Argument ellipsis as topic deletion*

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Abstract

In recent syntactic literature, argument ellipsis has become a productive perspective of investigation for null arguments in natural language. Focusing on Japanese as the primary object of study, this paper aims to deepen our understanding of the underlying syntactic mechanism behind the derivation of argument ellipsis. The main empirical observation is that argument ellipsis and topicalization exhibit a striking parallelism with respect to the way they interact with *wh*-dependencies. Building on this observation, I argue that argument ellipsis is an instance of topic deletion, which involves movement of arguments to Spec,TopicP and phonological deletion of the arguments under identity of the topic in discourse. I show that the topic-deletion account of argument ellipsis offers a principled explanation for a variety of restrictions that have been observed in the literature concerning what types of argument can or cannot undergo ellipsis. I also suggest that the proposed account enables a unified perspective on argument ellipsis and discourse *pro*-drop by analyzing them uniformly as instances of topic deletion, thereby shedding new light on the deep typological correlation that has been observed between them.

Keywords: Argument ellipsis, Topicalization, *Wh*-phrases, Discourse *pro*-drop, Japanese

1 Introduction

In recent syntactic literature, some cases of null argument observed across languages have been analyzed as a result of *argument ellipsis* (henceforth AE; Oku 1998; Saito 2007; Sakamoto 2018, 2020; D. Takahashi 2008; among others). The classical analysis of null arguments has been to assume the presence of a silent counterpart of an overt pronoun (e.g., Kuroda 1965). The classical analysis thus posits for Japanese (1) that

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the null object of the second sentence involves "*pro*", whose interpretation is analyzed in terms of pronominalization (i.e., identification of the referent with an antecedent).

(1) *John-wa* [*Bill-o*] *hometa. Mary-mo pro hometa.*
John-TOP Bill-ACC praised Mary-also praised
'John praised Bill. Mary praised (him), too.' (*him* = *Bill*)

Some occurrences of null argument, however, are known to induce *sloppy readings*, which are considered a hallmark of ellipsis rather than pronominalization (Bresnan 1971; Hankamer and Sag 1976; Sag 1976). Consider another Japanese example (2), where the antecedent sentence involves the reflexive pronoun "*zibun*" ('self'); the null object in (2b) can refer to *Mary's letter*, an entity distinct from its antecedent (i.e., John's letter). This construal is not obtained if the null argument is replaced by an overt pronoun (2c), in which case the sentence can only mean that John and Mary threw out one and the same letter. The AE analysis accounts for this sloppy reading by assuming that the object has undergone ellipsis, as illustrated in (3).[1]

(2) a. *John-wa* [*zibun-no tegami-o*] *suteta.*
John-TOP self-GEN letter-ACC threw.out
'John$_1$ threw out his$_1$ letter.'
b. *Mary-mo* ___ *suteta.*
Mary-also threw.out
'Mary$_2$ also threw out (her$_2$ letter).'
c. *Mary-mo sore-o suteta.*
Mary-also it-ACC threw.out
'Mary$_2$ also threw it out.' (*it* = *John's letter*)

(3) Mary-also ~~[self-GEN letter]~~ threw.out

The AE analysis has also been extended to *quantificational phrases* (QPs; D. Takahashi 2008). In (4), the elliptical sentence can mean that Mary respects most teachers, and crucially John and Mary may respect different subsets of teachers. This construal, again, is not obtained if the null argument is replaced by an overt pronoun (4c), in which case the sentence can only mean that they respect exactly the same teachers. The AE analysis assumes that ellipsis applies to the object in (4b), as shown in (5).

(4) a. *John-wa* [*hotondo-no sensee-o*] *sonkeesiteiru.*
John-TOP most-GEN teacher-ACC respect
'John respects most teachers.'

[1] Hoji (1998) argues that what looks like a sloppy reading in (2b) is due to the availability of indefinite readings of *pro* in Japanese (see also Tomioka 2003, 2014). Hoji suggests that the object in (2b) is occupied by a *pro* that is construed as an indefinite pronoun, so that the sentence is interpreted as "Mary, too, threw one (letter) out"; the object then could happen to refer to Mary's letter, due to the interpretational leeway of existential quantification (the validity of assuming sloppy readings as evidence for the presence of ellipsis has also been questioned in recent literature; see, e.g., Merchant 2013). However, as subsequent works have pointed out (Saito 2007; Sakamoto 2018, 2020; among others), the approach solely relying on indefinite *pro* to derive sloppy readings faces difficulties in explaining null arguments appearing in the scope of *negation*, which I will discuss in more detail in Section 2. For another non-ellipsis approach to null arguments, see Kurafuji 2019, which claims that the use of choice function can derive a variety of interpretations of null arguments without assuming ellipsis.

b. *Mary-mo* ___ *sonkeesiteiru.*
Mary-also respect
'Mary respects (most teachers), too.'

c. *Mary-mo karera-o sonkeesiteiru.*
Mary-also they-ACC respect
'Mary respects them, too.' (*them* = *the teachers John respect*)

(5) Mary-also ~~[most-GEN teacher]~~ respect

The literature has demonstrated that the AE analysis has many advantages over the V-stranding VP-ellipsis analysis (Huang 1988, 1991; Otani and Whitman 1991), on which sentences like (2b) and (4b) are analyzed as involving VP ellipsis preceded by V-movement out of the VP. The AE analysis has been shown to fare better than the V-stranding VP-ellipsis analysis with respect to the sloppy reading in the subject position (Oku 1998), the unavailability of manner adverb interpretation in the elided site (Oku 1998), the elidability of immobile elements (Kim 1999; Sakamoto 2020), the anti-reconstruction effect (Sakamoto 2020), and so on.[2] Furthermore, although this paper will focus on ellipsis of NPs, the literature has extended the AE analysis to null CP arguments (Saito 2007; Sakamoto 2018, 2020; Shinohara 2006), which has brought results that further support the validity of the AE analysis (see Sakamoto 2018, 2020). See Sakamoto 2020 for a comprehensive overview of the recent development.

The aim of this paper is to deepen our understanding of the underlying syntactic mechanism behind the derivation of AE. While previous literature has concentrated on explicating the independence of AE against *pro* and arguing for the advantages of the AE analysis over other analyses of null arguments, less attention has been paid to the issues concerning the licensing environment of AE and the syntactic behavior of elided arguments themselves (but see Abe 2009; Fujiwara 2020, 2022; Sakamoto 2016 for recent work). This paper aims to shed light on these relatively understudied issues by using Japanese as the main focus of investigation.

The main empirical claim of this paper is that the availability of AE in Japanese is crucially constrained by its structural relation with *wh*-phrases. In Section 2, I present what I call the *Wh-Scope Generalization* for AE, which states that AE is blocked if the ellipsis site is c-commanded by a *wh*-phrase at LF. Combined with the recent observations by Fujiwara (2020, 2022), which indicate that AE is subject to the same locality constraint as applied to movement, this generalization leads to the prediction that AE induces some form of syntactic dependency for which *wh*-phrases act as interveners. In Section 3, I demonstrate that this prediction is borne out by a striking parallelism with *topicalization*, which is shown to exhibit the same behavior as AE with respect to its interaction with *wh*-phrases. Building on this parallelism, I argue that AE is an instance of *topic deletion*, wherein arguments move to Spec,TopicP and undergo phonological deletion under the identity of the topic in discourse.[3]

[2] See the works listed here for concrete data and discussion. See also Funakoshi 2016 for a recent defense of the V-stranding VP-ellipsis account. Note that the works cited above that argue for the AE analysis do not necessarily rule out the existence of V-stranding VP ellipsis in Japanese; what they show is that even if V-stranding VP ellipsis exists, AE is needed to account for the full range of facts.

[3] The idea that various types of ellipsis involve movement, in particular topicalization, as part of their derivation has been advocated by several authors (e.g., Funakoshi 2012, 2014; Johnson 2001; Maeda 2018;

My proposal has a variety of implications. For instance, it offers a straightforward account of what kinds of argument AE can apply to. While the literature has noted various restrictions concerning what types of argument can or cannot undergo ellipsis, there has not been an account that explains them from a unified perspective. The topic-deletion account offers a principled explanation for these restrictions: what cannot be topicalized cannot undergo AE. In Section 4, I present four restrictions observed in the literature, and show that they all involve untopicalizable items.

As another implication, my proposal underscores a tangible link between AE and discourse *pro*-drop, the latter of which has traditionally been analyzed as an instance of topic deletion (Huang 1984; Tsao 1977; among others). The topic-deletion account of AE thus offers a unified view on the two phenomena: AE and discourse *pro*-drop are different realizations of the same phenomenon, namely, topic deletion. In Section 5, I argue that such unification is supported by the deep typological overlap between AE languages and discourse *pro*-drop languages (Saito 2007; Sakamoto 2020).

I conclude in Section 6 with conjectures about how my proposal will be extended to ellipsis of CP complements and to languages other than Japanese. I also provide additional discussion of the empirical and theoretical claims of this paper in Appendices A-C. Appendix A provides further clarification of my topicalization data. Appendix B provides some notes on the recent account of AE by Landau (2023a, 2023b). Appendix C provides a case against the possibility of assuming base-generation of elided items at Spec,TopicP, from the perspective of the *de re*/*de dicto* ambiguity.

Some remarks on data are in order. Data from Section 2 to 4 constitute the main empirical contribution of this paper. Each piece of data in these sections is accompanied by the distribution of judgments collected from five Japanese native speakers, including myself ("ok" = acceptable, "?" = slightly off, "??" = significantly degraded, "*" = extremely degraded; the speakers are all linguists). For the four speakers other than myself, judgments were collected through informal elicitation. I consulted each speaker separately in person. For each example, they were told the target interpretation of that example and asked how acceptable it is. Notable speaker variation about some of these examples is mainly discussed in Appendix A.

2 The *Wh*-Scope Generalization for AE

In this section, I establish the following generalization for Japanese AE:

(6) **The *Wh*-Scope Generalization for Japanese AE:**
AE is blocked if the ellipsis site is c-commanded by a *wh*-phrase at LF.

To illustrate this, I introduce the following theoretical/strategic assumptions:

(i) Given the canonical word order of Japanese, which aligns subjects, indirect objects (IOs) and direct objects (DOs) in this order, I assume that subjects asymmetrically c-command IOs and DOs, and IOs asymmetrically c-command DOs (see Hoji 1985; Takano 1998). I will consider the c-commanding relation

see also Aelbrecht and Haegeman 2012 for some criticisms), though applying a topicalization analysis to AE has not been done before.

between a *wh*-phrase and the ellipsis site based on this structural hierarchy, exploiting the fact that Japanese is a *wh*-in-situ language.[4]

(ii) Throughout, I will apply ellipsis to IOs. This choice makes the presentation more efficient: to see the structural impact on ellipsis, one only has to locate a *wh*-phrase in the subject or the DO. The use of IOs, or more precisely the use of *dative* arguments, will also have an impact on the argumentation in Section 3. I emphasize that the generalization does not hinge on this particular choice of ellipsis site; this is done only for expository purposes.

(iii) I will look into sloppy readings triggered by binding of the reflexive pronoun "*zibun*" ('self'). Note that my focus is on what environments make sloppy readings *un*available: the absence of sloppy readings indicates that the syntactic environment in question involves a certain characteristic which is not involved in those that allow sloppy readings.

(iv) Negation is included in all elliptical sentences.[5] This is intended to exclude the possibility of indefinite readings for null arguments, which were argued to be brought by indefinite *pro* in Hoji 1998. I will elaborate further on this below.

2.1 Data

2.1.1 Simplex structure (i): LF-c-commanding *wh*

I start with simplex structures. As a baseline, consider a case with no *wh*-phrase.

