties of PSE described above are derived as follows. First, PSE targets a sentence-initial topic element if we assume that the Top head constitutes the highest functional projection in the derivation of PSE; the presence of an extra element in the specifier of a higher functional head as postulated in Rizzi’s (1997) elaborated left periphery would wind up

triggering the Spell-Out of the whole TopP to PF for externalization. Second, PSE is a root phenomenon under the proposed system because the specifier of Top within an embedded clause would necessarily be Spelled-Out, thereby rendering PSE impossible as an instance of the “Privilege of the Root” phenomenon in the sense of Rizzi (2005). Finally, PSE can apply only once because the hypothetical second application of PSE would target a non-sentence-initial topic that is not contained in the specifier of the highest Top and hence cannot enjoy the “Privilege of the Root” status unlike the sentence-initial topic element.

3. Problems with the Phase-Theoretic Analysis of PSE: Moving Toward PF-Deletion

In this section, we point out problems, both conceptual and empirical, with Sato’s (2012) phase-theoretic analysis of PSE. Drawing on Shibata’s (2014) insights, we submit that the problems at hand will receive a more satisfactory solution in terms of string-based deletion applying in the phonological component (Mukai 2003; An 2016).

3.1. Problems with Sato’s (2012) Phase-Theoretic Analysis of PSE

Let us start by noting that Sato’s proposed derivation of PSE crucially stands on the assumption that at the root level, the intermediate Top’ projection, containing the head and its TP complement, may undergo optional Spell-Out. However, it has been commonly assumed (Chomsky 2001) that Spell-Out applies to the complement of a phase head, not the combination of the head and its complement together, as required in (5). Unfortunately, the particular assumption Sato adopts for his Spell-Out domain is not motivated elsewhere on independent grounds.

More importantly, the structural analysis is faced with considerable weakness in its empirical coverage. Previous works on PSE, including Sato and Ginsburg (2007), Goto (2014), and Shibata (2014), point out that PSE can occur not only with the topic marker *-wa*, but also with a wide range of other non-topic particles. They include, but are not limited to, *-ga* (nominative case particle), *-mo* (additive particle), inherent case markers such as *-kara* ‘from’, complementizers, both declarative and interrogative, such as *to* ‘that’ and *kadooka* ‘whether’, and certain semi-auxiliary expressions such as *mitai* ‘seem’, as shown in (6–10). For Speaker B’s utterances in (9–10), which involve PSE followed by the three semi-auxiliary markers, we have provided non-elliptical, full-fledged grammatical controls.

(6) Speaker A: John-ga doo sita-no?
 John-NOM how did-Q
 ‘What did John do?’

Speaker B: **ga** kaisya-o yameta-rasii-yo.
 NOM company-ACC quit-seem-PRT
 ‘John quit his company.’

(adopted from Goto 2014:103, with a minor modification)

(7) Speaker A: Taroo-mo kita-no?
 Taro-also came-Q
 ‘Did Taro also come?’

Speaker B: **mo** ki-masita.
 also come-POL.PAST
 ‘Taro also came.’

(Shibata 2014)

- (8) Speaker A: John-kara okane-o moratta-no?
 John-from money-ACC received-Q
 ‘Did you receive money from John?’
 Speaker B: **kara** moratta-yo.
 from received-PRT
 ‘I received money from John.’ (Goto 2012:103)
- (9) Speaker A: John-wa kita-no?
 John-TOP came-Q
 ‘Did John come?’
 Speaker B: **to** omoi-masu-kedo.
 COMP think-POL-though
 ‘I think that he came.’
 (Control: Kare-wa kita-to omoi-masu-kedo.)
 he-TOP came-COMP think-POL-though
 ‘I think he came.’
 Speaker B: **kadooka-wa** tyotto wakari-masen-ne.
 whether-TOP a bit know-POL.NEG-PRT
 ‘I am a little unsure whether he came or not.’
 (Control: Kare-ga kita-kadooka-wa tyotto wakari-masen-ne.)
 he-NOM came-whether-TOP a bit know-POL.NEG-PRT
 ‘I am a little unsure whether he came or not.’
- (10) Speaker A: Chomsky-ga sangatu-ni rainiti-suru-rasii-yo.
 Chomsky-NOM March-in visit.Japan-do-hear-PRT
 ‘It seems that Chomsky is visiting Japan in March.’
 Speaker B: **mitai**-desu-ne.
 seem-COP.POL-PRT
 ‘It seems that he is visiting Japan in March.’
 (Control: Kare-ga sangatu-ni rainiti-suru-mitai-desu-ne.)
 he-NOM March-in visit.Japan-do-seem-COP.POL-PRT
 ‘It seems that he is visiting Japan in March.’

Since Sato’s approach is specifically tailored for canonical cases of PSE, as shown in (1), which contain an overtly stranded topic marker, it is unclear how it can be extended to cover those cases, as shown in (6–10), which do not seem to necessarily involve a topic interpretation for the elided expressions followed by those non-topic particles. It would be more desirable to have an alternative analysis that provides a uniform explanation for (6–10) as well as the core cases of PSE illustrated in (1), than to have two separate explanations for the two types of PSE cases.

3.2. *Shibata’s (2014) Phonological Approach to PSE and Mukai’s (2003) String Deletion*

We maintain that Shibata’s (2014) phonological approach provides precisely such an alternative. Shibata observes that all the PSE cases discussed thus far involve a focused stranded particle and proposes to formalize this observation as the interaction of two alignment constraints (Pierrehumbert and Beckman 1988; Nagahara 1994) defined in (11a, b).

- (11) a. FOCUS-LEFT-EDGE (Pierrehumbert and Beckman 1988:101)
 The left edge of a focused constituent must be aligned with a left intermediate phrase boundary.
- b. FOCUS-TO-END (Nagahara 1994:42)
 There must be no intervening Major phrase boundary between any focused constituent and the end of sentence.

To illustrate, the sentence in (12a), when uttered normally, is phrased as shown in (12b). This is because, in Japanese, the left edge of a syntactic XP is aligned with an intermediate phrase boundary, with the sentence-final verb being included in the same intermediate phrase with its preceding direct object (Selkirk and Tateishi 1991:529). Nagahara observes that the topic particle *-wa* attached to the subject DP *Naoko-wa* ‘Naoko-TOP’ receives focus prosody, it extends the right boundary of the intermediate phrase which originally contained it to the end of the whole sentence, an effect captured by the interaction of the two constraints shown in (11a, b). This focus-driven rephrasing is given in (12c). In (12b, c), *u* stands for Utterance whereas *i* stands for Intermediate Phrase.

- (12) a. Náoko-wá nitiyóobi Nágoya-dé Mári-ní átta.
 Naoko-TOP Sunday Nagoya-LOC Mari-DAT met
 ‘Naoko met Mari in Nagoya on Sunday.’
- b. [[Náoko-wá]_i [nitiyóobi]_i [Nágoya-dé]_i [Mári-ní átta]_i]_u
- c. [[Náoko]_i [wá nitiyóobi Nágoya-dé Mári-ní átta]_i]_u
- ((12a) from Nagahara 1994:40; (12b, c) from Nagahara 1994:40, with slight modifications)

The phonological phrasing shown in (12c) indicates that 1) the particle *-wa* starts a new Intermediate Phrase by boosting its pitch accent almost as high as that of the first vowel in the subject DP *Naoko*, and that 2) the pitch contour level at *-wa* is considered a cue to initiate a new prosodic boundary. Given these observations in place, Shibata proposes (13) as a licensing condition on PSE, which states that PSE is possible only if the left edge of its containing Intermediate Phrase is aligned with the left edge of the Utterance and the particles undergoing PSE (can) bear focus prosody on their own.²

- (13) PSE is licensed in: [[X]_i]_u, where X is a stranded particle and is focused.
 (from Shibata 2014, with a minor modification)

Shibata’s approach to PSE does include an explicit mention of the licensing condition on this construction, but falls short of exploring what the exact derivational process involved in PSE is such that it must meet the condition in (13): a complete theory of PSE must specify not only just the licensing condition on PSE, but also the underlying formal mechanism for how Japanese speakers know that Speaker B’s utterance in (1), for example, repeated here as (14), is interpreted as Tanaka quit his company.

² Shibata (2014) notes that the condition correctly predicts that Korean does not accept PSE, given Jun’s (1993) independent observation that it is impossible to focus only a particle in Standard varieties of Korean. See also section 5 for a related discussion.

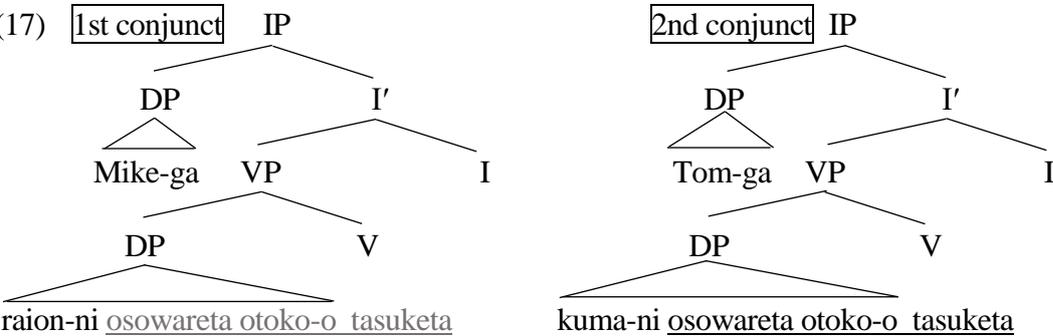
- (14) Speaker A: Tanaka-kun-wa?
 Tanaka-TITLE-TOP
 ‘How about Tanaka?’
 Speaker B: **wa**-ne, kaisya-o yameta-yo.
 TOP-PRT company-ACC quit-PRT
 ‘He quit his company.’ (Hattori 1960:452)

We believe that Mukai’s (2003) analysis of gapping in Japanese is suggestive in this connection: see also An (2016) for further evidence for a similar deletion process – which he terms Extra Deletion – from fragment answers in Korean. Mukai (2003) proposes that gapping examples such as (15) are derived through what she calls *String Deletion*. This operation is defined as in (16).

