Reanalysis of the Anti-Superiority Effect

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1. Introduction

In English multiple-wh questions, only one wh-item (WH) can undergo movement, and the other WH's must stay *in-situ*[1]. Also, Kuno and Robinson (1972) observed that there is even a restriction on which WH can undergo movement (1)[2].

(1) a. Why did Taro buy what?
     b. *What did Taro buy why?

It has been known that the ungrammaticality of (1b) is due to the violation of the Superiority Effect (SE) to the effect that WH is not allowed to move over another c-commanding WH (Chomsky 1995) unless the WH is the D-linked (Discourse-linked) phrase like which apple, which carries an implication that there exists a set of entities that can be determined from the context (Pesetky 1987). In other words, in (1b), the *what* that originates in the position where it is c-commanded by *why* cannot move to the position higher than *why*.

Japanese doesn't respect the SE, and wh-movement is quite flexible. And yet, when *naze* 'why' is used as one of the WH's in multiple-wh questions, the order of the two WH's must be such that *naze* follows the other WH as shown in (2). Notice that while sentence (2a) and (2b) correspond to (1a) and (1b), respectively, they have received the opposite grammaticality judgments; this is called the Anti-Superiority Effect (ASE)[3];

(2) a. *Taroo-wa   naze   nani-o   kat-ta   no?
          -Top   why   what-Acc   buy-Pst   Q
      '(lit.) why did Taroo buy what?'
    b. Taroo-wa   nani-o   naze   kat-ta   no?
          -Top   what-Acc why   buy-Pst   Q
      '(lit.) *what did Taroo buy why?'

There are two major analyses of the ASE; one proposed by Watanabe (1992), and the other by Saito (2004). However, since Watanabe's analysis relies on the ECP, which is not employed in minimalist framework any longer, I regard Saito's analysis as the representative analysis of ASE. In fact, Takita et al. (2007) recently adopted Saito's analysis, and extended it to the analysis of the comparison between Japanese and Chinese in terms of the presence of covert wh-movement.

Takita et al. explain that essentially, the ungrammaticality of (2a) is attributed to *naze* being unable to check an appropriate feature. First, he assumes covert movement in Japanese

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[1] Throughout the current paper, "multiple-wh question" refers to one that involves exactly two WH's, and not more.
[2] The glosses used in this paper are as follows: Nom = nominative Case, Acc = Accusative Case, Dat = dative Case, Top = topic marker, Pst = past tense, NonPst = non-past tense, Neg = negation, Q = Question particle, Stv = stative marker, Nmlz = nominalizer.
[3] Interestingly, when *naze* in (2a) is replaced by *nande* 'why' that is more often used in casual speech, the ASE is observed more conspicuously.

based on the existence of an island effect (3)[4].

(3) a. ?*John-wa [[Mary-ga   nani-o   kat-ta] kadooka] Tom-ni   tazune-ta no?
        -Top   -Nom what-Acc buy-Pst whether   -Dat ask-Pst   Q
       'What did John ask Tom whether Mary bought?'
    b. *Kimi-wa [sono hon-o   naze kat-ta]   hito]-o   sagasi-teir-u   no?
       you-Top that book-Acc why buy-Pst   person-Acc looking-for-Stv-NonPst Q
       'What is the reason x such that you are looking for [the person [who bought the book
        for reason x]]?'

(Takita et al., 2007)

Also, Takita et al. adopt *Attract Closest* and *tucking-in*, so the WH that is structurally higher undergoes movement first, and the subsequent WH moves to the inner specific position immediately following the firstly-moved WH. Based on these assumptions, Takita et al. suppose along the same lines with Saito that C^0 may have two features dubbed *P(eripheral)-feature* and *Q-feature*. These features are checked by WH's in this order, and a WH that has checked the Q-feature takes scope within the CP headed by the C^0, and thus became unable to participate in further movement operations. Considering that the WH with the Q-feature is able to take scope in the relevant CP, Takita et. al assume the Q-feature as the more prominent feature, stipulating that more prominent feature is checked later in Japanese.