(7) a. *John*$_1$*-wa* [*zibun*$_1$*-no sensee-ni*] *kansyazyoo-o okut-ta.*
John-TOP self-GEN teacher-DAT letter.of.thanks-ACC send-PAST
'John$_1$ sent his$_1$ teacher a letter of thanks.'

b. *Hantaini, Mary-wa* ___ *kansyazyoo-o okur-ana-katta. (Hoka-no*
conversely Mary-TOP letter.of.thanks-ACC send-NEG-PAST other-GEN
sensee-tati-ni-wa okut-tei-ta noni).
teacher-PL-DAT-TOP send-ASP-PAST though
'Conversely, Mary$_2$ didn't send (her$_2$ teacher) a letter of thanks (even though she sent letters of thanks to other teachers).' (ok: 5/5)

As noted above, negation in the elliptical sentence helps preclude the possibility of indefinite *pro* apparently accounting for sloppy readings in null positions (see also footnote 1). The key here is the (un)availability of sloppy readings *in the context* in which Mary sent letters of thanks to some other teachers. Indefinite *pro* is incompatible with such contexts: if an indefinite *pro* figured in the null position, (7b) would imply that Mary did not send a letter of thanks to *anyone*. However, as confirmed by Japanese speakers, sloppy readings are available in such contexts, as suggested by the felicity of the follow-up in (7b).[6] The availability of sloppy readings in a relevant context is compatible with the AE analysis, thus evidence for ellipsis in (7b).

[4] Following the standard assumption in the recent Minimalist framework, I assume that in-situ *wh*-phrases do not move in LF but are intepreted in situ (see, e.g., Cable 2007, 2010; Hagstrom 1998; Reinhart 1998).

[5] I thank an anonymous reviewer for suggesting the use of negation.

[6] Notice that the DO is unelided in (7b). Oku (2016) suggested that, at least for ellipsis of adjuncts (e.g., instrumental or locative phrases), applying ellipsis leaving potentially deletable arguments unelided makes

For simplicity, I call the contexts at stake here *existential contexts*. The assumption is that if sloppy readings are available in existential contexts, that indicates the presence of ellipsis; if they are not, that indicates the absence of ellipsis.

Now, in (8), the elided IO is c-commanded by the subject *wh*-phrase. The context ensures that the culprits who did not send letters of thanks to their own teachers (i.e., the answer to the *wh*-question (8b)) did send ones to some others, thus an existential context. Crucially, the five Japanese speakers all found the target sloppy reading as shown in the translation of (8b) very difficult, in contrast to (7b). Notice that (8b) has a reading on which one asks who did not send a letter to *anyone* (i.e., an indefinite *pro* reading), which, however, is excluded by the context.[7]

(8) **Context**: It is common ground that everyone sent a letter of thanks to at least one teacher.

a. ***Dare***$_1$*-ga* [*zibun*$_1$*-no sensee-ni*] *kansyazyoo-o okut-ta no?*
who-NOM self-GEN teacher-DAT letter.of.thanks-ACC send-PAST Q
'Who$_1$ sent his$_1$ teacher a letter of thanks?'

b. *Hantaini,* ***dare****-ga* ___ *kansyazyoo-o okur-ana-katta no?*
conversely who-NOM letter.of.thanks-ACC send-NEG-PAST Q
'Conversely, who$_2$ didn't send (his$_2$ teacher) a letter of thanks?' (??: 1/5, *: 4/5)

The difficulty of sloppy readings here indicates that AE is absent in (8b), suggesting that the presence of a higher *wh*-phrase affects the availability of AE.

2.1.2 Simplex structure (ii): No LF-c-commanding *wh*

(9) involves a *wh*-phrase in the DO, with no *wh*-phrase c-commanding the ellipsis site in the IO. The context ensures that the things that Mary did not give her child (i.e., the answer to the *wh*-question (9b)) were given by her to some other children. The Japanese speakers found the target sloppy reading readily available here.

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sloppy readings difficult. As Oku observed, in (i) (= Oku 2016, 6), when the object is left unelided (= (ib)), sloppy readings for the elided instrumental phrase are difficult.

(i) a. *Ziroo*$_1$*-wa* [*zibun*$_1$*-no burasi-de*] *sono kuruma-o arat-ta ga,*
Ziroo-TOP self-GEN brush-with that car-ACC wash-PAST but
'Ziroo$_1$ washed that car with his$_1$ brush, but ...'

b. *Taroo-wa* ___ *sono kuruma-o araw-ana-katta.*
Taroo-TOP that car-ACC wash-NEG-PAST
Not available: 'Taroo$_2$ did not wash that car with his$_2$ brush.'

b' *Taroo-wa* ___ ___ *araw-ana-katta.*
Taroo-TOP wash-NEG-PAST
Available: 'Taroo$_2$ did not wash that car with his$_2$ brush.'

For my data, the effect of remnant DOs on acceptability was much milder, at least as far as my consultants are concerned. This may be because my data involve ellipsis of arguments (i.e., IOs) rather than adjuncts, pointing to a potential argument-adjunct asymmetry as to how offending remnant arguments would be.

[7] I thank an anonymous reviewer for offering this particular example (the reviewer likewise found sloppy readings very difficult here). I note that strict readings (e.g., there is one and only one individual to whom everyone gave a letter) are also available here, but they are not relevant. I ignore the possibility of strict readings throughout.

(9) **Context**: There are some things that John gave to all children except his own. Likewise, there are some things that Mary gave to all children except her own.

a. *John$_1$-wa* [*zibun$_1$-no kodomo-ni*] ***nani***-*o* *age-na-katta* *no?*
John-TOP self-GEN child-DAT what-ACC give-NEG-PAST Q
'What did John$_1$ not give his$_1$ child?'

b. *Ato, Mary-wa* ___ ***nani***-*o* *age-na-katta* *no?*
and Mary-TOP what-ACC give-NEG-PAST Q
'And what did Mary$_2$ not give (her$_2$ child)?' (ok: 5/5)

Compare this with the *wh*-less counterpart in (10): just as in (9), the target sloppy reading is readily available. Thus, the presence of a *wh*-phrase not c-commanding the ellipsis site has no impact on the availability of sloppy readings, thus confirming the generalization in (6).

(10) **Context**: John's child is allergic to chocolate and Mary's is allergic to peanuts. At the Halloween party, John and Mary gave each child various snacks including chocolate and peanuts, but they were careful not to feed their respective children the food they are allergic to.

a. *John$_1$-wa* [*zibun$_1$-no kodomo-ni*] *choko-o* *age-na-katta.*
John-TOP self-GEN child-DAT chocolate-ACC give-NEG-PAST
'John$_1$ did not give his$_1$ child chocolate.'

b. *Mary-wa* ___ *piinattu-o* *age-na-katta.*
Mary-TOP peanut-ACC give-NEG-PAST
'Mary$_2$ did not give (her$_2$ child) peanuts.' (ok: 5/5)

2.1.3 Complex structure (i): LF-c-commanding *wh* in the matrix clause

In (11), the ellipsis site is in the embedded IO and is c-commanded by the *wh*-phrase in the matrix subject. The context ensures that the fathers who think that Alex did not show affection to their respective daughters (i.e., the answer to the *wh*-question (11b)) all know that Alex showed affection to some other girls. The Japanese speakers found the target sloppy reading very difficult here.[8]

(11) **Context**: Little girls were playing with a dog named Alex and fathers were watching the scene. Every farther knows that Alex was unfriendly and showed affection to just a few of the girls.

a. ***Dare***$_1$*-ga* [*Alex-ga* [*zibun$_1$-no musume-ni*] *kooi-o* *simesi-ta* *to*] *omotteiru no?*
who-NOM Alex-NOM self-GEN daughter-DAT affection-ACC show-PAST C think Q
'Who$_1$ thinks that Alex showed affection to his$_1$ daughter?'

[8] Like above, indefinite *pro* readings (i.e., the speaker is asking who thinks that the dog did not show affection to *anyone*) are available, but they are incompatible with the context.

b. *Hantaini,* ***dare****-ga* [*Alex-ga* ___ *kooi-o* *simes-ana-katta* *to*]
conversely who-NOM Alex-NOM affection-ACC show-NEG-PAST C
omotteiru no?
think Q
'Conversely, who$_2$ thinks that Alex didn't show affection (to his$_2$ daughter)?' (?: 1/5, ??: 2/5, *: 2/5)

Compare this with its *wh*-less counterpart in (12). All the speakers found the sloppy reading here much easier than that for (11b), confirming the generalization in (6).

(12) (The same context as in (11))
a. *Taroo$_1$-wa* [*Alex-ga* [*zibun$_1$-no musume-ni*] *kooi-o* *simesi-ta*
Taroo-TOP Alex-NOM self-GEN daughter-DAT affection-ACC show-PAST
to] *omotteiru.*
C think
'Taroo$_1$ thinks that Alex showed affection to his$_1$ daughter.'
b. *Hantaini, Ziroo-wa* [*Alex-ga* ___ *kooi-o* *simes-ana-katta* *to*]
conversely Ziroo-TOP Alex-NOM affection-ACC show-NEG-PAST C
omotteiru.
think
'Conversely, Ziroo$_2$ thinks Alex didn't show affection (to his$_2$ daughter).' (ok: 3/5, ?: 2/5)

2.1.4 Complex structure (ii): LF-c-commanding *wh* in the embedded clause

In (13), the ellipsis site is in the embedded IO and is c-commanded by the *wh*-phrase in the embedded subject. The context ensures that Mary knows that the culprits who did not submit a questionnaire to her subordinate (i.e., the answer to the embedded *wh*-question in (13b)) did submit questionnaires to John's subordinate. All the Japanese speakers found the target sloppy reading extremely difficult here.[9]

(13) **Context**: There were several questionnaires that everyone in the company had to submit, some going to John's subordinate and others to Mary's. John knows that some individuals submitted a questionnaire to Mary's subordinate but did not submit one to his, and he is curious about who they are. Likewise, Mary knows that some individuals submitted a questionnaire to John's subordinate but did not submit one to hers, and she is curious about who they are. They both know that everyone submitted at least one questionnaire.
a. *John$_1$-wa* [***dare****-ga* [*zibun$_1$-no* *buka-ni*] *ankeeto-o*
John-TOP who-NOM self-GEN subordinate-DAT questionnaire-ACC
teesyutusi-na-katta ka] *kyoomigaaru.*
submit-NEG-PAST Q is.curious

[9] Here, too, indefinite *pro* readings (i.e., Mary is curious to know who did not submit a questionnaire to *anyone*) are available, but incompatible with the context.

'John$_1$ is curious to know who did not submit a questionnaire to his$_1$ subordinate.'

b. *Mary-mo* [***dare*-ga** ___ *ankeeto-o* *teesyutusi-na-katta* *ka*]
Mary-also who-NOM questionnaire-ACC submit-NEG-PAST Q
kyoomigaaru.
is.curious
'Mary$_2$, too, is curious to know who did not submit a questionnaire (to her$_2$ subordinate).' (*: 5/5)

In its *wh*-less counterpart in (14), the context ensures that Mary thinks that Taroo submitted at least one questionnaire. All the speakers found a contrast with (13).