- (15) Mike-ga raion-ni, Tom-ga kuma-ni osowareta otoko-o tasuketa.
 Mike-NOM lion-DAT Tom-NOM bear-DAT was.attacked man-ACC saved
 ‘Mike saved the man who was being attacked by a lion, and Tom saved the man who was being attacked by a bear.’ (Mukai 2003:210)

- (16) Mukai’s (2003) definition of String Deletion
 String Deletion is a PF operation that applies to a phonetic string, regardless of its constituency, under string-based identity. The only structural condition on String Deletion is that the target string is continuous and contains a verb. (Mukai 2003:210–211)

Mukai (2003:211) assumes that the only condition imposed on String Deletion is that the target be continuous and contain a verb. The example in (15) is analyzed as in (17) under her theory.

- (17)  (adopted from Mukai 2003:211)

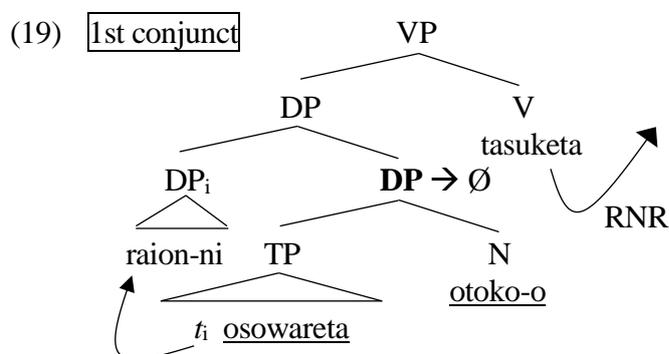
In this derivation, the underlined portion of the first conjunct is identical to the underlined portion of the second conjunct. String Deletion subsequently applies to the underlined part of the elliptical conjunct, even though the target of the operation does not form a syntactic constituent.

Mukai shows that the lack of the Complex DP Island Effect in this example, while problematic for movement-based analyses of gapping (e.g., Jayaseelan 1990; Abe and Hoshi 1997), is straightforwardly derived under the String Deletion theory. Example (18) shows that movement/scrambling of the dative argument to the sentence-initial position from within its containing DP results in the Complex DP Island Effect.

- (18) * Raion-ni_i Mike-ga t_i osowareta otoko-o tasuketa. (Complex DP Island)
 lion-DAT Mike-NOM was.attacked man-ACC saved
 ‘A lion, Mike saved the man who was being attacked by.’

Suppose that the derivation of the example in (15) involves the extraction of the dative argument *raion-ni* ‘lion-DAT’ from its containing DP headed by the head noun *otoko-o* ‘man-ACC’ to some position above the VP, followed by the ellipsis of the VP. Any movement-based theory of gapping would then lead us to predict that (15) should be ungrammatical on a par with (18). Mukai’s String Deletion theory, on the other hand, provides a principled answer to why (15) is immune to the Complex DP Island effect: the dative arguments within the two conjuncts do not undergo any syntactic movement but stay literally in-situ throughout the derivation of (15).

An anonymous reviewer suggests an alternative movement-based derivation of the example in (15) which nonetheless correctly predicts the absence of the island constraint. In this derivation, the dative argument *raion-ni* ‘lion-DAT’ in the first conjunct moves within the complex DP, and everything else within the complex DP, including the relative head, undergo clausal ellipsis, whereas the verb moves rightward in the form of right-node-raising (RNR)/across-the-board movement. This sequence of derivational steps is schematically depicted in (19), using the relevant part of the representation for the first conjunct in (15).



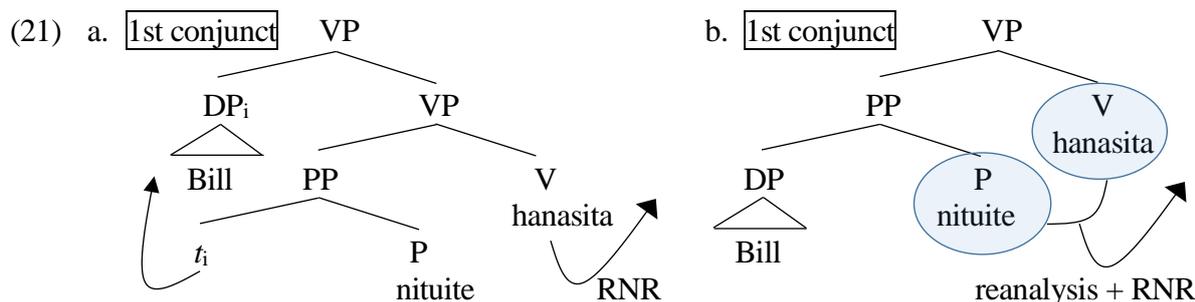
The reviewer notes that the lack of the island effect in (15) is now consistent with this movement-based analysis since the dative remnant is not moved out of the complex DP. Note further that the ellipsis here still targets a constituent marked here by underlining. This way, the analysis would also allow us to maintain the time-honored assumption that ellipsis targets a syntactic constituent.

Though this alternative analysis works fine for the particular example in (15), it will not be able to cover a different type of gapping constructions involving particle drop as successfully as Mukai’s String Deletion theory does. To illustrate this point with postposition (P)-drop, as first observed by Abe and Hoshi (1997), Japanese gapping allows optional omission of postpositions such as *nituite* ‘about’ from the first gapped conjunct when the host to which the postposition is attached is linearly adjacent to the gapped verb, marked here as \emptyset_v , as shown in (20a). Indeed, this P-omission becomes completely unavailable if the PP is scrambled so that it will be no longer linearly adjacent to the gapped verb, as witnessed by the ungrammaticality of (20b) (see also Sohn 1994 and Kim 1997 for the observation that the same pattern holds true in Korean gapping).

- (20) a. John-ga Bill-(**nituite**) \emptyset_v , Mary-ga Susan-nituite hanasita.
 John-NOM Bill-about Mary-NOM Susan-about talked
 ‘John talked about Bill, and Mary talked about Susan.’
- b. Bill-*(**nituite**) John-ga \emptyset_v , Susan-nituite Mary-ga hanasita.
 Bill-about John-NOM Susan-about Mary-NOM talked
 ‘John talked about Bill, and Mary talked about Susan.’
- ((20a) from Abe and Hoshi 1997:111, with a slight modification)

The analysis sketched in (19), which resorts to the across-the-board movement of the verb, cannot account for the grammaticality of P-drop in (20a) as well as the contrast between (20a) and (20b).

One might think of two potential derivations, shown in (21a) and (21b), for the P-drop case within the movement-and-deletion approach to gapping.



The derivation in (21a) is hard to maintain because Japanese does not allow P-stranding, as shown in (22), rendering the extraction of *Bill* from the PP in (21a) impossible.

- (22) * Susan_i, Mary-ga t_i-nituite hanasita.
 Susan Mary-NOM about talked
 ‘Susan_i, Mary talked about t_i.’ (Abe and Hoshi 1997: 111)

One might be tempted to save the movement-and-deletion analysis by saying that *hanasu* ‘talk’ and *nituite* ‘about’ are reanalyzed as a single verb, as shown in (21b), so that this derived verb, in turn, undergoes the RNR-style movement. Abe and Hoshi (1997) show that this analysis also fails for the following reason. If reanalysis were at stake in the derivation of the P-less gapping construction, the P-drop pattern should not be available with postpositions that are unlikely to undergo reanalysis with a verb. Examples such as (23) show that this prediction is not borne out.³

- (23) John-ga kono riyuu-(de) Ø_V, sosite Mary-ga ano riyuu-de kubininatta.
 John-NOM this reason-for and Mary-NOM that reason-for was.fired
 ‘John was fired for this reason, and Mary was fired for that reason.’
 (adopted from Abe and Hoshi 1997:112, with a minor modification)

Our analysis based on String Deletion provides a straightforward account for the possible and impossible patterns of P-omission under gapping illustrated in (20a, b) and (23). Recall that one of the fundamental conditions for String Deletion is that the target of this operation forms a contiguous string. (20a) is grammatical with P-omission because the postposition *nituite* and the gapped verb form a continuous string. (20b) is ungrammatical with P-omission, on the other hand, because the postposition does not form such a string with the gapped verb due to the scrambling of the PP. The same analysis holds true for the example in (23). We therefore conclude that at least some classes of the gapping examples pose empirical problems with movement-and-deletion analyses, which can be successfully resolved under our present String Deletion-based analysis.⁴

³ Abe and Hoshi (1997:111–112) do not provide an explicit definition of reanalysis in this context. We take the liberty of assuming that only a pair of a verb and the prepositional head of its complement can undergo reanalysis when they form a “natural predicate” or “possible semantic word” in the sense of Hornstein and Weinberg (1981:65–67). This particular choice on reanalysis, however, does not crucially bear on the present argument made in the text, as far as we can determine.