Crucially, they then suppose that the Q-feature is divided into two subfeatures; *Q-primary* and *Q-secondary*. Since the more prominent Q-feature is checked later than the P-feature, they consider that the more prominent Q-primary is checked later than the Q-secondary as well. Finally, they suppose that a wh-adjunct *naze* 'why' must check Q-primary. With these assumptions in mind, let's look at the feature-checking in the ASE sentence (2a);

(4) a. [$_{CP}$ C$_{\{Q\text{-}P, \mathbf{Q\text{-}S}\}}$ [$_{TP}$ … naze … nani-o…]]

    b. [$_{CP}$ naze C$_{\{Q\text{-}P, \overline{Q\text{-}S}\}}$ [$_{TP}$ … naze … nani-o…]]

    c. [$_{CP}$ naze C$_{\{\mathbf{Q\text{-}P}, \overline{Q\text{-}S}\}}$ [$_{TP}$ … t$_{naze}$ … nani-o…]]

    d. [$_{CP}$ naze nani-o C$_{\{\overline{Q\text{-}P}, \overline{Q\text{-}S}\}}$ [$_{TP}$ … t$_{naze}$ … t$_{nani\text{-}o}$…]]
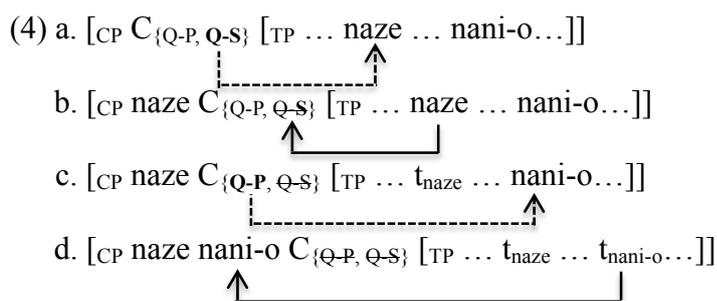
In (4a), Q-secondary first attracts *naze* in accordance with Attract Closest, and after *naze* has moved to Spec CP, the feature gets deleted, (4b). Then Q-primary attracts *nani-o*, (4c), and it gets tucked into the position as shown in (4d). Since both WH's checked Q-features, they can take matrix scope. Notice however that *naze* checked Q-secondary, and not Q-primary. Takita et al. claim it is for this reason that sentence (2a) is ill-formed. On the other hand, *naze* in (2b) moves after the movement of *nani-o*, and thus it can check Q-primary, following that its derivation converges without any problem. This is why Takita et al. consider the ASE as a

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[4] Takita et al. claim that sentence (i) is grammatical despite the presence of a relative clause island.

(i) Kimi-wa [[nani-o   kat-ta]   hito]-o   sagasi-teir-u   no?
    you-Top   what-Acc buy-Pst   person-Acc looking-for-Stv-NonPst Q
    'What is the thing x such that you are looking for [the person [who bought x]]?'

Takita et al. ascribe the grammaticality of (i) to Nishigauchi's (1986, 1990) *large-scale pied-piping* analysis. However, they don't explain why the same analysis wouldn't hold for (3b) and the sentence becomes grammatical, too.

purely syntactic problem caused by the inappropriate feature-checking of *naze*. Importantly, this analysis presupposes covert movement in Japanese. Therefore, he concludes that although Japanese and Chinese are both wh-in-situ languages, Japanese differs from Chinese in that the former has covert movement while the latter doesn't.

In this paper, however, I will propose an alternative analysis for the ASE. Also, I will cast doubt on his analysis, from which I conclude that the ASE is not a purely syntactic problem, and cannot be used as evidence for the existence of covert movement, either.

The organization of this paper is as follows. Section 2 first introduces a SE analysis distinct from the one above, and then shows my alternative analysis based on the SE analysis. In section 3, I will present some problems from which Takita et al.'s analysis suffers. Section 4 then turns to some implications from the fact to be revealed in section 2. Finally, section 5 will summarize the discussion.