(14) **Context**: John thinks that Taroo did not submit a questionnaire to his subordinate while submitting some other questionnaires; so does Mary.

a. *John$_1$-wa* [*Taroo-ga* [*zibun$_1$-no* *buka-ni*] *ankeeto-o*
John-TOP Taroo-NOM self-GEN subordinate-DAT questionnaire-ACC
teesyutusi-na-katta to] *omotteiru.*
submit-NEG-PAST C think
'John$_1$ thinks that Taroo did not submit a questionnaire to his$_1$ subordinate.'

b. *Mary-mo* [*Taroo-ga* ___ *ankeeto-o* *teesyutusi-na-katta* *to*]
Mary-also Taroo-NOM questionnaire-ACC submit-NEG-PAST C
omotteiru.
think
'Mary$_2$, too, thinks that Taroo did not submit a questionnaire (to her$_2$ subordinate).' (ok: 3/5, ?: 1/5, ??: 1/5)

2.1.5 Complex structure (iii): No LF-c-commanding *wh* in the matrix/embedded clause

(15) involves a *wh*-phrase in the embedded DO, with no *wh*-phrase c-commanding the ellipsis site in the embedded IO. The context ensures that Ziroo knows that there are students to whom John recommended the companies he did not recommend to Ziroo's students. The Japanese speakers found the target sloppy reading here much easier than that for (13) above.

(15) **Context**: Taroo and Ziroo are engineering professors. During the job-hunting season, their students consult John, the job advisor at the university. Taroo knows that there are companies that John recommended to some students but not to Taroo's, and he is curious about what those companies are. Likewise, Ziroo knows that there are companies that John recommended to some students but not to Ziroo's, and he is curious about what those companies are.

a. *Taroo$_1$-wa* [*John-ga* [*zibun$_1$-no* *gakusee-ni*] ***doko*-o**
Taroo-TOP John-NOM self-GEN student-DAT what.place-ACC
susume-na-katta *ka*] *kyoomigaaru.*
recommend-NEG-PAST Q is.curious

'Taroo$_1$ is curious to know which companies John did not recommend to his$_1$ students.'

b. *Ziroo-mo* [*John-ga* ___ ***doko**-o* *susume-na-katta* *ka*]
Ziroo-also John-NOM what.place-ACC recommend-NEG-PAST Q
kyoomigaaru.
is.curious
'Ziroo$_2$, too, is curious to know which companies John did not recommend (to his$_2$ students).' (ok: 3/5, ?: 1/5, ??: 1/5)

Compare this with its *wh*-less counterpart in (16). The context ensures that Ziroo thinks John recommended Microsoft to some students. All the speakers found the sloppy reading for (16b) as easy as that for (15b).

(16) **Context**: Taroo believes that John did not recommend Microsoft to his student while recommending it to some other students; so does Ziroo.

a. *Taroo$_1$-wa* [*John-ga* [*zibun$_1$-no* *gakusee-ni*] *Microsoft-o*
Taroo-TOP John-NOM self-GEN student-DAT Microsoft-ACC
susume-na-katta *to*] *omotteiru.*
recommend-NEG-PAST C think
'Taroo$_1$ thinks that John did not recommend Microsoft to his$_1$ students.'

b. *Ziroo-mo* [*John-ga* ___ *Microsoft-o* *susume-na-katta* *to*]
Ziroo-also John-NOM Microsoft-ACC recommend-NEG-PAST C
omotteiru.
think
'Ziroo$_2$, too, thinks that John did not recommend Microsoft (to his$_2$ students).' (ok: 3/5, ?: 1/5, ??: 1/5)

2.1.6 Complex structures (iv): Long-distance scrambling

The generalization in (6) states that what matters is the LF position of the *wh*-phrase. I demonstrate this with cases involving long-distance scrambling of *wh*-phrases.

Consider (17). In (17b), the *wh*-phrase originating in the embedded DO undergoes long-distance scrambling to the sentence-initial position. Despite this surface position, this *wh*-phrase is interpreted *in situ*, leading (17b) to have the same meaning as (17a).

(17) a. *Taroo$_1$-wa* [*John-ga* [*zibun$_1$-no* *gakusee-ni*] ***doko**-o*
Taroo-TOP John-NOM self-GEN student-DAT what.place-ACC
susume-na-katta *ka*] *kyoomigaaru.*
recommend-NEG-PAST Q is.curious
'Taroo$_1$ is curious to know which companies John did not recommend to his$_1$ student.'

b. [***Doko**-o*]$_3$, *Taroo$_1$-wa,* [*John-ga* [*zibun$_1$-no* *gakusee-ni*] t_3
what.place-ACC Taroo-TOP John-NOM self-GEN student-DAT
susume-na-katta *ka*] *kyoomigaaru.*
recommend-NEG-PAST Q is.curious

'Taroo$_1$ is curious to know which companies John did not recommend to his$_1$ student.'

Japanese long-distance scrambling is known to involve *radical reconstruction* (Bošković and Takahashi 1998; Saito 1989, 1992), meaning that the moved element obligatorily reconstructs into its base-position at LF. Thus, the *wh*-phrase in (17b) is assumed to reconstruct into the embedded DO and ultimately fall within the scope of the embedded interrogative C at LF.

Turning to AE, (18b) involves a *wh*-phrase that undergoes long-distance scrambling: the *wh*-phrase c-commands the ellipsis site on the surface but not at LF, given radical reconstruction. Crucially, in the same context as in (15), the Japanese speakers found the target sloppy reading available in (18b), thus confirming that what matters is indeed the LF position of the *wh*-phrase.

(18) (The same context as in (15))

a. [***Doko***-*o*]$_3$, *Taroo*$_1$*-wa, [John-ga [zibun*$_1$*-no gakusee-ni] t_3 *susume-na-katta ka] kyoomigaaru.*
what.place-ACC Taroo-TOP John-NOM self-GEN student-DAT recommend-NEG-PAST Q is.curious
'Taroo$_1$ is curious to know which companies John did not recommend to his$_1$ student.'

b. [***Doko***-*o*]$_4$, *Ziroo-mo, [John-ga* ___ t_4 *susume-na-katta ka] kyoomigaaru.*
what.place-ACC Ziroo-also John-NOM recommend-NEG-PAST Q is.curious
'Ziroo$_2$, too, is curious to know which companies John did not recommend (to his$_2$ student).' (ok: 2/5, ?: 3/5)

2.1.7 Summary

The (un)acceptability of the data shown here is summarized in Table 1. Each symbol refers to the representative judgment in each case. They all confirm the generalization in (6): AE is blocked if the ellipsis site is c-commanded by a *wh*-phrase at LF.[10]

[10] An anonymous reviewer drew my attention to the so-called "low" and "high" readings of adjunct *wh*-phrases. For instance, the English sentence, "*Why did John think his advisor was fired?*", is ambiguous: on the low reading, it concerns what John had in mind about the cause of his advisor's dismissal (e.g., John thought his advisor committed an academic misconduct), whereas on the high reading, it pertains to what caused John to entertain such a thought (e.g., he heard a rumor about it). Leaving a detailed investigation for future research, I offer a preliminary observation. I used (i) as a test case, with the embedded subject undergoing AE (I did not include negation in order to avoid complicating the examples). I excluded one speaker who did not obtain the high reading of (ia). When (ia) was intended to have a low reading, all four speakers confirmed that (ib) has a sloppy low reading. However, when (ia) was intended to have a high reading, three speakers found sloppy high readings difficult.

(i) a. *John*$_1$*-wa [zibun*$_1$*-no sensee-ga]* ***naze*** *kaikosareta to omotta no?*
John-TOP self-GEN advisor-NOM why was.fired C thought Q
'Why did John$_1$ think his$_1$ advisor was fired?'

b. *Ato, Mary*$_1$*-wa* ___ ***naze*** *kaikosareta to omotta no?*
and Mary-TOP why was.fired C thought Q
'And why did Mary$_2$ think (her$_2$ advisor) was fired?' (Low: ok: 4/4; High: ok: 1/4, ??: 2/4, *: 1/4)

(8) Simplex (i)	[***wh***$_1$ [... ~~[... SELF$_1$ ...]~~ ...] ...] Q	*
(9) Simplex (ii)	[NP$_1$ ... ~~[... SELF$_1$ ...]~~ ... [... ***wh*** ...] ...] Q	ok
(11) Complex (i)	[***wh***$_1$ [CP ... ~~[... SELF$_1$ ...]~~ ...] ...] Q	??/*
(13) Complex (ii)	[NP$_1$ [CP ... ***wh*** [... ~~[... SELF$_1$ ...]~~ ...] ... Q] ...]	*
(15) Complex (iii)	[NP$_1$ [CP ... ~~[... SELF$_1$ ...]~~ [... ***wh*** ...] ... Q] ...]	ok
(18) Complex (iv)	[***wh***$_3$ ... [NP$_1$ [CP ... ~~[... SELF$_1$ ...]~~ [... t_3 ...] Q] ...] ...]	?

Table 1 Summary of the (un)acceptability for AE data.

Note in passing that the validity of the generalization does not hinge on particular argument positions. For instance, if there is a *wh*-phrase in the IO, AE is blocked in the DO position of the same clause. To illustrate a case with no *wh*-phrase first, the Japanese speakers found the target sloppy reading for (19b) readily available.

(19) **Context**: John and Mary both recommended several companies to Taroo, but somehow they did not recommend the companies they respectively work for.

a. *John$_1$-wa Taroo-ni [zibun$_1$-no kaisya-o] (syuusyokusaki-tosite)*
John-TOP Taroo-DAT self-GEN company-ACC place.of.employment-as
susume-na-katta.
recommend-NEG-PAST
'John$_1$ did not recommend his$_1$ company to Taroo (as a place of employment).'

b. *Mary-mo Taroo-ni* ___ *susume-na-katta.*
Mary-also Taroo-DAT recommend-NEG-PAST Q
'Mary, too, did not recommend (her$_2$ company) to Taroo.' (ok: 5/5)

Unlike (19), (20) involves a *wh*-phrase in the IO. The context ensures that Mary did recommend some companies to those people to whom she did not recommend her own company. Four out of five speakers found the target sloppy reading here difficult, suggesting that an IO *wh*-phrase does block AE in the DO.[11]

(20) **Context**: John and Mary respectively recommended several companies to each person, but there are people to whom John did not recommend his own company; likewise for Mary.

a. *John$_1$-wa* ***dare*****-ni** *[zibun$_1$-no kaisya-o] (syuusyokusaki-tosite)*
John-TOP who-DAT self-GEN company-ACC place.of.employment-as
susume-na-katta no?
recommend-NEG-PAST Q
'To whom did John$_1$ not recommend his$_1$ company (as a place of employment)?'

Given that, on the high reading, *naze* is located in the matrix clause in LF, the difficulty of sloppy readings in the embedded subject in this case falls out from the *Wh*-Scope Generalization. For the low reading, given the *Wh*-Scope Generalization, the availability of sloppy readings suggests that *naze* does not c-command the ellipsis site at LF. This, of course, has to be discussed carefully in connection to the syntax of *naze* itself, which is still controversial (e.g., Ko 2005 argues that *naze* originates in the CP domain, whereas Miyagawa 2017 argues that it can originate in the VP domain). I leave further investigation for another occasion.

[11] An anonymous reviewer likewise found the sloppy reading difficult here.

b. *Ato, Mary-wa* ***dare****-ni* ___ *susume-na-katta no?*
and Mary-TOP who-DAT recommend-NEG-PAST Q
'And to whom did Mary$_2$ not recommend (her$_2$ company)?' (ok: 1/5, ??: 3/5, *: 1/5)

To summarize, the *Wh*-Scope Generalization is a robust constraint underlying the licensing of AE, which any theory of AE (more precisely, any analysis of null arguments, whether it involves AE, VP-ellipsis or a non-elliptical strategy) must explain.[12]

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[12] An anonymous reviewer raised the question of whether *wh*-phrases that have undergone A-scrambling may block AE. To introduce the issue briefly, it is known that Japanese clause-internal scrambling can create a new binding relation just as A-movement does (see Saito 1992; Tada 1990, 1993; Yoshimura 1989). In (i), while the IO *wh*-phrase cannot bind the pronoun in the subject in the canonical order (ia), it can if it moves to the sentence-initial position (ib), suggesting that the scrambling in (ib) involves A-movement.