⁴ As the same reviewer himself/herself points out, there are two other potential problems with the alternative analysis depicted in (19). First, it must be shown whether the movement within an island is indeed possible (see Barros et al. 2014 for a somewhat related approach to so-called “island repair”). Second, it must be established that the deletion of the relative clause including the relative head is available in grammar. We won’t bother to

3.3. PSE and String Deletion: Evidence from Non-Constituent Deletion

Following the spirit, not the letter, of Mukai’s (2003) analysis of Japanese gapping, then, we now propose that the derivation of PSE similarly involves a string-sensitive PF-deletion process. (24) gives our own definition of the generalized version of Mukai’s (2003) String Deletion, which we assume to be at work in the derivation of PSE: see the last paragraph of section 3.4 for a more general outline of the theory of a string-based deletion and its core design specifications. In (24), U_E stands for an elliptical utterance whereas U_A stands for an antecedent non-elliptical utterance.⁵

(24) Left-Edge String Deletion (LESD) in the Phonological Component

LESD may apply to a contiguous phonetic string in U_E at PF, regardless of its syntactic constituency, if U_A has the identical phonetic string.

Let us now illustrate how the LESD works with the example in (14). The example has roughly the following underlying representation before PF-deletion takes place.

(25) Speaker A: Tanaka-kun-wa?

Tanaka-TITLE-TOP

‘How about Tanaka?’

Speaker B: [_{DP} Tanaka-kun]-**wa**-ne, kaisya-o yameta-yo.
TOP-PRT company-ACC quit-PRT

‘Tanaka quit his company.’

In this representation, the underlined portion of the DP in Speaker B’s utterance is string-identical to the underlined portion of the DP in Speaker A’s utterance, meeting the identity condition imposed on the application of LESD. The deletion subsequently applies, yielding PSE, as desired.

As the definition of the string-based deletion in (24) already indicates, one of the most important theoretical implications of our proposed analysis is that PF-deletion processes have their own domain-specific guidelines when they apply, the chief one among them being the requirement that it deletes a contiguous phonetic string in a phonological representation in the same way that syntactic operations such as movement apply to syntactic constituents. This approach to PSE, then, has as the consequence that in certain well-circumscribed cases, the application of the LESD should ignore syntactic constituencies, though in many other cases including those discussed thus far in this paper, the PSE material happens to correspond to some syntactic constituent (e.g., (1, 2, 6, 7, 8, 9)).

We have found thus far two such cases to verify the prediction that PSE, or LESD, does exhibit non-constituent deletion, thereby further substantiating our PF-deletion approach to PSE. One case is provided by the PSE example in (10), repeated here as (26).

delve into the justifications for these points since we already pointed out independent empirical problems with such an analysis in connection with P-drop and since we are not advocates of such an analysis, in the first place.

⁵ Jason Merchant (personal communication, November 2017) points out that strings, as most commonly understood as segments in a phonological representation, do not have access to syntactic information such as “verb” because there would be no natural way for a purely string-based phonological operation to “see up” into the syntactic derivation. We agree. This means that instead of a monolithic approach like the one proposed by Mukai (2003) for gapping, we actually need a system whereby the application of a string-based deletion is somehow made parasitic on verb gapping in Japanese. Sato and Maeda (2018) develop such a system within William’s (1997) hybrid coordinate/dependent ellipsis theory, as further elaborated by Ackema and Szendrői (2002). Sato and Maeda show that the system captures core properties of Japanese gapping regarding island-insensitivity, case particle/postposition omission, strict identity with homonyms, left branch extractions, and so on. We will not go into further discussions of this analysis for reasons of space, merely referring the reader to Sato and Maeda (2018).

- (26) Speaker A: Chomsky-ga sangatu-ni rainiti-suru-rasii-yo.
 Chomsky-NOM March-in visit.Japan-do-hear-PRT
 ‘It seems that Chomsky is visiting Japan in March.’
- Speaker B: **mitai**-desu-ne.
 seem-COP.POL-PRT
 ‘It seems that he is visiting Japan in March.’
- (Control: Kare-ga sangatu-ni rainiti-suru-mitai-desu-ne.)
 he-NOM March-in visit.Japan-do-seem-POL.COP-PRT
 ‘It seems that he is visiting Japan in March.’

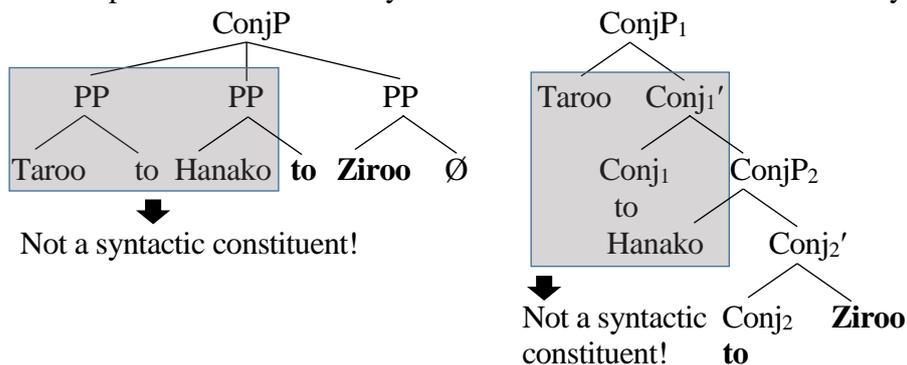
Let us assume, as is reasonable, that, given the morphological agglutinative nature of Japanese, the verbal complex in the pre-ellipsis environment/control case – *rainiti-suru-mitai-desu* ‘visit. Japan-do-seem-COP.POL’ – is created through *Morphological Merger* (Halle and Marantz 1993; see also Shibata 2015), which smooshes the various constituent parts together into a derived complex morphological word. Given this reasonable assumption, the grammaticality of Speaker B’s PSE utterance in (26) indicates that LESD must have applied to the sub-string of this giant derived verbal complex, certainly a non-syntactic constituent.

The other case is concerned with PSE in a tripartite coordination structure in Japanese. Examples (27–28) illustrate the structure in question. The former involves coordination of three DPs through the conjunctive marker *to* whereas the latter involves coordination of three DPs through the disjunctive marker *ka*.

- (27) Speaker A: Ano omoi piano-o Taroo-to Hanako-de motiageta-no?
 that heavy piano-ACC Taro-and Hanako-with lifted-Q
 ‘Taro and Hanako lifted that heavy piano?’
- Speaker B: **to** Ziroo-no san-nin-de (issyoni) motiageta-nda-yo.
 and Jiro-GEN three-CL-with together lifted-COP-PRT
 ‘Intended: Taro, Hanako and Jiro lifted the piano together.’
- (Control: Taroo-to Hanako-to Ziroo-no san-nin-de (issyoni) motiageta-nda-yo.)
 Taro-and Hanako-and Jiro-GEN three-CL-with together lifted-COP-PRT
 ‘Taro, Hanako and Jiro lifted the piano together.’
- (28) [Context: Speakers A and B wonder where they might want to go for a date this Saturday.]
 Speaker A: Kon-shyuu-no doyoobi deeto doko ik-oo-ka? Omotesando ka Sinzyuku?
 this-week-GEN Saturday date where go-shall-Q Omotesando or Shinjuku
 ‘Where shall we go for a date this Saturday? Omotesando or Shinjuku?’
- Speaker B: **ka** Asakusa-wa?
 or Asakusa-TOP
 ‘Intended: Omotesando, Shinjuku or Asakusa?’
- (Control: Omotesando-ka Sinzyuku-ka Asakusa-wa?)
 Omotesando or Shinjuku-or Asakusa-TOP
 ‘Omotesando, Shinjuku or Asakusa?’

What is particularly telling about these examples for our present purposes is that under no known previous analysis of coordination – either simple coordination or structured coordination – would the to-be-elided expressions, marked by underlining in (27–28), not form a syntactic constituent. To illustrate this point more closely, consider the two possible syntactic structures shown in (29a) and (29b) for the relevant part of the subject portion in the pre-ellipsis/control sentence in (27).

- (29) a. Simple Coordination Analysis b. Structured Coordination Analysis



In (29a), the set of elements to be elided to yield the attested PSE result in (27) – *Taroo-to Hanako* ‘Taroo and Hanako’ – do not form a syntactic constituent. In a similar vein, the same set of elements also do not form a constituent in (29b). Our string-based theory, on the other hand, correctly predicts this attested pattern of PSE: *Taroo-to Hanako* undergo LESD regardless of their syntactic constituency. A similar analysis holds true for the disjunctive-based PSE example in (28). The grammaticality of these two examples, therefore, provides powerful empirical support for our string-based PF-deletion theory of PSE advocated in this paper.

3.4. New Predictions of the Proposed Analysis: Embedded PSE and Strict Linear Sensitivity

In this sub-section, we show that the present analysis makes correct predictions regarding the (un-)availability of PSE in two contexts in a way that purely structural analyses such as Sato’s (2012) cannot, which thus provide further evidence in favor of our PF-deletion theory of PSE.

One context concerns PSE within an embedded clause. Recall from section 2 that structural approaches to PSE initiated by Sato (2012) was so designed to explain the root-privilege of PSE (Yoshida 2004). Shibata (2014) shows, however, that this observation is, in fact, not descriptively adequate, as shown in (30).