2.   Alternative analysis of the ASE

In this section, we will first observe Bhattacharya and Simpson's (2012) analysis of the SE from the perspective of multiple-wh sluicing[5], and then move onto the discussion about the ASE where it is shown that their analysis is applicable to the ASE.

2.1. The SE and informational prominence

Contrary to a general idea that the SE is a derivational constraint as explained above, it has recently been pointed out by some syntacticians that the SE is indeed a representational constraint. Bhattacharya and Simpson are such syntacticians, arguing along the same lines with Aoun and Li (2003) that the SE is caused by the surface representation where the left-most WH doesn't have the largest informational prominence, especially in discourse configurational languages (DCL), which show the parallel relation between free-word-order permutation and the degree of the informational prominence of words. In the relevant part of their paper, they discuss multiple-wh sluicing in Bangla. Two WH's that are used in those sentences are the Bangla counterparts of *who* and *what*, the former of which has more informational prominence than the latter due to its being an animate agent as opposed to an inanimate bare patient. Essentially, their argument is that *what-who* order is usually not allowed, but should be permitted if quantified expressions corresponding to *what-who* in the antecedent sentence are ordered in parallel, and the CP containing the remnant WH's moves to the beginning of the second conjunct. The following is a relevant multiple-wh sluicing in Bangla[6].

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[5] It is generally considered that sluicing refers to an operation where TP deletes following overt wh-movement under identity with its antecedent TP, as in (i), and Bhattacharya and Simpson (2012) considers that the same analysis holds for sluicing in Bangla.

(i) I know that John bought something, but I don't know [$_{CP}$ what$_i$ [$_{TP}$ ~~he bought t$_i$~~]]
(strikethrough indicates deletion)

Multiple-wh sluicing differs from (i) only in terms of the number of WH's. Although multiple-wh sluicing is not preferred in English, if a conjunction/disjunction is inserted between two WH's, a similar sentence can derive, as in (ii).

(ii) I know that someone bought something, but I don't know [$_{CP}$ who$_i$ or what$_j$ [$_{TP}$ ~~t$_i$ bought t$_j$~~]]

[6] In fact, Bhattacharya and Simpson show that the SE repair shown in (5) is also applicable to German, which doesn't respect the SE in ordinary interrogative sentences but does in multiple-wh sluicing.

(5)   Mini-ke **kichu**   kal rate **keu**   diyeche,
        -Dat **something** last night **someone** give.has
      kintu [**ki   ke**]   ami jani   na.
      but   **what who** I   know not
      'Last night someone gave something to Mini, but I don't know who and what'
                                                          (Bhattacharya and Simpson, 2012)

Notice that despite the order of two WH's in the remnant position, i.e. *ki ke*, the sentence is grammatical. What is important to our discussion is that the movement of *ki ke* is essential for its order to be legitimate. Bhattacharya and Simpson attributed this SE repair to the WH sequence being able to be topicalized or focalized in the sentence-initial position. For the same reason, especially by focalization, sentence (6a) becomes well-formed in (6b).

(6) Mini-ke   kal rate   keu   kichu   diyeche,
      -Dat last night someone something give.has
    'Last night someone gave Mini something,'
            a. *kintu ami   jani   na [ke   ki]
               but   I   know   not   what who
               'but I don't know who and what.'
            b. kintu ami   **Sotti** jani   na [ke   ki]
               but   I   **really** know   not   what who
               'but I really don't know who and what.'
                                                          (Bhattacharya and Simpson, 2012)

In (6b), an emphatic adverbial, *Sotti* 'really,' precedes and focalizes the WH sequence, and thus the sentence is grammatical, while sentence (6a) without *Sotti* is ungrammatical.