(i) a. *[*Soitu*$_1$*-no gakusee-ga*] ***dare***$_1$*-ni kansyazyoo-o okur-ana-katta no?*
he-GEN student-NOM who-DAT letter.of.thanks-ACC send-NEG-PAST Q
lit. 'Whom$_1$ did his$_1$ student not send a letter of thanks?'
b. ***Dare***$_1$*-ni* [*soitu*$_1$*-no gakusee-ga*] *kansyazyoo-o okur-ana-katta no?*
who-DAT he-GEN student-NOM letter.of.thanks-ACC send-NEG-PAST Q
lit. 'Whom$_1$ did his$_1$ student not send a letter of thanks?'
trans. 'Who$_1$ makes the following true: his$_1$ student did not send him$_1$ a letter of thanks.'

It is predicted that, if the subject in (ib) were to undergo AE, desired sloppy readings would not be available in the ellipsis site, because the ellipsis site here is c-commanded at LF by the A-scrambled *wh*-phrase. This prediction appears to be borne out: the Japanese speakers found sloppy readings difficult in (iib).

(ii) a. ***Dare***$_1$*-ni* [*soitu*$_1$*-no gakusee-ga*] *kansyazyoo-o okut-ta no?*
who-DAT he-GEN student-NOM letter.of.thanks-ACC send-PAST Q
lit. 'Whom$_1$ did his$_1$ student send a letter of thanks?'
b. *Hantaini,* ***dare****-ni* ___ *kansyazyoo-o okur-ana-katta no?*
conversely who-DAT letter.of.thanks-ACC send-NEG-PAST Q
lit. 'Conversely, whom$_2$ did (his$_2$ student) not send a letter of thanks?' (*: 5/5)

While the result of (ii) aligns with my generalization, there is a further complication: sloppy readings are impossible in A-scrambling cases even if no *wh*-phrase is involved. Consider (iii). In (iiia), the QP "*hansuu-izyoo-no kyoosi*" ('at least half the number of teachers') has undergone A-scrambling and binds the pronoun in the subject. With (iiia) as the antecedent, however, sloppy readings in (iiib) are extremely difficult.

(iii) a. *Kyonen-wa* ***hansuu-izyoo-no*** ***kyoosi***$_1$***-ni*** [*soitu*$_1$*-no gakusee-ga*]
last.year-TOP half.the.number-at.least-GEN teacher-DAT he-GEN student-NOM
kansyazyoo-o okur-ana-katta.
letter.of.thanks-ACC send-NEG-PAST
'Last year, at least 50% of the teachers$_1$ did not receive a letter of thanks from his$_1$ student.'
b. *Kotosi-mo,* ***hansuu-izyoo-no*** ***kyoosi***$_1$***-ni*** ___ *kansyazyoo-o*
this.year-also half.the.number-at.least-GEN teacher-DAT letter.of.thanks-ACC
okur-ana-katta.
send-NEG-PAST
'This year, too, at least 50% of the teachers$_1$ did not receive a letter of thanks (from his$_1$ student).' (*: 5/5)

Given that AE is impossible regardless of the presence or absence of a *wh*-phrase, cases involving A-movement cannot serve as a testing ground for the proposed generalization. Why AE is impossible in these cases needs to be explored as a separate issue, which I leave for future work.

2.2 AE and syntactic dependency

What explains the generalization in (6)? The fact that higher *wh*-phrases cause trouble suggests that they count as *intervenors*, implying that AE induces a syntactic dependency that could interact with *wh*-dependencies. In this regard, it is worth introducing the recent proposal by Fujiwara (2020, 2022), who argues that AE involves a certain form of movement in its derivation.

Fujiwara observes that AE is constrained by the same locality constraint as applied to movement. For instance, he observes that sloppy readings do not obtain if the ellipsis site is located within an adjunct clause, as illustrated in (21) (from Fujiwara 2022, p.36). The target construal for (21b) is one true in the following situation: Mother does not go with Daughter when Daughter drives Mother's car, but Mother goes with Daughter when Daughter drives some other cars. As Fujiwara observes, this construal is not available for (21b): the only available reading is one on which Mother never goes with Daughter *no matter what car* Daughter drives.

(21) a. *Otoosan*$_1$*-wa* [*musume-ga* [*zibun*$_1$*-no* *kuruma-o*] *untensu-ru* *toki*]
father-TOP daughter-NOM self-GEN car-ACC drive-NPST when
(sinpai-de) *yoku* *tuiteik-u.*
worried-COP often go.with-NPST
'Father$_1$ often goes with Daughter when she drives his$_1$ car (for fear of damage).'

b. *Demo,* *okaasan-wa* [*musume-ga* ___ *untensu-ru* *toki*]
but mother-TOP daughter-NOM drive-NPST when
tuiteik-ana-i.
go.with-NEG-NPST
Not available: 'But Mother$_2$ does not go with Daughter when she drives (her$_2$ car).'

Fujiwara notes that the difficulty of sloppy readings in (21b) is reminiscent of the island constraint applying to movement, as exemplified by the difficulty of scrambling out of an adjunct clause in Japanese (Saito 1985).

(22) ?*[*Zibun*$_1$*-no* *kuruma-o*]$_2$, *otoosan*$_1$*-wa* [*musume-ga* t_2 *untensu-ru* *toki*]
self-GEN car-ACC father-TOP daughter-NOM drive-NPST when
(sinpai-de) *yoku* *tuiteik-u.*
worried-COP often go.with-NPST
'Father$_1$ often goes with Daughter when she drives his$_1$ car (for fear of damage).'

Fujiwara observes that the correlation between AE and movement regarding their sensitivity to locality constraints likewise holds for Complex NP islands and coordination islands (see Fujiwara 2022, Section 2.3). Based on these observations, Fujiwara hypothesizes that arguments undergo movement before ellipsis applies, suggesting that

this movement induces an Ā-dependency (i.e., involves movement to Spec,CP).[13] He assumes that the moved argument undergoes PF deletion, which, along with the trace left behind, creates the appearance of a null argument, as shown in (23).

(23) a. $[_{CP}\ \alpha_i \ldots [\ \ldots t_i \ldots\ ] \ldots$ (Before spell-out)
b. $[_{CP}\ \sout{\alpha_i} \ldots [\ \ldots t_i \ldots\ ] \ldots$ (PF)

What remains unsettled, however, is the concrete status of the movement involved in AE. While Fujiwara suggests that the movement correlates in its properties with long-distance scrambling, his hypothesis cannot capture the interaction between AE and *wh*-phrases.[14] For suppose that AE involves long-distance scrambling. Then we would naturally predict that the unavailability of AE in the scope of a higher *wh*-phrase is due to the impossibility of long-distance scrambling crossing that *wh*-phrase. This prediction, however, is not borne out. Take (13), which is repeated in (24). Recall that the target sloppy reading is extremely difficult in (24b). However, as all the speakers confirmed, the scrambling counterpart in (25) is completely acceptable.

(24) a. *John*$_1$*-wa* [***dare****-ga* [*zibun*$_1$*-no buka-ni*] *ankeeto-o*
John-TOP who-NOM self-GEN subordinate-DAT questionnaire-ACC
teesyutusi-na-katta ka] *kyoomigaaru.*
submit-NEG-PAST Q is.curious
'John$_1$ is curious to know who did not submit a questionnaire to his$_1$ subordinate.'

b. *Mary-mo* [***dare****-ga* ___ *ankeeto-o* *teesyutusi-na-katta* *ka*]
Mary-also who-NOM questionnaire-ACC submit-NEG-PAST Q
kyoomigaaru.
is.curious
'Mary$_2$, too, is curious to know who did not submit a questionnaire (to her$_2$ subordinate).' (*: 5/5)

(25) [*Zibun*$_1$*-no buka-ni*] *John*$_1$*-wa* [***dare****-ga* t_2 *ankeeto-o*
self-GEN subordinate-DAT John-TOP who-NOM questionnaire-ACC
teesyutusi-na-katta ka] *kyoomigaaru.*
submit-NEG-PAST Q is.curious
'John$_1$ is curious to know who did not submit questionnaires to his$_1$ subordinate.' (ok: 5/5)

The absence of interaction with a higher *wh*-phrase in (25) is in fact not very surprising given that long-distance scrambling is semantically vacuous (see Saito 1989, 1992), as evidenced by its radical reconstruction properties. Considering the interaction between AE and *wh*-phrases, it is more plausible to assume that the movement in AE is semantically non-vacuous, similar to English topicalization or *wh*-movement,

[13] Fujiwara also observes correlations between AE and movement with respect to ECM constructions, binding of reciprocals and local anaphors, quantifier-scope interactions, etc. See his work for concrete data.
[14] Fujiwara relates his speculation to the hypothesis submitted by Oku (1998) that the availability of AE correlates with the availability of (Japanese-style) long-distance scrambling.

both of which establish meaningful Ā-dependencies. The question is thus exactly what Ā-dependency the movement in AE induces, which I will address in the next section.

3 Proposal

3.1 AE induces a topic-related Ā-dependency

Here I demonstrate that AE shows a striking parallelism with *topicalization* regarding its interaction with *wh*-phrases. Specifically, I establish the following generalization.

(26) **The *Wh*-Scope Generalization for Japanese topicalization:**
Topicalization is blocked if there is a *wh*-phrase whose LF position intervenes between the landing site and the launching site: *$[_{\text{TopicP}}$ α_i ... [***wh*** ... [... t_i ...

Let me first clarify what I mean by "topicalization". In Japanese, topics are marked by the particle "*-wa*" (see Kuno 1973; Kuroda 1965), but whether a *wa*-phrase counts as a topic depends on where it appears in the sentence. For instance, when the subject is *wa*-marked (27a), it serves as the topic of the sentence, with the rest of the sentence considered a "comment" on it (e.g., in the sense of Reinhart 1981). In contrast, when the object is *wa*-marked in situ (27b), it does not function as a topic: instead, it acts as a contrast marker, implying that John praised no one but Bill (Kuno 1973; Vermeulen 2013). However, if this object is preposed (27c), it becomes able to function as a topic. In other words, for a *wa*-marked phrase to be considered a topic, it cannot remain in situ but must be preposed (see also Maki, Kaiser, and Ochi 1999).

(27) a. *John-wa Bill-o hometa.*
John-TOP Bill-ACC praised
'As for John, he praised Bill.'
b. *John-ga Bill-wa hometa.*
John-NOM Bill-TOP praised
'John praised Bill (but he didn't praise others).'
c. *Bill-wa*$_1$ *John-ga* e_1 *hometa.*
Bill-TOP John-NOM praised
'As for Bill, John praised him.'

While there has been controversy over whether preposing of a *wa*-phrase involves base-generation or movement (see Hoji 1985; Kuno 1973; Kuroda 1965; Saito 1985), there is consensus that preposing of *wa*-marked PPs, including *dative objects*, involves movement (see Saito 1985). In (28), the topics are associated with empty positions in complex NP islands. As Saito (1985) observed, if *Pekin* is only marked by *-wa* as in (28a), the sentence is acceptable: the topic is base-generated sentence-initially and associated with an in-situ *pro* via co-reference. If the topic also involves the dative as in (28b), the sentence is unacceptable, hence evidence for movement in this case.