- (30) Speaker A: John-wa sigoto-o yameru-no?
 John-TOP job-ACC quit-Q
 ‘Will John quit his job?’
- Speaker B: [CP₁ [CP₂ **ga** sigoto-o yameru kadooka-wa] sira-nai-kedo,
 NOM job-ACC quit whether-TOP know-NEG-though
 sooiu uwasa-wa aru.
 such rumor-TOP exist
 ‘Though I don’t know whether he will quit his job, there is such a rumor.’
 (Shibata 2014)

In this example, the topicalized CP₂ in Speaker B’s utterance is embedded within the CP₁ headed by the verbal complex *sira-nai-kedo* ‘though I don’t know’. Note that (30) cannot be assimilated to the matrix-level PSE by scrambling the nominative subject to the sentence-initial position within the CP₁ because this operation at issue would violate the well-known ban on string-vacuous scrambling (Hoji 1985). The grammaticality of this example, thus, shows that PSE can occur within an embedded context, running counter to Yoshida’s (2004) observation.

Speaker B’s utterance in (31) makes a similar point. Here, we use the subordinating conjunction marker *nagara* ‘while’, which requires one clause to its left as its subordinate complement and another clause to its right as its matrix complement. Again, the grammaticality of (31) shows that PSE can occur within an embedded clause.

- (31) Speaker A: Sonnani tyokoreeto katte doo suru-no?
 that much chocolate buy.CONJ how do-Q
 ‘You bought so much chocolate. What will you do with that?’
 Speaker B: [CP1 [CP2 o tabe-nagara LGB-demo yom-ookana-tte omotta-no]].
 ACC eat-while LGB-or.something read-shall-COMP thought-PRT
 ‘I thought about reading LGB or something while eating this much of chocolate’.

The new observation reported here poses a serious empirical challenge for the structure-oriented analysis of PSE such as Sato’s (2012), because that particular analysis is designed in a way to predict that PSE can occur only within a matrix clause, for the reason stated in section 2. The possibility of embedded PSE is perfectly consistent with our current PF-oriented approach, on the other hand, because LESD can apply on the basis of the string identity between an antecedent and an elliptical clause; in other words, nothing prevents it from applying to an embedded context, as illustrated in (30–31).

The other context which distinguishes between the phonological and structural analyses of PSE has to do with the observation first made by Shibata (2014) that the target site of PSE must strictly come first: it cannot be preceded by any overt linguistic expression. Example (32) illustrates this observation.⁶

⁶ Shibata (2014) himself illustrates this observation with interjections such as *etto* ‘well’, as shown in (i).

- (i) Speaker A: John-wa kuru-no?
 John-TOP come-Q
 ‘Will John come?’
 Speaker B: a. * Eetto, **wa** ki-masen.
 well TOP come-POL.NEG
 ‘Well, John won’t come.’
 b. Eetto John-**wa** ki-masen.
 well TOP come-POL.NEG
 ‘Well, John won’t come.’ (Shibata 2014)

An anonymous reviewer points out that he/she does not see any contrast between (ia) and (ib), in a manner reported by Shibata. Though the present authors themselves, as well as three other native Japanese speakers we consulted, found (ia) much more degraded than (ib), we did run across several native speakers/linguists of Japanese, such as Yoshiki Fujiwara and Daiko Takahashi, who judged (ia) fully acceptable on a par with (ib).

We think that variation of this kind is not surprising at all if we take certain discourse and prosodic functions of an interjection seriously. As is well-known, an interjection is an expression that can, in principle, stand on its own as an utterance expressing a spontaneous feeling or reaction. It stands to reason, then, that *etto* ‘well’ and the rest of the sequence in Speaker B’s utterance in (a) may be analysed as constituting two separate utterances. We maintain that those speakers who find the relevant contrast in (ia, b) parse (ia) as one (large-size) utterance, as shown in (iia) while those speakers who do not find the relevant contrast parse (ia) as two different utterances, as shown in (iib).

- (ii) a. [etto [**wa** ki-masen]_i]_U
 b. [etto]_U[[**wa** ki-masen]_i]_U

(iib) meets the condition in (13) because the site of the PSE is the initial position of an utterance, unlike (iia). We suspect that this underlying different prosodic phrasing accounts for the variation alluded to by the reviewer.

(32) Speaker A: John-wa kuru-no?
 John-TOP come-Q
 ‘Will John come?’

Speaker B: a. * Tasika-dewa-nai-kedo, wa ki-masen-yo.
 certain-COP.TOP-NEG-though TOP come-POL.NEG-PRT
 ‘I am not completely certain, but he won’t come.’
 b. Tasika-dewa-nai-kedo, John-wa ki-masen-yo.
 certain-COP.TOP-NEG-though John-TOP come-POL.NEG-PRT
 ‘I am not completely certain, but he won’t come.’

The contrast between (32a) and (32b) is difficult to explain under the structural analysis because the input structure for (32a) would be (32b), which allows the topic DP to be preceded by some linguistic material without any loss of grammaticality. Our alternative analysis, on the other hand, predicts this contrast rather straightforwardly since (32a) violates the licensing condition in (13).

To summarize this section, we have argued that the derivation of PSE involves a string-based deletion process (Mukai 2003; An 2016) which has the function of aligning the left edge of the first intermediate phrase to the left edge of the utterance phrase, a syntax-phonology alignment constraint on PSE originally proposed by Shibata (2014). As the process occurs at PF, we have argued that this deletion operation is subject to its own domain-specific guidelines on its application. In particular, we have focused on one such guideline, namely the requirement that it delete a contiguous phonetic string in a phonological representation under identity with a previous occurrence of the same string in the same way that syntactic operations such as movement apply to syntactic constituents. This exclusively PF-oriented nature of String Deletion thus has the important prediction that its application should ignore syntactic constituents, a point which we have shown to be borne out by those PSE cases involving semi-auxiliary expressions such as *mitai* ‘seem’ and tripartite coordination. The analysis, we have further shown, correctly predicts the other hitherto-unnoticed string-sensitive property of PSE, namely that PSE can actually occur within an embedded clause as long as the target of the deletion is strictly utterance-initial. Of course, it may be easy to object, as does an anonymous reviewer, that it is still not completely established what the ultimate theory of string deletion, despite its clear empirical gains when applied to PSE, but we wish to say that our current study, together with other contemporary studies supporting some version of string deletion (Fukui and Sakai 2003; Mukai 2003; An 2016; Sato and Maeda 2018), has already uncovered several core architectural that such a theory must be able to satisfy to understand when a string-based deletion is and is not possible. First, string deletion must apply to a contiguous sequence of phonetic strings, as evidenced, for example, by the fact that PSE must occur in the strictly utterance-initial position and that it can actually occur within an embedded context if this initiality condition is met. Second, string deletion can apply to a phonetic string only when it has an identical string in a linguistic antecedent, a point which we will prove shortly in section 4.1, as first reported by Sakamoto and Saito (2017). Thirdly, string deletion, targeting some phonetic strings contained within a purely phonological representation, may well target non-syntactic constituents, an observation which we have independently motivated based on semi-auxiliary expressions and tripartite coordination, though the output of PSE turns out to be a syntactic constituent such as DP and PP in many other cases. All of these architectural properties of PSE clearly motivate the postulation of some version of a string-sensitive PF-deletion operation in the phonological component as an additional component of a comprehensive theory of deletion.

4. New Arguments that PSE Can Involve PF-Deletion: Views from Argument Ellipsis

In this section, we investigate possible connections, if any, between PSE, analyzed here as the result of a string-based deletion, and other forms of ellipsis studied in the literature on Japanese

syntax. More specifically, we will present four novel observations to show that PSE may well take the form of AE (Oku 1998; Saito 2007; Takahashi 2008). These observations, in turn, lend further indirect support to our present view that PSE involves PF-deletion, contrary to Sato’s (2012) structural analysis. In doing so, we also use some of these observations to reject the conceivable non-ellipsis analysis of PSE which resorts to *pro*-drop (Kuroda 1965).

4.1. *PSE ≠ Pro-Drop: Further Arguments for the PF-Deletion Analysis of PSE*

As first observed by Sakamoto and Saito (2017), PSE requires a linguistic antecedent. Since Hankamer and Sag (1976), the need for linguistic antecedent has been standardly taken as one of the hallmarks of surface anaphors as manifested in VP-ellipsis and sluicing – two elliptic forms hypothesized to be derived through PF-deletion based on fully articulated syntactic structures.⁷ This observation is illustrated in (33c). Compare this example with (1), which shows that PSE is licensed when there is an overt linguistic antecedent licensing the ellipsis.

- (33) [Context: Mary is a very cute girl, and every boy in her class has a crush on her. When Mary_i enters the classroom, ...]
- | | | |
|--|--|--|
| a. [DP <i>Kanozyo</i>] _i -ga kita! | b. [DP <i>pro</i>] _i kita! | c. *[DP Δ] _i -ga kita! |
| she-NOM came | came | NOM came |
| ‘She _i came!’ | ‘Lit. <i>pro</i> _i came!’ | ‘Lit. [DP Δ] _i - NOM came!’ |
- (Sakamoto and Saito 2017:3)

The examples in (33a, b) show that the overt pronoun *kanozyo* ‘she’ and the null pronoun can be pragmatically controlled. By contrast, the PSE counterpart cannot be used in the same context, as witnessed by the ill-formedness of (33c). This shows that PSE needs a linguistic antecedent. The contrast between (33b) and (33c) thus proves that PSE cannot be reduced to *pro*-drop with optional ellipsis/pronunciation of the particle following the sentence-initial phrase.