     Apparently, it is unclear how the SE violation is ameliorated in (5) and (6b) if we assume the SE as a purely derivational constraint. Although fronting the multiple WH's in (5) seems to be derivational in nature, it should be emphasized again that the fronting itself is not enough, and the order of the quantified expressions in the first conjunct must be congruent with that of the WH's in the second conjunct as well. When it comes to (6), the difference between the ungrammatical and grammatical sentence is only the presence/absence of the lexical word *Sotti*. Therefore, Bhattacharya and Simpson 2012 are led to conclude that the SE is associated with the information-structure restriction on multiple WH's on the surface representation. This doesn't of course mean that the SE in other languages is also a representational constraint without a fail. Then, it is important to examine how their analysis can be generalized; in other words, when the SE is a derivational constraint and when it is a representational constraint. To this end, it seems worthwhile to inspect the SE in DCL. Also, it is intriguing to see whether their analysis can be employed to account for the ASE. In fact, Japanese is also a DCL (Kiss 1995) and respect the ASE, so in the following subsection, let us look at whether the ASE in Japanese is also a representational constraint and ASE repair is possible, i.e. the ASE violation can be repaired by some operations we have seen in this subsection.

2.2 The ASE and informational prominence

Section 2.1 exhibited that the SE in Bangla is not a derivational constraint but a representational constraint. In this section, I'll present that the ASE too should be considered

as a representational constraint, contra general analyses of the ASE[7]. First, it should be noted again that Japanese is also a DCL, so it is not implausible to consider that multiple WH's in Japanese sentences are also preferred to be aligned in descending order of the informational prominence. In fact, the order of the two WH's in (2a) is adjunct-argument; since it is considered that an argument is more significant element in a sentence, adjunct-argument order is not desired. Thus, I consider the ill-formedness of (2a) to also stem from the information-structure restriction. Then, what we should confirm is whether the ASE violation can be repaired by topicalization/focalization, just like the SE in Bangla. And yet, since the underlying structure of Japanese multiple-wh sluicing has not been revealed very well[8], let us look at non-sluicing sentences where *naze-nani-o* sequence is topicalized/focalized.

(7) a. **[naze nani-o]$_i$**   Taroo-wa   t$_i$ kat-ta   no?
        why what-Acc   -Top   buy-Pst   Q
        'why did Taroo buy what?'
   b. kimi-wa [Taroo-ga   kat-ta   no-ga   **[naze nani-o]**   ka] sit-teir-u ?
        you-Top   -Nom buy-Pst   Nmlz-Nom why what-Acc   Q   know-Stv-NonPst
        '(Intended) For which x and y, do you know it is x and y that Taroo bought?'
   c. Taroo-wa   **hontoo-wa** naze nani-o   kat-ta   no?
             -Top reality-Top why what-Acc buy-Pst Q
        'why did Taroo buy what in reality?'

In (7a), *naze nani-o* has undergone movement to the left-periphery where it is focalized, and the grammaticality is actually improved. Sentence (7b) is a cleft construction where *naze nani-o* is focalized, and again the sentence sounds more natural than (2a). In (7c), *naze nani-o* is lexically focalized by *hontoo-wa* 'reality-Top,' just like in (6b), and the grammaticality has improved even more, compared with (7a) and (7b). These results clearly show that the

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[7] Here, general analyses refer to the ones proposed by Watanabe and Saito, and it doesn't mean that there is no analysis that deals with the ASE as a non-syntactic phenomenon. For example, Yoshida (2014) considers that ASE is caused by *naze* 'why' being in the position in which only a D-linked WH is allowed to be. However, this analysis cannot capture the grammaticality of some sentences to be presented in this subsection, either.
[8] It is generally considered that the Japanese single-wh sluicing-like construction refers to the deletion of the presupposition part of the cleft construction, as in (i) (e.g. Kizu 1997;Kuwabawa 1997; Nishiyama, Whitman, and Yi 1996) (c.f. Hiraiwa and Ishihara 2002, 2012; Fukaya 2007, Nakamura 2012 etc).