(28) a. *Pekin-wa*$_1$ *John-ga* [[*pro*$_2$ *pro*$_1$ *itta koto-ga aru*] *hito*$_2$]*-o*
Beijing-TOP John-NOM went fact-NOM have person-ACC
mituketa.
found
'As for Beijing$_1$, John found a person who has been there$_1$.'

b. **Pekin-ni-wa*$_1$ *John-ga* [[*pro*$_2$ t_1 *itta koto-ga aru*] *hito*$_2$]*-o*
Beijing-DAT-TOP John-NOM went fact-NOM have person-ACC
mituketa.
found
lit. 'Beijing$_1$, John found a person who has been to t_1.'

More relevant to the present investigation, notice, is topicalization involving movement, as I am assuming following Fujiwara (2020, 2022) that AE involves movement as part of its derivation. The use of constructions that may involve base-generation introduces an additional factor, so I will set them aside and focus on cases in which topicalization is guaranteed to involve movement (see Appendix C for additional evidence against assuming base-generation for deriving AE). As the target of topicalization, I will throughout use dative arguments, whose topicalization is proven to involve movement by examples like (28b) (notice that this is part of the reason why I concentrated on IOs as the ellipsis site in Section 2). Each example below will be shown alongside its scrambling counterpart, in order to clarify the effect of topicalization.[15]

Finally, my focus here is on the interaction between *wh*-phrases and *non-contrastive* topicalization. As a reviewer pointed out, preposed *wa*-phrases may optionally bear contrastive focus to function as contrastive topics. The potential effect of contrastiveness on the interaction with *wh*-phrases is discussed in Appendix A.3: here it suffices to note that what is important is to observe that the target generalization holds for non-contrastive cases (see Appendix A.3 for discussion). To clarify, all the topicalization data to be shown in this paper (except some of the examples in Appendix A.3) were presented to the Japanese speakers with the intonation pattern typically associated with non-contrastive topics, namely, the absence of phonological prominence on any part of the topic plus the presence of a (relatively) high pitch peak accent on the phrase immediately following the topic; see Appendix A.3 for further clarification. I will come back to relevant issues in Section 4.

3.2 Data

3.2.1 Simplex structure (i): LF-c-commanding *wh*

(29) is the non-elliptical sentence of the AE example in (8). The subject *wh*-phrase c-commands the IO and binds the reflexive within it.

(29) ***Dare***$_1$*-ga* [*zibun*$_1$*-no sensee-ni*] *kansyazyoo-o okur-ana-katta no?*
who-NOM self-GEN teacher-DAT letter.of.thanks-ACC send-NEG-PAST Q
'Who$_1$ didn't send his$_1$ teacher a letter of thanks?'

[15] To clarify the elicitation process for each example here, I first asked the speakers to judge the scrambling sentence as a baseline, and then asked them to judge the corresponding topicalization sentence.

Consider scrambling as a baseline. In (30), the IO undergoes scrambling, crossing the subject *wh*-phrase. All the speakers found the sentence with the target reading completely acceptable.

(30) [*Zibun*$_1$*-no* *sensee-ni*]$_2$ ***dare***$_1$*-ga* t_2 *kansyazyoo-o* *okura-na-katta* *no?*
self-GEN teacher-DAT who-NOM letter.of.thanks-ACC send-NEG-PAST Q
'Who$_1$ didn't send his$_1$ teacher a letter of thanks?' (ok: 5/5)

Turning to topicalization, (31) is identical to (30) except for the occurrence of the particle "*-wa*" on the moved IO, which signals topicalization. Strikingly, the sentence with the intended reading was found to be difficult by many speakers, indicating the difficulty of topicalization here.

(31) [*Zibun*$_1$*-no* *sensee-ni-wa*]$_2$ ***dare***$_1$*-ga* t_2 *kansyazyoo-o* *okura-na-katta* *no?*
self-GEN teacher-DAT-TOP who-NOM letter.of.thanks-ACC send-NEG-PAST Q
lit. 'His$_1$ teacher, who$_1$ didn't send a letter of thanks?' (ok: 1/5, ?: 1/5, ??: 1/5, *: 2/5)

The contrast between (30) and (31) confirms the generalization in (26): topicalization crossing a *wh*-phrase, unlike scrambling crossing a *wh*-phrase, leads to degradation (some speakers do not find (31) particularly degraded; the speaker variation here is discussed in Appendix A.1).

3.2.2 Simplex structure (ii): No LF-c-commanding *wh*

(32) is the antecedent sentence of the AE example in (9). No *wh*-phrase c-commands the IO in this case.

(32) *John*$_1$*-wa* [*zibun*$_1$*-no* *kodomo-ni*] ***nani****-o* *age-na-katta* *no?*
John-TOP self-GEN child-DAT what-ACC give-NEG-PAST Q
'What did John$_1$ not give his$_1$ child?'

Consider scrambling (33). The IO undergoes scrambling but only crosses a non-*wh*-phrase. All the speakers found the sentence completely acceptable.

(33) [*Zibun*$_1$*-no* *kodomo-ni*]$_2$ *John*$_1$*-wa* t_2 ***nani****-o* *age-na-katta* *no?*
self-GEN child-DAT John-TOP what-ACC give-NEG-PAST Q
'What did John$_1$ not give his$_1$ child?' (ok: 5/5)

Turning to topicalization (34), the speakers found the sentence completely acceptable, just as in the scrambling case. The contrast with topicalization (31) above, as well as the absence of contrast with scrambling (33) here, confirms the generalization.

(34) [*Zibun*$_1$*-no kodomo-ni-wa*]$_2$ *John*$_1$*-wa* t_2 ***nani****-o* *age-na-katta* *no?*
self-GEN child-DAT-TOP John-TOP what-ACC give-NEG-PAST Q
lit. 'His$_1$ child, what did John$_1$ not give?' (ok: 5/5)

3.2.3 Complex structure (i): LF-c-commanding *wh* in the matrix clause

(35) is the non-elliptical sentence of the AE example in (11). The embedded IO is c-commanded by the *wh*-phrase in the matrix subject.

(35) ***Dare***$_1$*-ga* [*Alex-ga* [*zibun*$_1$*-no musume-ni*] *kooi-o* *simes-ana-katta*
who-NOM Alex-NOM self-GEN daughter-DAT affection-ACC show-NEG-PAST
to] *omotteiru no?*
C think Q
'Who$_1$ thinks that Alex did not show affection to his$_1$ daughter?'

Consider scrambling (36). Most of the speakers found the sentence completely acceptable.

(36) [*Zibun*$_1$*-no* *musume-ni*]$_2$ ***dare***$_1$*-ga* [*Alex-ga* t_2 *kooi-o*
self-GEN daughter-DAT who-NOM Alex-NOM affection-ACC
simes-ana-katta to] *omotteiru no?*
show-NEG-PAST C think Q
'Who$_1$ thinks that Alex did not show affection to his$_1$ daughter?' (ok: 4/5, ??: 1/5)

Turning to topicalization (37), all the speakers found the sentence significantly or extremely degraded, in contrast to (36).[16]

(37) [*Zibun*$_1$*-no* *musume-ni-wa*]$_2$ ***dare***$_1$*-ga* [*Alex-ga* t_2 *kooi-o*
self-GEN daughter-DAT-TOP who-NOM Alex-NOM affection-ACC
simes-ana-katta to] *omotteiru no?*
show-NEG-PAST C think Q
lit. 'To his$_1$ daughter, who$_1$ thinks that Alex did not show affection?' (??: 2/5, *: 3/5)

Thus, here as well, the presence of a *wh*-phrase that c-commands the launching site of topicalization leads to degradation, confirming the generalization in (26).

To further confirm the generalization, consider (38), which is the declarative counterpart of (37) in which the *wh*-phrase in the matrix subject is replaced by a referential NP. The sentence was found to be completely acceptable by all the speakers.

(38) [*Zibun*$_1$*-no* *musume-ni-wa*]$_2$ *Taroo*$_1$*-wa* [*Alex-ga* t_2 *kooi-o*
self-GEN daughter-DAT-TOP Taroo-TOP Alex-NOM affection-ACC
simes-ana-katta to] *omotteiru.*
show-NEG-PAST C think

[16] The speaker who gave "??" to (36) gave "*" to (37).

'To his$_1$ daughter, Taroo$_1$ thinks that Alex did not show affection.' (ok: 5/5)

The contrast with the scrambling and *wh*-less counterparts suggests that the presence of an intervening *wh*-phrase does affect the acceptability of topicalization, thus confirming the generalization in (26).

3.2.4 Complex structure (ii): LF-c-commanding *wh* in the embedded clause

(39) is the antecedent sentence of the AE example in (13). The embedded IO is c-commanded by the *wh*-phrase in the embedded subject.

(39) *John$_1$-wa* [***dare*-ga** [*zibun$_1$-no* *buka-ni*] *ankeeto-o*
John-TOP who-NOM self-GEN subordinate-DAT questionnaire-ACC
teesyutusi-na-katta ka] *kyoomigaaru.*
submit-NEG-PAST Q is.curious
'John$_1$ is curious to know who did not submit questionnaires to his$_1$ subordinate.'

Consider scrambling (40). All the speakers found the sentence completely acceptable.

(40) [*Zibun$_1$-no* *buka-ni*] *John$_1$-wa* [***dare*-ga** t_2 *ankeeto-o*
self-GEN subordinate-DAT John-TOP who-NOM questionnaire-ACC
teesyutusi-na-katta ka] *kyoomigaaru.*
submit-NEG-PAST Q is.curious
'John$_1$ is curious to know who did not submit questionnaires to his$_1$ subordinate.' (ok: 5/5)

Turning to topicalization (41), four out of five speakers found the sentence significantly or extremely degraded. The contrast with the scrambling counterpart confirms the generalization in (26) (for the speaker who accepted (41), see Appendix A.2).

(41) [*Zibun$_1$-no* *buka-ni-wa*] *John$_1$-wa* [***dare*-ga** t_2 *ankeeto-o*
self-GEN subordinate-DAT-TOP John-TOP who-NOM questionnaire-ACC
teesyutusi-na-katta ka] *kyoomigaaru.*
submit-NEG-PAST Q is.curious
lit. 'To his$_1$ subordinate, John$_1$ is curious to know who did not submit questionnaires.' (ok: 1/5, ??: 2/5, *: 2/5)

3.2.5 Complex structure (iii): No LF-c-commanding *wh* in the matrix/embedded clause

(42) is the antecedent sentence of the AE example in (15). No *wh*-phrase c-commands the embedded IO.

(42) *Taroo$_1$-wa* [*John-ga* [*zibun$_1$-no* *gakusee-ni*] ***doko**-o*
Taroo-TOP John-NOM self-GEN student-DAT what.place-ACC
susume-na-katta *ka*] *kyoomigaaru.*
recommend-NEG-PAST Q is.curious
'Taroo$_1$ is curious to know which companies John did not recommend to his$_1$ student.'

For scrambling (43), all the speakers found the sentence completely acceptable.

(43) [*Zibun$_1$-no* *gakusee-ni*]$_2$ *Taroo$_1$-wa* [*John-ga* t_2 ***doko**-o*
self-GEN student-DAT Taroo-TOP John-NOM t_2 what.place-ACC
susume-na-katta *ka*] *kyoomigaaru.*
recommend-NEG-PAST Q is.curious
'Taroo$_1$ is curious to know which companies John did not recommend to his$_1$ student.' (ok: 5/5)

Turning to topicalization (44), four speakers found the sentence completely acceptable.[17] As in (34) above, this shows that non-intervening *wh*-phrases do not affect the acceptability of topicalization.[18]

(44) [*Zibun$_1$-no* *gakusee-ni-wa*]$_2$ *Taroo$_1$-wa* [*John-ga* t_2 ***doko**-o*
self-GEN student-DAT-TOP Taroo-TOP John-NOM t_2 what.place-ACC
susume-na-katta *ka*] *kyoomigaaru.*
recommend-NEG-PAST Q is.curious
lit. 'To his$_1$ student, Taroo$_1$ is curious to know which companies John did not recommend.' (ok: 4/5, ?: 1/5)

3.2.6 Complex structures (iv): Long-distance scrambling

(45) is the antecedent sentence of the AE example in (18). The *wh*-phrase in the embedded DO undergoes long-distance scrambling. As noted in Section 2, this *wh*-phrase must reconstruct at LF.