Sato and Ginsburg (2007), in fact, present an independent argument against the *pro*-drop analysis of PSE on the basis of the Double-*o* Constraint. This constraint is defined in (34) and illustrated in (35).

- (34) Shibatani’s (1975:262) Double-*o* Constraint
There cannot be more than one accusative Case in a sentence.

- (35) a. Taroo-ga Ziroo-ni/-o Tokyo-e ik-ase-ta. (base verb = intransitive)
Taro-NOM Jiro-DAT/-ACC Tokyo-to go-CAUS-PAST
‘Taro made Jiro go to Tokyo.’
- b. Taroo-ga Ziroo-ni/*-o ronbun-o yom-ase-ta. (base verb = transitive)
Taro-NOM Jiro-DAT/-ACC article-ACC read-CAUS-PAST
‘Taro made Jiro read an article.’

⁷ There is currently a heated debate regarding the requirement of a linguistic antecedent in the case of VP-ellipsis, given the acceptability of exophoric VP-ellipsis under appropriate discourse conditions, as illustrated in (ia, b).

- (i) a. Yes, we can! Yes, we did! (Merchant 2013:540)
b. [Context: Entering a construction site, A hands a helmet to B].
B: Do I have to? (Miller and Pullum 2014:20)

See Merchant (2004, 2013), Miller and Pullum (2014) and references cited therein for further examples of exophoric VP-ellipsis and special discourse licensing conditions imposed on this type of VP-ellipsis. We thank Jason Merchant (personal communication, November 2017) for bring our attention to the relevant literature on this topic.

In (35a), the causee argument can be marked with the accusative case *-o* when the embedded verb takes a non-accusative goal argument. However, this accusative marking of the same argument results in severe ungrammaticality in (35b) because it will result in two accusative Cases within a single clause, in violation of the Double-*o* Constraint.

Keeping this constraint in mind, consider now (36). This example is modeled after Saito's (2004:116) example, intended to show that null arguments in Japanese receive Case.⁸ Note that the accusative marking of the causee argument *Taroo* 'Taro' violates the Double-*o* Constraint, and hence results in ungrammaticality.

(36) [Context: Speaker A is wondering who helped Taro, her five-year-old son, take his regular Asthma medication while she was taking a nap.]

Speaker B: *Watasi-ga Taroo-ni/*-o pro nom-ase-te-oi-ta-yo.*
 I-NOM Taro-DAT/-ACC drink-CAUS-CONJ-put-PAST-PRT
 'I let Taro take it (=his regular Asthma medication).'

In this example, there is no linguistic antecedent for the elliptical theme object intended to refer back to *kusuri* 'medicine'. As we will see in sections 4.2–4.5, the output of AE always requires a linguistic antecedent, unlike the null pronoun, which does not need one (recall (33b)). Since the null argument in (36) does not have a linguistic antecedent, it must be analyzed as *pro* instead of being derived through AE. The manifestation of the Double-*o* Constraint effect in (36) then conclusively shows that *pro* bears, or is internally marked with, accusative Case.

This observation, in turn, makes it difficult to maintain the *pro*-drop analysis of PSE. To illustrate why, consider the PSE example in (37), which applies to the accusative argument in the sentence-initial position – *koibito-kara-no rabu retaa* 'love letter from girlfriend' – as evidenced by the stranded accusative case particle *-o*.

(37) Speaker A: *Koibito-kara-no rabu-retaa-o doo sita-tte?*
 girlfriend-from-GEN love-letter-ACC how did-COMP
 'What did you do with your girlfriend's love letter?'

Speaker B: *o yabutte kawa-ni suteta-nda-yo!*
 ACC tear.up river-into threw.away-COP-PRT
 'I tore it up and threw it into a river!'

We have seen so far in this section that *pro* is internally marked with Case such as accusative Case (see below for cases where *pro* is marked with nominative Case). Consequently, the example in (37) would be difficult to accommodate under the *pro*-drop analysis of PSE because the accusative case *-o* should not be able to manifest itself in overt syntax as an exponent outside the null pronoun. Our PF-deletion analysis, of course, is fully consistent with the accusative PSE pattern in (37) since LESD can apply to delete the sentence-initial XP *koibito-kara-no rabu retaa* 'love letter from girlfriend' under string-based identity with its previous occurrence of the same XP in the antecedent clause.⁹

⁸ Saito's (2004:116) original example is shown in (i):

(i) *Ziroo-ga kusuri-o mottekita-node Hanako-ga Taroo-ni/*-o e_{DP} nom-ase-ta.*
 Jiro-NOM medicine-ACC brought-since Hanako-NOM Taro-DAT/-ACC drink-CAUS-PAST
 'Since Jiro brought a medicine, Hanako let Taro take it.'

⁹ An anonymous reviewer suggests an alternative analysis consistent with the overt stranding of case particles whereby what is elided is the overt pronoun itself rather than the full-fledged DP. This analysis is depicted as shown in (i) for the example in (37). Here an overt pronoun, instead of a full-brown DP, undergoes PSE.

We can make a similar argument against the *pro*-drop analysis of PSE on the basis of nominative variant of this construction. The argument developed below is modeled on Takahashi's (2016) recent argument for Case-marked nominative null pronouns, which in turn draws on Shibatani's (1978:65) Japanese-particular case-marking constraint – the Nominative Case Constraint – to the effect that there be at least one nominative argument in a finite clause. Consider (38) to illustrate how Shibatani's constraint works in Japanese.

- (38) a. Megumi-**ga** Indonesi-**o** hanas-e-ru.
 Megumi-NOM Indonesian-ACC speak-can-PRES
 'Megumi can speak Indonesian.'
- b. Megumi-**ga** Indonesi-**ga** hanas-e-ru.
 Megumi-NOM Indonesian-NOM speak-can-PRES
 'Megumi can speak Indonesian.'
- c. Megumi-**ni** Indonesi-**ga** hanas-e-ru.
 Megumi-DAT Indonesian-NOM speak-can-PRES
 'Megumi can speak Indonesian.'
- d. *Megumi-**ni** Indonesi-**o** hanas-e-ru.
 Megumi-DAT Indonesian-ACC speak-can-PRES
 'Megumi can speak Indonesian.'

The examples here exemplify potential construction headed by the potential affixal head – *e* 'can'. As is well-known (Kuroda 1965; Kuno 1973), a series of different case alignments emerges in this construction. The transitive verb *hanas* 'to speak' may take a nominative subject and an accusative object, as shown in (38a). The examples in (38b, c) show that the direct object and the subject can alternatively be marked with the nominative and dative cases, respectively. Interestingly, however, the dative-accusative case alignment is ungrammatical, as witnessed in (38d). Shibatani (1978:65) argues that the example is ruled out by the aforementioned constraint that a finite clause must have at least one nominative argument.

Having reviewed Shibatani's constraint, consider now examples (39) and (6). (6) is repeated here as (40).

- (39) [Context: Speaker A is wondering what language a foreigner sitting next to him is speaking. Speaker B happens to have studied the language the foreigner is speaking.]
 Speaker B: *pro* Indonesi-**o** hanasite-i-masu-ne.
 Indonesian-ACC speak-PROG-POL-PRT
 'He is speaking Indonesian.'

-
- (i) [DP ~~some~~]-**o** yabutte kawa-ni suteta-nda-yo!
 it-ACC tear.up river-into threw.away-COP-PRT
 'I tore them up and threw it into a river!'

We agree that this alternative is certainly consistent with the data reported so far. However, as we will see in sections 4.2–4.5, this analysis cannot account for those cases – sloppy interpretations, wide scope negation, disjunction, and referential parallelism – where PSE may exhibit interpretive properties diagnostic of AE.

(40) Speaker A: John-ga doo sita-no?
 John-NOM how did-Q
 ‘What did John do?’

Speaker B: **ga** kaisya-o yameta-yo.
 NOM company-ACC quit-PRT
 ‘John quit his company.’

(Goto 2014:103)

Given the Nominative Case Constraint, the grammaticality of (39) shows that there must be at least one nominative argument in its derivation. Since there is no overt linguistic antecedent preceding Speaker B’s utterance, the subject argument within the utterance must be represented by *pro* instead of being derived through AE. Consequently, the *pro*-drop analysis of PSE would have no way of explaining why the nominative case could be stranded in (40) since the case marker should be contained within the null pronoun itself and should not surface as such.

To sum up this section, we have presented two types of empirical arguments against the *pro*-drop analysis of PSE, one based on the requirement for linguistic antecedents and the other based on the Double-*o* Constraint and the Nominative Case Constraint. In the next four sections, we will present four novel arguments, based on 1) sloppy identity interpretations, 2) relative scope between negation and universally quantified subjects, 3) disjunction, and 4) parallelism, to show that PSE can take the form of AE. These observations, in turn, lend further indirect evidence to our current view that the derivation of PSE involves PF-deletion.

4.2. *Sloppy Interpretations of Elided Arguments*

Our first argument that PSE may well take the form of AE comes from the availability of sloppy interpretations of PSE-ed arguments. To set the stage for this argument, consider (41).

- (41) a. Taro-wa zibun-no hahaoya-o sonkeisiteiru.
 Taro-TOP self-GEN mother-ACC respect
 ‘Taro respects his mother.’
 b. Hanako-mo *e* sonkeisiteiru. (strict/sloppy)
 Hanako-also respect
 ‘Hanako also respects (Taro’s/Hanako’s mother).’
 c. Hanako-mo *kanozyo-o* sonkeisiteiru. (strict/*sloppy)
 Hanako-also her-ACC respect
 ‘Hanako also respects her.’