(i) [Taroo-ga   nanika-o   kat-ta   no]-wa   sit-teir-u   ga,
        -Nom something-Acc buy-Pst Nmlz-wa know-Stv-NonPst   but
   boku-wa [$_{CP}$[$_{CP}$ ~~Taroo-ga   kat-ta   no]-ga~~   nani-o   ka] sira-nai
   I-Top   -Nom buy-Pst Nmlz-Nom what-Acc Q know-Neg
   'I know that Taroo bought something, but I don't know what.'

In multiple-wh sluicing-like sentences, we can get similar surface representations, as in (ii).

(ii) [dareka-ga   nanika-o   kat-ta   no]-wa   sit-teir-u   ga,
     someone-Nom something-Acc buy-Pst Nmlz-wa know-Stv-NonPst   but
   boku-wa [$_{CP}$(*[$_{CP}$ kat-ta   no]-ga)   dare-ga   nani-o   ka] sira-nai
   I-Top   buy-Pst Nmlz-Nom who-Nom what-Acc Q   know-Neg
   'I know that someone bought something, but I don't know who or what.'

However, as indicated by *, if *katta no-ga* is pronounced, the sentence is ungrammatical, while (i) is grammatical with/without the deletion of *Taroo-ga katta no-ga*. This is problematic because sluicing is an optional operation, so the sentence to which sluicing applies must be grammatical too. Also, although what appears in the focal position of clefting must be a constituent, it is unclear how *dare-ga nani-o* is forming a constituent unless one adopts Takano's (2002) "surprising constituent", which is refuted by Hiraiwa and Ishihara 2012).

occurrence of the ASE is also closely associated with the information-structure of the multiple WH's, and importantly, the grammaticality of the sentences in (7) is unaccountable by Takita et al.'s analysis. Therefore, I'm led to conclude that ASE is not a syntactic problem, either[9].

2.3 Peculiarity of '*naze*'

One interesting difference between the SE and the ASE is that the ASE is not merely a mirror image of the SE; that is, the Japanese counterparts of English multiple-wh questions that are not subject to the SE don't necessarily violate the ASE. Remember that the ASE is observed when the second WH in multiple-wh questions is *naze* 'why.' So one might wonder why *naze*, and not other wh-adjuncts, cause the ASE. In fact, considering the discussion we have made thus far, we can provide a plausible explanation for this fact; that is, *naze* has the least informational prominence of all WH's, and the illegitimate informational prominence order of WH's is the most remarkable when *naze* and another wh-argument are used. When we compare the informational prominence of *naze* and *nani-o* in section 2.1, it was concluded that the latter has more prominence due to an argument/adjunct difference. This is based on the fact that arguments are obligatory and essential elements for predicates while adjuncts are optional elements (e.g. Gawron 1988, Haegman 1991, Radford 1988). The more intimate relation between a predicate and its argument is also reflected by the stricter categorial/semantic selection between them. First, let us look at the following sentences.

(8) <u>argument</u>   <u>adjunct</u>
  a. I asked what the time was/the time.   e. I inquired what the time was this morning.
  b. I inquired what the time was/*the time.   f. I inquired what the time was because the
                   bus hadn't come yet.
  c. I eat an apple.   g. I eat an apple at home.
  d. *I eat a sofa.   h. I eat an apple every morning.
                  ((8a) and (8b) are from Rothstein 1992)

The sentences in (8a-b) show that DP can be a complement of both *ask(ed)* and *inquire(d)*, but *inquire(d)* cannot take an interrogative clause as its complement although a semantically equivalent verb *ask(ed)* can. On the other hand, the same type of categorial restriction is not observed between a predicate and an adjunct in (8e-f). The sentences in (8c-d) show a semantic selection in the way that *apple* can be a complement of a verb *eat* while *sofa* cannot. Again, what adjunct phrases are used is much less likely to affect the felicity of a sentence, as shown in (8g-h). These facts are consistent with the idea that arguments are more closely related to a verb that is the central part of predicates playing an important role in sentence interpretation, and thus are more important elements for verbs than adjuncts. In fact, this point is clearly reflected by their positions in a tree diagram; arguments are closer to verbs,. Interestingly, the difference in the intimacy with a predicate can be observed even among adjuncts such as *naze*, *itu* 'when' and *doko* 'where.' While *itu* and *doko* are not compatible with some types of predicates, *naze* has much fewer predicates with which it is incompatible.