(45) [***Doko**-o*]$_3$, *Taroo$_1$-wa,* [*John-ga* [*zibun$_1$-no* *gakusee-ni*] t_3
what.place-ACC Taroo-TOP John-NOM self-GEN student-DAT
susume-na-katta *ka*] *kyoomigaaru.*
recommend-NEG-PAST Q is.curious
'Taroo$_1$ is curious to know which companies John did not recommend to his$_1$ student.'

In (46), the embedded IO undergoes long-distance scrambling past the scrambled *wh*-phrase. All the speakers found the sentence completely acceptable.

[17] The speaker who gave "?" to (44) gave "*" to (41), finding the latter much more degraded.

[18] An anonymous reviewer found examples like (44) degraded on a par with examples like (41), suggesting that this could be due to extraction out of a *wh*-island in both cases. See Section 3.4 for a theoretical speculation concerning the interaction between *wh*-phrases and topicalization, where I suggest that it is the structural position of in-situ *wh*-phrases that matters for the possibility of topicalization, thus making different predictions for (41) and (44). The view that I suggest is necessary to explain the judgments of the speakers like my consultants.

(46) [*Zibun*$_1$*-no gakusee-ni*]$_2$ [***doko**-o*]$_3$ *Taroo*$_1$*-wa* [*John-ga* t_2 t_3
self-GEN student-DAT what.place-ACC Taroo-TOP John-NOM
susume-na-katta ka] *kyoomigaaru.*
recommend-NEG-PAST Q is.curious
'Taroo$_1$ is curious to know which companies John did not recommend to his$_1$ student.' (ok: 5/5)

Crucially, topicalization (47), in which the topic crosses a *wh*-phrase on the surface, was found to be completely acceptable by most speakers. Notice that, due to radical reconstruction of the *wh*-phrase, the sentence involves no *wh*-phrase that intervenes between the landing site and the launching site of topicalization at LF. The acceptability of (47) confirms that what matters is indeed the LF position of a *wh*-phrase rather than its surface position.

(47) [*Zibun*$_1$*-no gakusee-ni-wa*]$_2$ [***doko**-o*]$_3$ *Taroo*$_1$*-wa* [*John-ga* t_2 t_3
self-GEN student-DAT-TOP what.place-ACC Taroo-TOP John-NOM
susume-na-katta ka] *kyoomigaaru.*
recommend-NEG-PAST Q is.curious
lit. 'To his$_1$ student, Taroo$_1$ is curious to know which companies John did not recommend.' (ok: 4/5, ?: 1/5)

Note further that (48), in which the embedded DO is replaced by a referential NP, was found by the Japanese speakers to be just as acceptable as (47).

(48) [*Zibun*$_1$*-no gakusee-ni-wa*]$_2$ [*Microsoft-o*]$_3$ *Taroo*$_1$*-wa* [*John-ga* t_2 t_3
self-GEN student-DAT-TOP Microsoft-ACC Taroo-TOP John-NOM
susume-na-katta to] *omotteiru.*
recommend-NEG-PAST C think
'To his$_1$ student, Taroo$_1$ thinks that John did not recommend Microsoft.' (ok: 4/5, ?: 1/5)

The absence of significant contrast with the scrambling and *wh*-less counterparts suggests, as in the relevant cases above, that non-intervening *wh*-phrases do not affect the acceptability of topicalization.

3.2.7 Summary

The (un)acceptability of the data presented here is summarized in Table 2. Each piece of data is accompanied by the (un)acceptability of the corresponding AE data from Section 2. Notice that the ellipsis site of AE structurally corresponds to the trace position of topicalization in each pair.

The parallelism is evident: AE is blocked by a *wh*-phrase that c-commands the ellipsis site at LF, just as topicalization is blocked by a *wh*-phrase that c-commands the launching site at LF. This parallelism, I argue, would remain mysterious unless one assumes that AE involves topicalization as part of its derivation.

(8)	AE	[***wh***$_1$ [... ~~[... SELF$_1$ ...]~~ ...] ...] Q	*
(31)	Top	[... SELF$_1$ ...]-TOP$_2$ ... [***wh***$_1$ [... t_2 ...] ...] Q	*
(9)	AE	[NP$_1$ ... ~~[... SELF$_1$ ...]~~ ... [... ***wh*** ...] ...] Q	ok
(34)	Top	[... SELF$_1$ ...]-TOP$_2$ ... [NP$_1$ ... t_2 ... [... ***wh*** ...] ...] Q	ok
(11)	AE	[***wh***$_1$ [$_{CP}$ ... ~~[... SELF$_1$ ...]~~ ...] ...] Q	??/*
(37)	Top	[... SELF$_1$ ...]-TOP$_2$ ... [***wh***$_1$ [$_{CP}$ ... t_2 ...] ...] Q	*
(13)	AE	[NP$_1$ [$_{CP}$ ... ***wh*** [... ~~[... SELF$_1$ ...]~~ ...] ... Q] ...]	*
(41)	Top	[... SELF$_1$ ...]-TOP$_2$ ... [NP$_1$ [$_{CP}$ ... ***wh*** [... t_2 ...] ... Q] ...]	??/*
(15)	AE	[NP$_1$ [$_{CP}$ ... ~~[... SELF$_1$ ...]~~ [... ***wh*** ...] ... Q] ...]	ok
(44)	Top	[... SELF$_1$ ...]-TOP$_2$ ... [NP$_1$ [$_{CP}$ ... t_2 [... ***wh*** ...] ... Q] ...]	ok
(18)	AE	[***wh***$_3$ ... [NP$_1$ [$_{CP}$ ... ~~[... SELF$_1$ ...]~~ [... t_3 ...] Q] ...] ...]	?
(47)	Top	[... SELF$_1$ ...]-TOP$_2$ ... [***wh***$_3$ ... [NP$_1$ [$_{CP}$ ... t_2 [... t_3 ...] Q] ...] ...]	ok

Table 2 Summary of the (un)acceptability of AE and topicalization data.

3.3 AE as topic deletion

Building on the parallelism between AE and topicalization observed in the last section, I propose that AE is an instance of *topic deletion*, where to-be-elided arguments move to Spec,TopicP before spell-out and undergo deletion in the same position at PF.[19]

(49) a. [$_{\text{TopicP}}$ α_i ... [... t_i ...] ... (Before spell-out)
b. [$_{\text{TopicP}}$ ~~α_i~~ ... [... t_i ...] ... (PF)

Notice that (49) is essentially a revision of the account by Fujiwara (2020, 2022), who, recall, proposed that arguments undergo movement into the CP left periphery before ellipsis applies. The crucial difference from his account is that, in my account, this movement is identified with movement to Spec,TopicP, which explains the parallelism between AE and topicalization concerning their interaction with *wh*-phrases.

Here is an illustration of how my account explains simplest cases. As shown in (51a), the object of the second sentence in (50) first moves to Spec,TopicP. This item is regarded as the topic in discourse: the first and second sentences in (50) both concern *self's teachers* (with *self* bound by an appropriate antecedent in each sentence). With this being the shared topic in discourse, its occurrence in the second sentence can be elided under the identity of the topic.[20]

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[19] An anonymous reviewer wondered how my topic-deletion account of AE would relate to the analysis of Germanic topic drop (Cardinaletti 1990; Huang 1984; Sigurðsson 2011; among others), which is illustrated with Swedish (i) (= Sigurðsson 2011, 61a). Here the embedded null subject is assumed to raise into the matrix C-domain, where it is linked pronominally to the topic in discourse.

(i) ___ *Visste'ja inte* [___ *var förbjudet*]
knew'I not was forbidden
'That, I didn't know was forbidden.'

One prominent difference between Germanic topic drop and AE is that while the former forces pronominal readings (≈ strict readings; see Sigurðsson 2011), the latter allows non-pronominal readings (≈ sloppy readings). Further investigation of commonalities and discrepancies between them (as well as discourse *pro*-drop, which will be discussed in Section 5) is left for future work.

[20] An anonymous reviewer asked for further clarification of the idea of deletion "under the identity of the topic" in discourse. For this there are a range of possible implementations; I would refrain from committing to one particular analysis. One possibility is to adopt the idea of "focus-related topics" in Tancredi 1992, which are, roughly speaking, generated by replacing each focused item in the LF representation of a sentence with a variable of the corresponding type. In the case of (50), the focus-related topic of the second sentence is "x [self's teacher R]", with x a variable substituted for the focused subject (i.e., *Bill*) and R a variable

(50) *John*$_1$*-wa* [*zibun*$_1$*-no sensee-o*] *sonkeesiteiru. Bill-wa* ___ *sonkeesiteinai.*
John-TOP self-GEN teacher-ACC respect Bill-TOP not.respect
'John$_1$ respects his$_1$ teachers. Bill$_2$ does not respect (his$_2$ teachers).'

(51) a. [$_{\text{TopicP}}$ self$_j$-GEN teacher$_i$ ... [Bill$_j$ t_i not.respect] ... (Before spell-out)
b. [$_{\text{TopicP}}$ ~~self$_j$-GEN teacher$_i$~~ ... [Bill$_j$ t_i not.respect] ... (PF)

Ellipsis of QPs is derived in a similar way. As shown in (53a), the QP in the second sentence of (52) first moves to Spec,TopicP, where it is licensed as the topic. For QPs, I assume that what is addressed as the topic in discourse is the *cardinality* or *proportion* of the denotation of the restrictor NP. This correctly captures the fact that the referents of teachers may differ between the two sentences: what is at stake is not *who* but *how many* or *what proportion*. Because *most teachers* is the shared topic in discourse, its occurrence in the second sentence can be elided as in (53b).[21]

(52) *John-wa* [*hotondo-no* *sensee-o*] *sonkeesiteiru.* *Bill-wa* ___ *sonkeesiteinai.*
John-TOP most-GEN teacher-ACC respect Bill-TOP not.respect
'John respects most teachers. Bill does not respect (most teachers).'

(53) a. [$_{\text{TopicP}}$ most-GEN teacher$_i$ ... [Bill t_i not.respect] ... (Before spell-out)
b. [$_{\text{TopicP}}$ ~~most-GEN teacher$_i$~~ ... [Bill t_i not.respect] ... (PF)

3.4 Notes on the interaction with *wh*-phrases

One remaining issue is why an in-situ *wh*-phrase intervenes with topicalization. Although this sort of theoretical concern does not significantly affect the main proposal of this paper, one possibility I would like to suggest is that the interaction arises because *wh*-phrases count as Ā-elements *even in situ*. The literature on Superiority effects for multiple *wh*-questions (Bošković 2011; L.L.-S. Cheng and Demirdache 1990; Cinque 1986; among others) has assumed that *wh*-phrases count as Ā-elements even if they are located in A-positions, due to their inherent operator feature. Topicalization crossing an in-situ *wh*-phrase thus involves an Ā-movement past an Ā-element, inducing the same effect as a violation of Relativized Minimality (Rizzi 1990). This explains

substituted for the focused two-place predicate (i.e., *not.respect*). With this notion, the "identity of the topic in discourse" will be formulated as the identity between the focus-related topic of the second sentence and one of the potential focus-related topics of the first sentence (γ is a potential focus-related topic of β if there is some expression β' which differs from β at most in its focus structure such that γ is the focus-related topic of β'; see Tancredi 1992, Ch.2 for detailed discussions). In (50), "x [self's teacher R]" is a potential focus-related topic of the first sentence, thus satisfying the identity condition. In this formalization, topicalization can be considered an operation that determines what cannot be replaced by a variable at LF, or more intuitively, what has to be fixed as "given" in discourse.
I leave open how a related idea would be instantiated through the notion of "Questions under Discussion" (see Roberts 1996, 2012). Questions under Discussion have recently been adopted to formulate the licensing conditions for sluicing (AnderBois 2011, 2014; Barros and Kotek 2019; Weir 2014), but how it could extend to the analysis of AE remains under-investigated (but see Tanabe and Hara 2021). I leave further investigation for another occasion.