Suppose that the null object argument in (41b) is understood to be somehow anaphoric to the overt object in (41a). Oku (1998) points out that, given this context, the null object argument in (41b) may exhibit either a strict interpretation (Taro’s mother) or a sloppy interpretation (Hanako’s mother). When (41b) is uttered in an out-of-the-blue context without proper full-fledged antecedent clause such as (41a), the null object cannot exhibit the sloppy interpretation but must instead denote some contextually salient individual (recall our discussion in section 4.1 regarding the difference between AE and *pro* with respect to the need for linguistic antecedents). Now, the example in (41c) shows that an overt pronoun can only give rise to a strict interpretation. Given this restriction, Oku (1998) proposes that the null argument with the sloppy interpretation is derived not through *pro*-drop, but instead through the ellipsis of the full-fledged direct object argument in (41b) in the manner depicted in (42).¹⁰

¹⁰ Oku (1998) himself technically implements this analysis in terms of LF-Copy. Saito (2007) presents an argument in favor of the LF-copy theory of AE from the ban on extraction from CP-ellipsis. Takahashi (2012, 2013a, b) and Maeda (2017), on the other hand, develop an alternative derivational PF-deletion analysis of AE.

- (42) Hanako-mo zibun-no hahaoya-o sonkeisiteiru. (sloppy)
 Hanako-also self-GEN mother-ACC respect
 ‘Lit. Hanako also respects self’s mother.’

It is worthwhile at this point to stop and consider a possible objection to the use of sloppy interpretations as a diagnostic for AE. An anonymous reviewer points out that the availability of sloppy identity here is not a strong argument for (argument) ellipsis. Merchant (2013:540), thus, excludes sloppy identity as a solid diagnostic test for ellipsis on the basis of the observation that, in English, this interpretation is found in a variety of constructions where ellipsis cannot be implicated or even within pronouns. Restricting our attention to sloppy interpretation in Japanese, Hoji (1998) famously argues that the sloppy reading of the null object, as shown in (41b), has nothing to do with AE: the null object exhibits a sloppy-like reading derived through the indefinite use of *pro* (*pro_{NP}*) on a par with indefinite nominals.¹¹ This indefinite *pro* theory is illustrated in (43).

- (43) a. Subete-no itinensei-ga soitu-i-no booru-o ketta.
 every-GEN first.year.student-NOM that guy-GEN ball-ACC kicked
 ‘Every first-year student kicked his/her ball.’
 b. Subete-no ninensei-mo e ketta. (sloppy)
 every-GEN second.year.student-also kicked
 ‘Lit. Every second-year student also kicked *e*.’
 c. Subete-no ninensei-mo booru-o ketta.
 every-GEN second.year.student-also ball-ACC kicked
 ‘Every second-year student also kicked a ball.’ (Hoji 1998:141)

Hoji observes that the real-word situation described by the sloppy interpretation in (43b) can be truthfully expressed by the sentence in (43c) with the indefinite bare argument *booru* ‘ball’ in direct object position; the sentence in (43c) can be used to express the sloppy reading expressed by (43b) with the null object that every second-year student kicked his/her own ball. In other words, the sloppy interpretation is accommodated by the *pro_{NP}*. Hoji concludes that such an interpretation cannot be a reliable diagnostic for ellipsis. Consequently, if all instances of sloppy readings associated with null arguments are explained away in this manner, we can no longer use the availability of this reading as a strong diagnostic test for AE in Japanese.

Contrary to the reviewer’s as well as Merchant’s (2013) assessment mentioned above, however, we wish to develop a more nuanced understanding of sloppy identity in Japanese such that this test still can play the advertised role of diagnosing AE in a restricted range of environments which exhibits unequivocal cases of ellipsis-driven sloppy readings. Saito (2007) shows that one such environment is AE in the context of negation. Consider the following data.

- (44) a. Hanako-wa zibun-no kuruma-o migaita.
 Hanako-TOP self-GEN car-ACC polished
 ‘Hanako polished her car.’
 b. Demo, Taro-wa e migaka-nakat-ta.
 but Taro-TOP polish-NEG-PAST
 ‘Lit ... but Taro didn’t wash *e*.’

In this paper, we are not concerned with this current debate between LF-copy and PF-deletion theories of AE. See section 5, however, for a discussion of how our PF-deletion analysis of PSE bears on this debate.

¹¹ We thank Jason Merchant (personal communication, November 2017) for reminding us of Hoji (1998) in this connection.

- c. Demo, Taroo-wa *kuruma-o* migaka-nakat-ta.
 but Taro-TOP car-ACC polish-NEG-PAST
 ‘but Taro didn’t wash a car.’

The examples in (44b, c) involve negation, unlike in the examples in (43b, c). (44c) can be truthfully uttered if Taro did not wash any car at all. Now, if (44b) were derived through the indefinite *pro*_{NP} on a par with the bare nominal *kuruma* ‘car’ in (44c), we would expect that (44b) should have the same meaning as (44c). Saito (2007) crucially notes that this is not the case: (44b) can be truthfully uttered even in a situation where Taro washed some car (say, his mother’s car or Hanako’s car) as long as he did not wash his own car. Remember that such a situation renders (44c) false. We thus conclude that sloppy interpretations in negative contexts such as (44b) can only be accounted for in terms of AE along the lines depicted in (42) and hence that AE can be properly diagnosed by sloppy identity under negative environments.

Having established sloppy interpretations as a possible (albeit restricted) test for AE in negative contexts, let us now consider negative PSE cases like (45). It is significant that PSE allows a sloppy interpretation as well as a strict interpretation for the elliptic phrase.

- (45) Speaker A: Zibun-no hahaoya-o Hanako-wa sonkeisitei-masu.
 self-GEN mother-ACC Hanako-TOP respect-POL
 ‘Hanako respects self’s mother.’
 Speaker B: a. **wa**, Taroo-wa sonkeisitei-masen. (strict/sloppy)
 TOP Taro-TOP respect-POL.NEG
 ‘Taro does not respect self’s mother.’
 b. **Kanozyo-wa**, Taroo-wa sonkeisitei-masen. (strict/*sloppy)
 she-TOP Taro-TOP respect-NEG-PRT
 ‘Taro does not respect her.’

In this example, the topic DP targeted by PSE/LESD – *zibun-no hahaoya-o* ‘self’s mother’ – permits both strict and sloppy interpretations (Hanako’s mother and Taro’s mother, respectively) in a negative context, just like the null object in (44b). Note, furthermore, that when the PSE position is replaced with the overt pronoun *kanojo* ‘she’, the resulting sentence can only yield the strict interpretation, as indicated in Speaker B’s second reply in (b). The parallel behavior between AE and PSE with respect to sloppy interpretations to the exclusion of the *pro*-drop case, therefore, suggests that the derivation of PSE can take the form of AE.

4.3. *Relative Scope between Universally Quantified DPs and Negation*

Our second argument that PSE may take the form of AE comes from relative scope between universally quantified DPs and negation, as illustrated in (46).

- (46) Speaker A: Kokoni iru zen’in-o paatii-ni syootaisita-no?
 here be all-ACC party-to invited-Q
 ‘Did you invite everyone here to the party?’
 Speaker B: a. **wa** syootaisi-masen-desita. (Neg » all)
 TOP invite-POL.NEG-POL.PAST
 ‘Lit. I didn’t invite *e*.’
 b. **Karera-wa** syootaisi-masen-desita. (*Neg » all)
 they-TOP invite-POL.NEG-POL.PAST
 ‘I didn’t invite them.’

The example in (46a) allows for the wide scope interpretation of negation vis-à-vis the universal quantifier, according to which Speaker B invited some, but not all, of the people present here. Significantly, however, (46b) – the variant of (46a) now with the overt third-person plural pronoun *karera* ‘them’ – blocks this interpretation. This interpretive contrast thus shows that the PSE case here cannot be assimilated to *pro*-drop. On the other hand, the wide scope interpretation of negation in (46a) is exactly predicted by the AE analysis, because the pre-ellipsis representation to (46a), with the quantified object fully pronounced, yields this interpretation, as shown in (47).

- (47) Kokoni iru zen'in-wa syootaisi-masen-desita.
 here be all-TOP invite-POL.NEG-POL.PAST
 ‘I didn’t invite everyone present here.’

4.4. *Disjunctive Interpretation of Elided Arguments*

Our third argument for the possibility of AE within PSE has to do with disjunctive interpretations. Sakamoto (2016) points out that in English, pronouns anaphorically linked to disjunctive antecedents accept the disjunctive E-type reading, but not the disjunctive reading. Taking (48) as an example, the pronoun *he* in (48b), which is anaphoric to the disjunctive antecedent *either John or Bill* in (48a), can only be interpreted as the person who actually visited Uconn last year (the disjunctive E-type reading); it cannot be interpreted as either John or Bill (the disjunctive reading). VP-ellipsis, on the other hand, can yield the latter interpretation, as shown in (49).

- (48) a. Last year, either John or Bill visited Uconn.
 b. This year too, he visited Uconn. (Disjunctive E-type reading/*Disjunctive reading)
 (Sakamoto 2016:6)
- (49) John scolded either Mary or Nancy, and Bill did [_{VP} Ø], too. (Disjunctive reading)
 (Sakamoto 2016:7)

The examples in (48, 49) together thus show that the availability of the disjunctive reading is contingent on the application of ellipsis. With this insight in place, Sakamoto observes that a null argument in Japanese allows the disjunctive reading, on a par with English VP-ellipsis, as shown in (50b), a result which suggests that the null argument is derived through AE.