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[9] In fact, sentences like (2) are acceptable to some native speakers, including me. This individual difference is also consistent if the ASE is not a syntactic problem, which is considered to trigger ungrammaticality almost invariantly.

(9) a. *itu/naze   swat-teir-u   no?
        when/why   sit-stv-NonPst   Q
        'When/why are you sitting?'
    b. *doko-de/doko-ni/naze   ir-u   no?
        where-at/where-at/why   exist-NonPst   Q
         'where are you?/Why are you here?'

The sentences in (9) show that *itu* and *doko-de* cannot be used in sentences where a relevant verb is a stative verb while whether a verb is stative or not has nothing to do with the availability of *naze*. Although in (9b) *doko-ni*, a form that can be used with a stative predicate, is available in (9b), since *doko* is always followed by a postposition (PP) like *de*/*ni* 'at,' *kara* 'from,' and so on, we can still say that *doko+PP* selects a type of predicate to adjoin to[10]. Hence, it seems that *naze* is less closely related to a predicate than *itu* and *doko*. In fact, it is known that *why* is located structurally higher than *where* or *when* in the underlying structure of an English interrogative sentence, so it is not implausible that *naze* is also located structurally higher than *itu* or *doko*[11]. Therefore, it could be considered that since *naze* is located structurally farthest from the verb, it has the least informational prominence. Also, the relation between the ASE and informational prominence is manifested by the fact that ASE is not observed when *dooyu riyu de* 'for what kind of reason' is used instead of *naze* in (2a), as shown below.

(10) Taroo-wa dooyu   riyu   de   nani-o   kat-ta   no?
        -Top what.kind.of   reason with   what-Acc   buy-Pst   Q
    'For what kind of reason did Taro buy what?'

As it is known that a D-linked WH can repair the SE, this D-linked WH, *dooyu riyu de*, has also repaired the ASE in (10). In effect, D-linked words refer to a set of entities whose candidates are limited to some degree by the context or discourse, and thus they are partially topicalized. Hence, the suppression of the ASE observed in (10) could be accounted for by the same reason that the sentences in (7) didn't elicit the ASE, i.e. topicalization.

In fact, *dooyu riyu de* is incompatible with some types of predicates, just like *itu* and *doko-de*.

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[10] Although sentence (i) without *-ni* 'to' is grammatical, it is considered that *-ni* has just dropped on the basis of the fact that we can always add a PP immediately after *doko*, as in (i). On the other hand, although *itu* 'when' can also be used with/without being followed by a PP as in (ii), this doesn't necessarily mean that a PP has dropped in every sentence where no PP follows *itu*, because no overt PP can be added in the position immediately after *itu* in sentences like (ii).

(i) doko(-ni)   ik-u   no?
    where-to   go-NonPst Q
    'Where will you go?'

(ii) itu(-*PP)   ik-u   no?
     when-PP   go-NonPst Q
    'When will you go?'

[11] Koizumi (1993) shows that while a clause headed by *-toki-ni* 'when' or *-toki* 'when' adjoins to VP and IP, respectively, a cause/reason *kara* clause and a circumference *kara* clause adjoins to IP and MP (Modal Phrase), respectively.

(11) *dooyu   riyu   de/   naze   bonyari   si-tei-ta   no?
     what.kind.of   reason with   why   absently   do-Stv-Pst Q
     "For what kind of reason/why were you spacing out?"

The use of the D-liked WH in (11) implies that there exist some reasons that are reasonable from the context that the listener was spacing out. But spacing out is something that people do for no particular reason. That is why the sentence sounds unnatural if the speaker uses *dooyu riyu de*. In light this, we can argue that *dooyu riyu de* has closer relation with a predicate than *naze* does, which is consistent with grammaticality of (10) as well.