[21] One may wonder about the specific status of the topics discussed here, in particular that of topicalized QPs, because topicalized QPs do not seem to perfectly fit the standard definition of topics, which requires that topics be "specific" or "referential" (see, e.g., Reinhart 1981). However, there is cross-linguistic evidence that non-referentially construed QPs can sometimes behave as topics; Tsai (1994, Ch.3) shows this for Mandarin, and Arregi (2003) for Spanish.

the offending effect of *wh*-phrases on topicalization and AE: the presence of an in-situ *wh*-phrase located higher than the launching site of topicalization renders the movement (and the corresponding AE) illicit because the movement ends up crossing an intervenor; the absence thereof does not cause the same effect because the movement crosses no intervenor. This is illustrated in (54).

(54) a. *[$_{\text{TopicP}}$ α-wa_1 [... [$_{\text{TP}}$ ... ***wh*** ... [... t_1 ...] ...
b. [$_{\text{TopicP}}$ α-wa_1 [... [$_{\text{TP}}$ ... t_1 ... [... ***wh*** ...] ...

This analysis is supported by facts concerning embedded topicalization. (55) shows that Japanese allows topicalization within an embedded clause (see Maki et al. 1999; Tomioka 2015).

(55) *Taroo-wa* [*Mary-ni-*$\underline{wa}_1$ *John-ga* t_1 *ai-ni itta to*] *omotteiru.*
Taroo-TOP Mary-DAT-TOP John-NOM meet-to went C think
Taroo thinks that Mary$_1$, John went to meet t_1.' (ok: 5/5)

The present analysis predicts that no intervention effect will arise in (56), where there is a *wh*-phrase in the matrix clause but topicalization occurs within an embedded clause.

(56) [$_{\text{TP}}$ ... ***wh*** ... [$_{\text{TopicP}}$ α-wa_1 [... t_1 ...] ...

This prediction is borne out: (57a), which instantiates the structure (56), is completely acceptable for most of the speakers. This contrasts with the low acceptability of (57b), in which the topic moves further and crosses the *wh*-phrase in the matrix subject. This shows that a higher *wh*-phrase is offending only when topicalization has to cross it.

(57) a. ***Dare****-ga* [*Mary-ni-*$\underline{wa}_1$ *John-ga* t_1 *ai-ni itta to*] *omotteiru no?*
who-NOM Mary-DAT-TOP John-NOM meet-to went C think Q
'Who thinks that Mary$_1$, John went to meet t_1?' (ok: 4/5, ??: 1/5)
b. *Mary-ni-*$\underline{wa}_1$ ***dare****-ga* [*John-ga* t_1 *ai-ni itta to*] *omotteiru no?*
Mary-DAT-TOP who-NOM John-NOM meet-to went C think Q
lit. 'Mary$_1$, who thinks that John went to meet t_1?' (ok: 1/5, ?: 1/5, ??: 1/5, *: 2/5)

The contrast between (57a) and (57b) has further implications about the topicalization involved in the derivation of AE. As shown in Section 2.1, the presence of a *wh*-phrase in the matrix clause blocks AE in an embedded clause even if there is no *wh*-phrase in the embedded clause (see (11)). The unavailability of AE here patterns with (57b) rather than with (57a), implying that to-be-elided arguments must move to Spec,TopicP in the *matrix* clause, not one in an embedded clause. A relevant remark was made by Fujiwara (2020, 2022), another advocate of the movement analysis of AE, who speculated that to-be-elided arguments must move to the matrix left periphery because only in this environment can they take an antecedent from the preceding discourse. See Sigurðsson 2011 for a similar remark for Germanic topic drop.

Further investigation of the relevant issues is left for another occasion, but I emphasize, as noted at the beginning of this section, that my overall proposal for AE does

not crucially hinge on the exact formulation of the interaction between *wh*-phrases and topicalization.[22]

3.5 *Whether*

In this section, I show that the *Wh*-Scope Generalizations for AE and topicalization also apply to cases involving *ka(dooka)* ('whether').

In (58), AE targets the subject in the embedded *whether*-clause. Four out of five speakers found the target sloppy reading significantly or extremely difficult here. For these four speakers, only strict (i.e., Ziroo is worried about whether Taroo's son played video games) or indefinite (i.e., Ziroo is worried about whether there was anyone who played video games) readings are available.

(58) **Context**: Taroo and Ziroo are worried about whether their respective sons kept a promise not to play video games while their fathers were away. As for

[22] An anonymous reviewer wondered why topicalization is sensitive in particular to *wh*-phrases, offering (i) as a point of comparison. (i) involves AE in a comparative deletion construction, which has been assumed to involve a null degree operator "*Op*" (Kikuchi 1987). The reviewer pointed out that sloppy readings obtain in the comparative clause, and given that *Op* is an Ā-element, this means that topicalization does not interact with *Op* in terms of the Relativized Minimality, suggesting variability among Ā-elements concerning whether they intervene with topicalization.

(i) *Hanako*$_1$*-wa* [*Taroo-ga* *Op* ___ *agetagatteiru* *yorimo*] *takusan-no* *hito-ni* [*zibun*$_1$*-no* *yasai*]*-o* *agetagatteiru.*
Hanako-TOP Taroo-NOM want.to.give than many-GEN people-DAT self-GEN vegetable-ACC want.to.give
'Hanako$_1$ wants to give her$_1$ vegetables to more people than Taroo$_2$ wants to give (his$_2$ ones).'

As for the availability of AE in (i), there are at least two ways to explain it. One is to assume an effect similar to "Rescue by PF-deletion" (Bošković 2011): the effect of violating the Relativized Minimality does not surface in (i) because *Op* lacks a phonological form and phonologically null elements do not count as intervenors for Relativized Minimality effects (see Bošković 2011 for discussion). The other is to assume that there is a more fine-grained distinction as to which Ā-elements interact with which Ā-elements, following the assumption of the feature-geometric analysis of the syntactic locality (Abels 2012; Starke 2001; among others). Which explanation fares better, as well as whether there is a third explanation, is left for future work. As for the feature-geometric account, it is by itself an interesting issue what the hierarchy of Ā-elements in Japanese looks like (e.g., topicalization interacts with *wh*-phrases whereas long-distance scrambling does not, despite the fact that they are both Ā-movement).
To note a related issue, another reviewer wondered if focus-related items other than *wh*-phrases, such as focus operators or negative concord items, could be intervenors for topicalization. Leaving exhaustive research for another occasion, I point out that at least negative concord items do not seem to interact with either AE or topicalization. For instance, *daremo* is considered a negative concord item in Japanese (Watanabe 2004). In (ii), the ellipsis site in the IO is c-commanded by *daremo* in the subject, and sloppy readings are available in the context in which everyone sent a letter of thanks to someone other than his own teacher. Furthermore, as (iii) shows, topicalization crossing this item is also possible (notice that the parallelism between AE and topicalization obtains here too). This suggests that in-situ *wh*-phrases seem to have a special status as an intervenor for topicalization among focus-related items.

(ii) a. *Kyonen-wa* ***daremo***$_1$ [*zibun*$_1$*-no* *sensee-ni*] *kansyazyoo-o* *okur-ana-katta.*
last.year-TOP no.one self-GEN teacher-DAT letter.of.thanks-ACC send-NEG-PAST
'Last year, no one$_1$ sent his$_1$ teacher a letter of thanks. '

b. *Kotosi-mo* ***daremo***$_1$ ___ *kansyazyoo-o* *okur-ana-katta.*
this.year-also no.one letter.of.thanks-ACC send-NEG-PAST
'This year, too, no one$_2$ sent (his$_2$ teacher) a letter of thanks.' (ok: 2/5, ?: 1/5, ??: 2/5)

(iii) [*Zibun*$_1$*-no* *sensee-ni-wa*]$_2$ ***daremo***$_1$ t_2 *kansyazyoo-o* *okur-ana-katta.*
self-GEN teacher-DAT-TOP no.one letter.of.thanks-ACC send-NEG-PAST
'His$_1$ teacher, no one$_1$ sent a letter of thanks.' (ok: 4/5, ?: 1/5)

the boys other than their respective sons, Taroo and Ziroo do not care if they played video games.

a. *Taroo$_1$-wa* [[*zibun$_1$-no musuko-ga*] *geemu-o si-nai-dei-ta*
Taroo-TOP self-GEN son-NOM video.game-ACC do-NEG-ASP-PAST
kadooka] *sinpaisiteiru.*
whether is.worried
'Taroo$_1$ is worried about whether his$_1$ son was not playing video games.'

b. *Ziroo$_2$-mo* [___ *geemu-o si-nai-dei-ta* ***kadooka***]
Ziroo-also video.game-ACC do-NEG-ASP-PAST whether
sinpaisiteiru.
is.worried
'Ziroo$_2$, too, is worried about whether (his$_2$ son) was not playing video games.' (ok: 1/5, ??: 2/5, *: 2/5)

Compare this with the embedded-declarative counterpart (59). Unlike in (58), all the speakers found the target sloppy reading readily available here.

(59) **Context**: Taroo believes that only his son kept a promise not to play video games; so does Ziroo.

a. *Taroo$_1$-wa* [[*zibun$_1$-no musuko-ga*] *geemu-o si-nai-dei-ta to*]
Taroo-TOP self-GEN son-NOM video.game-ACC do-NEG-ASP-PAST C
omotteiru.
think
'Taroo$_1$ thinks that his$_1$ son was not playing video games.'

b. *Ziroo$_2$-mo* [___ *geemu-o si-nai-dei-ta to*] *omotteiru.*
Ziroo-also video.game-ACC do-NEG-ASP-PAST C think
'Ziroo$_2$, too, thinks that (his$_2$ son) was not playing video games.' (ok: 5/5)

In (60), AE targets the IO in the *whether*-clause. Two speakers found the sloppy reading extremely difficult and one found it slightly off. Again, for these speakers, only strict (i.e., Hanako is worried about whether John scratched Taroo's car) or indefinite (i.e., she is worried about whether John scratched any car) readings are possible.

(60) **Context**: Taroo and Hanako rented their cars to John while on vacation, and they are now on their way home. Taroo is very worried about whether John scratched his car, but he does not care if John scratched Hanako's. Likewise, Hanako is very worried about whether John scratched her car, but she does not care if John scratched Taroo's.

a. *Taroo$_1$-wa* [*(ryokootyuu) John-ga* [*zibun$_1$-no kuruma-ni*] *kizu-o*
Taroo-TOP on.vacation John-NOM self-GEN car-DAT scratch-ACC
tuke-nai-dei-ta ***kadooka***] *sinpaisiteiru.*
make-NEG-ASP-PAST whether is.worried
'Taroo$_1$ is worried about whether John didn't scratch his$_1$ car.'

b. *Hanako-mo* [*John-ga* ___ *kizu-o* *tuke-nai-dei-ta* ***kadooka***]
Hanako-also John-NOM scratch-ACC make-NEG-ASP-PAST whether
sinpaisiteiru.
is.worried
'Hanako$_2$, too, is worried about whether John didn't scratch (her$_2$ car).'
(ok: 2/5, ?: 1/5, *: 2/5)

To compare this with the embedded-declarative counterpart, all the speakers found the target sloppy reading readily available in (61).