- (50) a. Kinoo Taroo ka Ziroo-ga Kanako-o sikatta.
 yesterday Taro or Jiro-NOM Kanako-ACC scolded
 ‘Yesterday, either Taro or Jiro scolded Kanako.’
 b. Kyoo-wa *e* Ayaka-o sikatta. (Disjunctive reading)
 today-TOP Ayaka-ACC scolded
 ‘Lit. Today, *e* scolded Ayaka.’
 (Sakamoto 2016:7)

Given the presence of the disjunctive reading as a useful diagnostic test for AE, our analysis predicts that PSE, analyzed here as a case of PF-deletion, should exhibit this reading. Example (51) shows that this prediction is indeed borne out. (51b) permits the disjunctive interpretation according to which the null argument is interpreted as representing the whole disjunctive antecedent *Taroo ka Ziroo* ‘Taro or Jiro’. Note that the overt pronoun *soitu* ‘that guy’ cannot support the disjunctive reading, a further indication that AE is involved in the PSE case.

- (51) Speaker A: Kinoo Taroo ka Ziroo-ga Kanako-o sikatta-yo.
 yesterday Taro or Jiro-NOM Kanako-ACC scolded-PRT
 ‘Yesterday, either Taro or Jiro scolded Kanako.’
- Speaker B: a. **wa**, tasika, Ayaka-mo sikatta-yo. (Disjunctive reading)
 TOP if I recall correctly Ayaka-also scolded-PRT
 ‘If I recall correctly, either Taro or Jiro also scolded Ayaka.’
- b. **Soitu**-wa tasika Ayaka-mo sikatta-yo. (*Disjunctive reading)
 that guy-TOP if I recall correctly Ayaka-also scolded-PRT
 ‘If I recall correctly, that guy also scolded Ayaka.’

4.5. *Parallelism Constraints on Elided Arguments*

Our final argument for the claim that PSE can take the form of AE comes from the so-called parallelism constraint imposed on elliptic arguments in Japanese (Takahashi 2013a; Takita to appear). To illustrate this constraint, let us consider the null object example in (52b).

- (52) a. John₁-wa zibun₁-no kuruma-o aratta.
 John-TOP self-GEN car-ACC washed
 ‘John₁ washed self₁’s car.’
- b. Mary₁-wa [CP Bill₂-ga/-wa *e* arawa-nakat-ta-to] itta.
 Mary-TOP Bill-NOM/-TOP wash-NEG-PAST-COMP said
 ‘Mary₁ said that Bill₂ did not wash self₁’s car.’
- c. Mary₁-wa [CP Bill₂-ga/-wa *zibun-no kuruma-o* arawa-nakat-ta-to] itta.
 Mary-TOP Bill-NOM/-TOP self-GEN car-ACC wash-NEG-PAST-COMP said
 ‘Mary₁ said that Bill₂ did not wash self₁’s car.’
- ((52a, b) from Takahashi 2013a:210)

In (52a), *zibun* ‘self’ within the direct object is bound to the local subject *John-wa* ‘John-TOP’. Takahashi (2013a) observes that the null object in (52b) can be interpreted as Bill’s car, but not Mary’s car and argues that this observation follows from the parallelism constraint in the sense of Fiengo and May (1994). The constraint in question requires that the antecedent and ellipsis targets must exhibit the same structural relationship between a binder and a variable. In (52a), there is a local binding relationship between the subject and the object within the same clause. The parallelism constraint then demands that the same local relationship be established between the subject and the reconstructed anaphoric object in (52b). This is why (52b) permits the local dependency reading (Bill didn’t wash Bill’s car), but not the non-local cross-clausal dependency reading (Bill didn’t wash Mary’s car). Example (52c) shows that the same effect obtains even when *zibun-no kuruma* ‘self’s car’ is replaced for the null object position.

Note that, given the logic of the parallelism constraint, the long-distance reading in (52b) should become available if we embed (52a) within another clause to create an antecedent configuration which involves a long-distance dependency between the matrix subject and the embedded object. Takahashi illustrates this configuration with examples such as (53).

- (53) a. Susan₁-wa [CP John₂-ga zibun-no kuruma-o aratta-to] itta.
 Susan-TOP John-NOM self-GEN car-ACC washed-COMP said
 ‘Susan₁ said that John₂ washed self₁’s car.’
- b. Mary₁-wa [CP Bill₂-ga/-wa *e* arawa-nakat-ta-to] itta.
 Mary-TOP Bill-NOM/-TOP wash-NEG-PAST-COMP said
 ‘Mary₁ said that Bill₂ did not wash self₁’s car.’

- c. Mary₁-wa [CP Bill₂-ga/-wa *zibun-no kuruma-o arawa-nakat-ta-to*] itta.
 Mary-TOP Bill-NOM/-TOP self-GEN car-ACC wash-NEG-PAST-COMP said
 ‘Mary₁ said that Bill₂ did not wash self’s_{1/2} car.’

((53a, b) from Takahashi 2013a:211)

Suppose we concentrate on the non-local reading where *zibun* ‘self’ is bound to the matrix subject *Susan* in the antecedent clause in (53a). When preceded by the antecedent clause so interpreted, (53b) readily allows the long-distance reading whereby Mary said that Bill did not wash Mary’s car, in sharp contrast with (52b). This long-distance dependency is fine, as expected, because the relevant interpretation is licensed by the parallel long-distance dependency in (53a).¹² (53c) with the overt object repeated exhibits the same parallelism effect.

Interestingly, PSE behaves on a par with AE in that it exhibits the parallelism constraint. Speaker A’s utterance in (54) involves a local dependency between *John* and *zibun-no kuruma* ‘self’s car’. The fact that Speaker B’s utterance in (54a) only allows the local interpretation (i.e. Bill washed Bill’s car), not the long-distance reading (i.e., Bill washed Mary’s car), indicates that the parallelism constraint is at work in the derivation of this example. Note that the variant of (54a) with the overt pronoun *sore* ‘it’, shown in (54b), only accepts the reading that Mary said that Bill washed John’s car. This interpretive discrepancy between (54a) and (54b) thus further proves that PSE cannot be assimilated to the *pro*-drop/ellipsis of the overt pronoun.

- (54) Speaker A: Zibun₁-no kuruma-o John₁-ga aratta-no?
 self-GEN car-ACC John-NOM washed-Q
 ‘Did John₁ wash self’s₁ car?’

- Speaker B: a. **wa** Mary₁-ga [CP Bill₂-ga *e aratta-to*] itteta-yo.
 TOP Mary-NOM Bill-NOM washed-COMP said-PRT
 ‘Mary₁ said that Bill₂ washed self’s*_{1/2} car.’

¹² An anonymous reviewer points out that the local non-parallel reading is easily available in (53) to the reviewer him/herself as well as five native speakers of Japanese he/she interviewed for judgements. The present authors as well as eight native speakers/linguists of Japanese uniformly find such a reading completely absent. It is important to recall that the parallelism constraint we’re interested in here arises in (53) under the restricted condition that the elliptical clause in (53b) is interpreted as an anaphoric statement to the antecedent clause in (53a). We can only speculate at this point that the relative strength of this anaphoric link speakers impose between the two clauses may be responsible for intra-speaker variation regarding the parallelism effect in (53). More specifically, the reviewer and his/her native speaker consultants do interpret the null object as anaphoric in (53b) to the overt object in (53a) but otherwise interpret the former as an “independent clause” of sorts whereas the present authors and their native speaker consultants opt to construe the former as completely parasitic on the latter not only in terms of the anaphoric object but also in terms of its referential dependency (parallelism). Indeed, when (53b) is uttered on its own, the sentence allows referential ambiguities, as shown in (ib), as long as the object gap is recoverable from contextual manipulations such as the antecedent clause such as (ia):

- (i) Speaker A: Zibun-no kuruma-ga nan-da-tte?
 self-GEN car-NOM what-COP-COMP?
 ‘Lit. What about self’s car?’
 Speaker B: Mary₁-wa [CP Bill₂-ga/-wa *e arawa-nakat-ta-to*] itta-no.
 Mary-TOP Bill-NOM/-TOP wash-NEG-PAST-COMP said-PRT
 ‘Mary₁ said that Bill₂ did not wash self’s_{1/2} car.’

Thus, we expect that the speakers like the reviewer who accept the local, non-parallel reading in (53) might end up rejecting such a reading when the elliptical clause is somehow made more anaphorically linked to the antecedent clause by contextual manipulations. Admitted, this is our speculation, and so we must leave a more detailed examination of intra-speaker variation regarding parallelism on elliptic arguments for another occasion.

- b. **Sore**-wa Mary₁-ga [CP Bill₂-ga *e* aratta-to] itteta-yo.
 it-TOP Mary-NOM Bill-NOM washed-COMP said-PRT
 ‘Mary₁ said that Bill₂ washed it.’

Furthermore, our analysis predicts that, when the antecedent clause is construed so as to yield a non-local reading, as in Speaker A’s utterance in (55), the subsequent PSE clause now should exhibit the same reading. This prediction is precisely borne out in Speaker B’s utterance in (55a), which allows the reading that Mary said Bill washed Mary’s car, unlike in (54a). Again, just as in (54b), (55b), with the overt pronoun *sore* ‘it’, only allows the reading that Mary said that Bill washed Sue or John’s car, with no indication of the parallelism effects on ellipsis.¹³

¹³ An anonymous reviewer hints at two other potential arguments for the AE analysis of PSE other than the four arguments introduced here, which we briefly review below from his/her review report. One argument concerns Condition (C) effects under PSE. Consider (i).