At this point, I want to emphasize an uncertainty of Takita et al.'s assumption; that is why only *naze* is required to check the Q-primary, and not other adjunct-WH's. Remember that the ungrammaticality of (2a) is reduced to *naze* not checking the Q-primary. Therefore, it is unclear how they explain the grammaticality of sentences that involve "adjunct-WH + argument-WH" except "*naze* + argument-WH." It is possible that they adopt what we discussed in this subsection, saying that WH with the least informational prominence in a given language must check the Q-primary. But then it is unclear why this is the case. Also, my analysis presented in this subsection is consistent with ASE repair in (7) where *naze*'s informational prominence is recovered by preposing, clefting, or the addition of a lexical phrase. Hence, I am led to conclude that the ASE should be considered as a phenomenon related to informational prominence of WH's.

Importantly, the analysis provided in this section doesn't presuppose covert movement; the fact about the ASE violation, ASE repair, and the peculiarity of the ungrammaticality of sentences with a *naze* + WH sequence can all be explained only by taking account of the particularly low informational prominence of *naze*. Therefore, to the extent my analysis of the ASE is correct, the presence or absence of the ASE cannot be used as evidence for the existence of covert wh-movement in a language.

3. Scrutiny of the general analysis of the ASE

In section 2, we confirmed the validity of my analysis of the ASE, citing new kinds of sentences involving the ASE with grammaticality that goes against Takita et al.'s analysis. But we haven't analyzed his analysis *per se,* so in this section, we will briefly scrutinize his analysis on the presence of covert movement in Japanese.

Takita et al.'s analysis of the ASE presupposes covert movement in Japanese, and its existence is supported by the island effect violation observed in the sentences in (3), which are repeated below as (12)

(12) a. ?*John-wa [[Mary-ga   nani-o   kat-ta]   kadooka] Tom-ni   tazune-ta no?
          -Top   -Nom   what-Acc   buy-Pas whether   -Dat ask-Pst   Q
     'What did John ask Tom whether Mary bought?'
   b. *Kimi-wa [sono hon-o   naze kat-ta]   hito]-o   sagasi-teir-u   no?
     you-Top   that   book-Acc   why   buy-Pst person-Acc looking-for-Stv   Q
     'What is the reason x such that you are looking for [the person [who bought the book for reason x]]?'

But are these sentences indeed ungrammatical? In actuality, they sound grammatical to 6 native speakers of Japanese I've consulted[12]. Since the sentence sounds grammatical to me as

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[12] In fact, some sentences that are considered violating the island effect in literatures can improve its acceptability significantly if we guarantee the natural flow of discourse by adding appropriate adverbial modifications. See Harada (2013) for more explanations and relevant example sentences.

well, it is difficult to detect the reason why these are ungrammatical to Takita et al., but I assume that the relevant sentences might be presented to the listeners with an inappropriate prosody. For example, the sentences in (12) could sound unacceptable if WH is not emphasized at all. However, this is not a problem with sentences involving an island, but a prosodic problem in Japanese in general; that is, such utterances go against the generalization to the effect that all WH's must receive prosodic prominence (Hiraiwa and Ishiraha 2002).

However, even though the grammaticality judgment for (3) is that it is acceptable, it is unclear why it proves the existence of covert movement in Japanese: Takita et al. adopt the idea that subjacency doesn't hold in Logical Form, and also adopts tucking-in for his analysis. Therefore, subjacency must be irrelevant to the ungrammaticality of (3) under his analysis, and other syntactic rules like the ECP seem inadequate for that explanation either. Moreover, if Takita et al. adopt tucking-in, he should also explain why the extension condition can be neglected in his analysis. Therefore, his premise that Japanese has covert movement seems to require more evidence.