- (i) Speaker A: Taro_i-no kuruma-o dare-ga aratta-no?
 Taro-GEN car-ACC who-NOM washed-Q
 ‘Who washed Taro’s car?’
- Speaker B:
- a. **wa**, aitu_i/kare_i-ga arai-masi-ta.
 TOP that guy/he-NOM wash-POL-PAST
 ‘Lit. Taro_i’s car, that guy_i/he_i washed.’
- b. *[DP Taro_i-no kuruma]-**wa**, aitu_i/kare_i-ga arai-masi-ta.
 Taro-GEN car-ACC TOP that guy/he-NOM wash-POL-PAST
 ‘Lit. Taro_i’s car, that guy_i/he_i washed.’
- c. *[DP **Sore**]-**wa**, aitu_i/kare_i-ga arai-masi-ta.
 it-TOP that guy/he-NOM wash-POL-PAST
 ‘Lit. It_i, that guy_i/he_i washed.’

The reviewer notes that when a name is embedded inside the antecedent of the PSE, the pronoun in (ia) cannot be construed as coreferential with the name. We do agree that the coreferential reading is hard to obtain in (i). This result thus appears to suggest that the name is syntactically represented within the elided DP, as shown in (ib) before PSE takes place. However, this result is equally consistent with the pronoun deletion analysis (see note 9) since *sore-wa* ‘it-TOP’ also triggers the connectivity effect in the same way as the full DP does, as shown in (ic). Thus, we believe that this argument does not conclusively support the AE analysis of PSE.

The other argument, which is related to the negative scope reversal argument in section 4.3, comes from the possibility of a bound variable interpretation (see Hoji (1990, 1991, 1995) for extensive discussions on *so*-series demonstratives such as *soko* ‘that place, it’ and their bound variable interpretations). Consider (ii).

- (ii) Speaker A: 30%-izyoo-no zidoosya-gaisya-ga soko-no kogaisya-o uttaeta-nda-yo-ne?
 30%-more than-GEN car-company-NOM it-GEN subsidiary-ACC sued-COP-PRT-PRT
 ‘More than 30 % of the car companies sued their subsidiary companies, right?’
- Speaker B:
- a. **wa**, soko-no komon-bengosi-mo uttae-masi-ta.
 TOP it-GEN corporate-lawyer-also sue-POL-PAST
 ‘Intended: More than 30% of the car companies also sued their corporate lawyers.’
- b. [DP 30%-izyoo-no zidoosya-gaisya]-**wa**, soko-no komon-bengosi-mo uttae-masi-ta.
 30%-more than-GEN car-company-TOP it-GEN corporate-lawyer-also sue-POL-PAST
 ‘More than 30% of the car companies also sued their corporate lawyers.’
- c. [DP **soko**]-wa, soko-no komon-bengosi-mo uttae-masi-ta.
 it-TOP it-GEN corporate-lawyer-also sue-POL-PAST
 ‘They also sued their corporate lawyers.’

The reviewer points out that the ellipsis analysis of PSE predicts the bound variable reading in (iia) since the quantifier is represented in the ellipsis site, as in (iia), which does yield such a reading. We agree that the reading is available in (iia), but again the same reading is equally available with the pronoun subject *soko-wa* ‘it-TOP’, as shown in (iic). Thus, this argument remains rather unequivocal regarding the nature of the elided argument and hence does not necessarily support the AE analysis.

We leave further examinations of these two arguments for another occasion.

- (55) Speaker A: Zibun_{1/2}-no kuruma-o Sue₁-ga John₂-ga aratta-to itta-no?
 self-GEN car-ACC Sue-NOM John-NOM washed-COMP said-Q
 ‘Did Sue₁ say that John₂ wash self’s_{1/2} car?’
- Speaker B: a. **wa**, tasika, Mary₁-ga Bill₂-ga aratta-to itteta-yo.
 TOP if I recall correctly Mary-NOM Bill-NOM washed-COMP said-PRT
 ‘If I recall correctly, Mary₁ said that Bill₂ washed self’s_{1/2} car.’
- b. **Sore**-wa tasika, Mary₁-ga Bill₂-ga aratta-to itteta-yo.
 it-TOP if I recall correctly Mary-NOM Bill-NOM washed-COMP said-PRT
 ‘If I recall correctly, Mary₁ said that Bill₂ washed it.’

5. Conclusions: Theoretical Implications and Residual Issues for Future Research

In this paper, we have argued for a PF-deletion analysis of PSE in Japanese. We have started by pointing out a number of conceptual and empirical problems with a purely structural approach to the phenomenon as represented by Sato’s (2012) recent phase-theoretic analysis. We have shown that his analysis not only necessitates a special proviso concerning possible Spell-Out domains within Phase Theory but also has a serious empirical limitation, as it is designed to cover only those PSE cases with topic-marked DPs. We have further pointed out that PSE can occur within an embedded clause and exhibits strict linear sensitivity, two observations which we took to seriously undermine the purely structural approach to PSE.

On the basis of these observations, we have proposed instead, developing the insights of Shibata’s (2014) recent approach, that PSE is better characterized in terms of a string-based deletion in the phonological component (Mukai 2003; An 2016) up to a focused particle so that the left edge of the first intermediate phrase aligns with the left edge of the utterance phrase. This analysis has led to the important prediction that, in certain cases, PSE could ignore syntactic constituencies, a point that we have shown to be borne out with tripartite coordination structures where the string-based deletion targets a non-syntactic constituent.

In order to further support our deletion analysis of PSE, we have also investigated possible connections, if any, between PSE and other relatively better-studied forms of ellipsis in Japanese syntax. More concretely, we have presented a wide variety of evidence concerning sloppy interpretations, negative scope readings, disjunction and referential parallelism constraints to show that PSE may well take the form of AE, rejecting the alternative *pro*-based analysis of PSE. This result, in turn, has an important implication for contemporary debates on the mechanism of AE as follows. If PSE can take the form of AE, then it must be the case that at least some of AE cases should also involve PF-deletion. This is an important consequence in view of the latest controversies regarding the PF-deletion (Takahashi 2012, 2013a, b; Maeda 2017) vs. LF-copy (Oku 1998; Saito 2007) theories of AE (see also note 10).¹⁴

Although we are confident that our current work has significantly advanced our understanding of the nature of and mechanism behind PSE, there is no denying that this phenomenon and our analysis thereof invites many intriguing questions worthy of further intense investigations, only two of which we briefly list below, together with our current directions to address them. One question concerns utterance-initiality of PSE. Ultimately, we wish to understand why PSE must follow the left-edge alignment condition, as stated in (13). Our current conjecture is that this initiality requirement has its origin in discourse accessibility of some sort such that an interlocutor’s PSE utterance inter-discoursally borrows some salient discourse referent from his/her interlocutor’s utterance which immediately precedes it. It may well be then that the use of this inter-discoursal borrowing is blocked by any intervening

¹⁴ Thanks to Heidi Harley (personal communication, August 2017) for suggesting this implication. See Sakamoto and Saito (2017) for suggestive evidence that PSE involves LF-copy instead of PF-deletion.

expression, which serves to disrupt the topic continuity. This pragmatic explanation, in turn, helps explain why PSE is prototypically found with topic-marked expressions as in (1).

The other question is language-specificity of PSE. Why is it that no other language than Japanese permits PSE? For example, Korean, which otherwise has a very similar particle system as Japanese, does not allow PSE. As stated in note 2, Shibata (2014) suggests that this is because particles in (standard) Korean cannot bear focus alone. This question is related to the Japanese-internal question of the nature of PSE-friendly particles. On one hand, there are PSE-permitting particles, included in the data in section 2, i.e. *-wa*, *-ga*, *-mo*, *-kara*, *-to*, *-kadooka*, and *-mitai*. On the other hand, there are PSE-blocking particles such as *-yooni*, *-no* and *-koto*, as shown in (56–58) (with the judgements as reported in Fujii (2016:14), on which we concur).

- (56) Speaker A: DeNA-ga katu-yooni inotte-masu-ka?
 DeNA-NOM win-COMP pray-POL-Q
 ‘Do you pray for DeNA to win?’
 Speaker B: *Yooni inotte-masu-yo.
 COMP pray-POL-PRT
 ‘Intended: I pray for DeNA to win.’ (Fujii 2016:14)
- (57) Speaker A: DeNA-ga katta-no-o mi-masi-ta-ka?
 DeNA-NOM won-COMP-ACC watch-POL-PAST-Q
 ‘Did you watch DeNA win?’
 Speaker B: *no-wa mi-masen-desi-ta.
 COMP-TOP see-POL.NEG-POL-PAST
 ‘Intended: I did not watch DeNA win.’ (Fujii 2016:14)
- (58) Speaker A: DeNA-ga katta-koto-o sittei-masu-ka?
 DeNA-NOM won-COMP-ACC know-POL-Q
 ‘Do you know that DeNA won?’
 Speaker B: *koto-wa siri-masen.
 COMP-TOP know-POL.NEG
 ‘Intended: I do not know that DeNA won.’ (Fujii 2016:14)

What property do the PSE-permitting particles have in common to the exclusion of the PSE-blocking particles? Is the property in question somehow related to the prosodic ability to bear pitch accent on its own, a necessary prosodic condition for PSE to obtain? (see also Vance (1993) for pertinent discussions on the status of Japanese particles).

We will return to some of these questions in our collaborative research in the near future.

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