4. Implications

Before proceeding to the conclusion section, let me introduce two implications of the analysis that we have been discussing. First, at this point, one might wonder why we didn't have to separate topicalization from focalization when we discussed ASE repair; this is because it is believed that what is topicalized is old information while what is focalized is new information. From this comes the idea that what repairs the ASE is not topicalization or focalization themselves, but some byproduct of these syntactic operations. In fact, Bhattacharya and Simpson alluded that what is crucial about the preposing of a WH sequence is that the preposed WH's came to be pronounced with additional intensity and that slight pausing occurs between the two WH's. Therefore, it is plausible to assume that prosody is associated with the occurrence of the ASE, too. But since focus can also be marked by the change of pitch range in Japanese (Ishihara 2003), I'd like to leave for future research what prosodic information is most relevant to ASE repair; F0, intensity, duration of WH's or duration of the pause between two WH's. However, we can still say that this prosodic approach seems to be on the right track. For one thing, the prosody of a post-*naze* WH tends to be attenuated when native speakers of Japanese pronounce ASE sentences without a context given, which goes against Hiraiwa and Ishihara's (2002) report that WH's in multiple-wh questions are all focalized. For another thing, the grammaticality of multiple-wh questions can be degraded even without *naze* if the second WH is pronounced with less prosodic prominence (13).

(13) ??Taroo-wa   doko-de   nani-o   kat-ta   no?
        -wa   where-at   what-Acc   buy-Pst   Q
    'Where did Taro buy what?'

Therefore, it is possible that the ASE can be reduced to a prosodic change in the second WH, which violates the principle that all WH's in multiple-wh questions must receive prosodic prominence.

The other implication concerns the underlying structure of multiple-wh sluicing. Since this hasn't been clarified very well, we didn't use it to inspect whether ASE repair exists in Japanese in section 2.2. But now that we know Japanese too has ASE repair, let's look at multiple-wh sluicing with two WH's that are *naze* and *nani-o*.

(14) Taroo-ga   nazeka   nanika-o kat-ta   no-wa   sit-teir-u   ga,
        -Nom for some reason what-Acc buy-Pst Nmlz-Top know-Stv-NonPst   but
    boku-wa [naze nani-o   ka] sira-nai
    I-Top   why what-Acc Q know-Neg
    'I know that Taro bought something for some reason, but I don't know why or what.'

It turns out that sentence (14) is completely well-formed. Notice that unlike the Bangla example, *naze nani-o* 'why what-Acc' hasn't undergone movement to the left periphery. This indicates that *naze nani-o* is topicalized or focalized even in the canonical position. In light of this, we can predict that Japanese multiple-wh sluicing-like constructions have the same baseline structure of the Japanese single-wh sluicing-like construction. This is because as mentioned in footnote 7, the baseline structure of Japanese single-wh sluicing-like sentences is a cleft construction, and a remnant WH appears in the focal position. Of course, if one adopts this analysis, the problems pointed out in footnote 7 must be solved. But to the extent that my analysis of the ASE is correct, it is certain that WH's in the remnant position of multiple-wh sluicing-like constructions are topicalized or focalized in some way.

5. Conclusion

The present article examined what is generally considered a syntactic phenomenon called the Anti-Superiority Effect, and concluded, coupled with new types of data, that the ASE cannot be reduced to a syntactic constraint, but to an information-structure restriction on wh-items. To this end, we regarded as representative Takita et al.'s (2007) analysis that stems from Saito (2004), and showed that their feature-checking analysis falls short when accounting for the availability of the ASE repair and the reason why the ASE is peculiar to multiple-wh questions where the initial WH is *naze*, to both of which my analysis could provide plausible explanations along the same lines with Bhattacharya and Simpson (2012). Also, it was revealed that there exist some unclear points in Takita et al.'s argument. Therefore, all things taken into consideration, it seems correct that informational prominence is associated with the ASE. I also pointed out that the prosody of the second WH might be relevant. Therefore, future research on the ASE would require us to approach to this phenomenon from the perspective of syntax, semantics and phonetics.

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