(61) **Context**: Taroo believes that John left only his car unscratched; so does Hanako.

a. *Taroo$_1$-wa* [*(ryokootyuu) John-ga* [*zibun$_1$-no kuruma-ni*] *kizu-o*
Taroo-TOP on.vacation John-NOM self-GEN car-DAT scratch-ACC
tuke-nai-dei-ta *to*] *omotteiru.*
make-NEG-ASP-PAST C think
'Taroo$_1$ thinks that John didn't scratch his$_1$ car.'

b. *Hanako-mo* [*John-ga* ___ *kizu-o* *tuke-nai-dei-ta* *to*]
Hanako-also John-NOM scratch-ACC make-NEG-ASP-PAST C
omotteiru.
think
'Hanako$_2$, too, thinks that John didn't scratch (her$_2$ car).' (ok: 5/5)

For topicalization, I focus on the counterpart of (60). Consider scrambling (62) as a baseline. All the speakers found the sentence completely acceptable.

(62) [*Zibun$_1$-no* *kuruma-ni*]$_2$, *Hanako$_1$-wa* [*John-ga* t_2 *kizu-o*
self-GEN car-DAT Hanako-TOP John-NOM scratch-ACC
tuke-nai-dei-ta ***kadooka***] *sinpaisiteiru.*
make-NEG-ASP-PAST whether is.worried
'Hanako$_1$ is worried about whether John didn't scratch her$_1$ car.' (ok: 5/5)

Turning to topicalization, two speakers found (63) extremely degraded, one found it significantly degraded, and one found it slightly off.

(63) [*Zibun$_1$-no* *kuruma-ni-wa*]$_2$, *Hanako$_1$-wa* [*John-ga* t_2 *kizu-o*
self-GEN car-DAT-TOP Hanako-TOP John-NOM scratch-ACC
tuke-nai-dei-ta ***kadooka***] *sinpaisiteiru.*
make-NEG-ASP-PAST whether is.worried
lit. 'Her$_1$ car, Hanako$_1$ is worried about whether John didn't scratch.' (ok: 1/5, ?: 1/5, ??: 1/5, *: 2/5)

To further compare this with the embedded-declarative counterpart, all the speakers found (64) completely acceptable.

(64) [*Zibun*$_1$*-no* *kuruma-ni-wa*]$_2$, *Hanako*$_1$*-wa* [*John-ga* t_2 *kizu-o*
self-GEN car-DAT-TOP Hanako-TOP John-NOM scratch-ACC
tuke-nai-dei-ta *to*] *omotteiru.*
make-NEG-ASP-PAST C think
'Her$_1$ car, Hanako$_1$ thinks that John didn't scratch.' (ok: 5/5)

The parallelism between AE and topicalization is thus observed: AE in the scope of *whether* is difficult just as topicalization crossing *whether* is.[23] Compared with nominal *wh*-phrases, the impact of *whether* on the possibility of AE and topicalization seems to be relatively weak, for which I have no good explanation for the moment (note, though, that *whether*-islands in English are also weaker than other *wh*-islands). However, the contrast with the declarative counterparts is clear in both AE and topicalization, and AE and topicalization behave in the same way in the relevant respects, thus lending further support to the topic-deletion analysis of AE.

4 Anti-AE ≈ Anti-topic

While the literature has documented an array of restrictions on what kinds of argument can be targeted by AE, there has not been an account that explains them from a unified perspective. I argue that the topic-deletion account offers a principled explanation: what cannot be topicalized cannot undergo AE. In Section 4.1, I introduce four restrictions observed in the literature. Establishing the relevant criteria in Section 4.2, I demonstrate in Section 4.3 that all the four restrictions involve *untopicalizable* items (more precisely, those that cannot be non-contrastive topics; see Appendix A.3). See also Appendix B, where I discuss the recent account of relevant issues by Landau (2023a, 2023b).

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[23] An anonymous reviewer suggested a potential counterexample to the parallelism between AE and topicalization with regard to *whether*-clauses, offering (i) and (ii). The reviewer reported that while topicalization in (i) is degraded (the judgment is the reviewer's), sloppy readings in (ii) seem easy to obtain.

(i) ??[*Zibun*$_1$*-no mise-ni-wa*]$_2$, *Taroo*$_1$*-ga* [*Hanako-ga* t_2 *kuru* ***kadooka***] *sinpaisiteiru.*
self-GEN shop-DAT-TOP Taroo-NOM Hanako-NOM come whether is.worried
lit. 'To his$_1$ shop, Taroo$_1$ is worried about whether Hanako will come.'

(ii) a. *Taroo*$_1$*-ga* [*Hanako-ga* [*zibun*$_1$*-no mise-ni*] *kuru* ***kadooka***] *sinpaisiteiru.*
Taroo-NOM Hanako-NOM self-GEN shop-DAT come whether is.worried
'Taroo$_1$ is worried about whether Hanako will come to his$_1$ shop.'
b. *Ziroo-mo* [*Hanako-ga* ___ *kuru* ***kadooka***] *sinpaisiteiru.*
Ziroo-also Hanako-NOM come whether is.worried
'Ziroo$_2$, too, is worried about whether Hanako will come (to his$_2$ shop).'

There are, however, two factors that are relevant to (ii). One is the absence of negation, which, as noted in Section 2, plays a role in precluding the possibility of indefinite *pro*. The other is the use of the relative locative expression *kuru* ('come'), which is known to invoke a dependency on a "point of view" or "perspective" for its interpretation (Mitchell 1986; Oshima 2006; Partee 1989; among others). Because of the absence of negation, there is room for an indefinite *pro*'s appearing in the missing object in (iib), giving rise to the interpretation that there is some place to which Hanako may come. Furthermore, when perspective-sensitive expressions are embedded under an attitude, their perspective center is fixed to the attitude holder (Bylinina, McCready, and Sudo 2014), so it is inferred that the place to which Hanako may come is fixed to Ziroo's vicinity, not to Taroo's, thus the apparent sloppiness of the missing object.
Notice that my AE examples control for these factors by using negation and not using perspective-sensitive expressions, and once this is done, the effect of *whether* on the availability of sloppy readings surfaces.

4.1 Restrictions on what is eligible for AE

4.1.1 *Wh*-phrases

Many previous works have noted that AE cannot apply to *wh*-phrases (e.g., Ikawa 2013; Sakamoto 2018, 2020; Sugisaki 2012). The target reading for the second sentence in (65) is one on which the *wh*-phrase is recovered in the missing object (i.e., "*What did Bill buy?*"). However, the sentence only allows polar-question readings (e.g., those on which the null object refers to the thing John bought, meaning "*Did Bill buy what John bought?*"), suggesting that *wh*-phrases cannot be elided.

(65) *John-wa* [***nani*-*o***] *katta no? Ato, Bill-wa* ___ *katta no?*
John-TOP what-ACC bought Q and Bill-TOP bought Q
Not available: 'What did John buy? And (what) did Bill buy?'

4.1.2 Downward-monotonic quantifiers

Tomioka (2014, 2016) observed that AE cannot target downward-monotonic quantifiers (see also Kurafuji 2019). In (66), with the downward-monotonic quantifier "*30-paasento-miman-no gakusee*" ('less than 30% of the students') being the antecedent, the null position in (66b) cannot recover the same meaning. This contrasts starkly to upward-monotonic quantifiers, as shown in (67).

(66) a. *Kyonen-no siken-de-wa* [*30-paasento-**miman**-no gakusee-ga*]
last.year-GEN exam-LOC-TOP 30-percent-less.than-GEN student-NOM
ukatta.
passed.
'At last year's exam, less than 30% of the students passed.'
b. *Kotosi-no siken-de-mo* ___ *ukatta.*
this.year-GEN exam-LOC-also passed
Not available: 'At this year's too, (less than 30% of the students) passed.'

(67) a. *Kyonen-no siken-de-wa* [*30-paasento-**izyoo**-no gakusee-ga*]
last.year-GEN exam-LOC-TOP 30-percent-at.least-GEN student-NOM
ukatta.
passed.
'At last year's exam, at least 30% of the students passed.'
b. *Kotosi-no siken-de-mo* ___ *ukatta.*
this.year-GEN exam-LOC-also passed
Available: 'At this year's too, (at least 30% of the students) passed.'

4.1.3 *Only*

Oku (2016) observed that AE cannot apply to focus operators like *dake* ('only') (see also Sato 2020). The target reading for the second sentence in (68) is one on which Bill met only Taroo just as John did. However, this reading is not available, suggesting that *dake*-phrases cannot be elided.

(68) *John-wa* [*Taroo-ni-**dake***] *atta. Bill-mo* ___ *atta.*
John-TOP Taroo-DAT-only met Bill-also met
Not available: 'John met only Taroo. Bill, too, met (only Taroo).'

4.1.4 Distributive readings for *each other*, *same* and *different*

Hoji (1998) observed that distributive readings of the reciprocal "*otagai*" ('each other') and the adnominal modifiers "*onazi*" ('same') and "*betubetu*" ('different') are not possible with null arguments. Hoji used these findings to argue against the V-stranding VP ellipsis account of null arguments (Huang 1988, 1991; Otani and Whitman 1991), but they also pose a challenge for AE analyses.

Take the reciprocal. The target reading for (69a) is one on which for each Japanese couple, the wife and the husband attended each other's class (i.e., the reciprocal is evaluated distributively for every couple). With this being the antecedent, the target reading for elliptical (69b) is one on which for each American couple, the wife and the husband attended each other's class. This reading, however, is not available in (69b).

(69) a. *Subete-no nihonzin fuufu-ga* [***otagai**-no zyugyoo-ni*] *sankasita.*
every-GEN Japanese couple-NOM each.other-GEN class-DAT attended
'Every Japanese couple attended each other's class.'
b. *Subete-no amerikazin fuufu-mo* ___ *sankasita.*
every-GEN American couple-also attended
Not available: 'Every American couple, too, attended (each other's class).'

Take *onazi* ('same'). The target reading for (70b) is one on which for each American couple, the wife and the husband attended the same class (e.g., the wife and the husband of Couple A attended Class X, the wife and the husband of Couple B attended Class Y, and so on). In contrast to antecedent (70a), this sort of distributive reading is not available in elliptical (70b).

(70) a. *Subete-no nihonzin fuufu-ga* [***onazi** zyugyoo-ni*] *sankasita.*
every-GEN Japanese couple-NOM same class-DAT attended
'Every Japanese couple attended the same class.'
b. *Subete-no amerikazin fuufu-mo* ___ *sankasita.*
every-GEN American couple-also attended
Not available: 'Every American couple, too, attended (the same class).'

Take *betubetu* ('different'). The target reading for (71b) is one on which for each American couple, the wife and the husband attended different classes (e.g., the sentence can be true if all the husbands gathered in one class and all the wives gathered in some other class). Again, in contrast to antecedent (71a), this sort of distributive reading is not available in elliptical (71b).

(71) a. *Subete-no nihonzin fuufu-ga* [***betubetu**-no zyugyoo-ni*] *sankasita.*
every-GEN Japanese couple-NOM different-GEN class-DAT attended
'Every Japanese couple attended different classes.'

b. *Subete-no amerikazin fuufu-mo* ___ *sankasita.*
every-GEN American couple-also attended
Not available: 'Every American couple, too, attended (different classes).'

If AE were applicable to these items, the target distributive readings would be readily available in the null object of each elliptical sentence. The lack of these readings suggests that some part of the derivation in AE blocks distributive readings of the target arguments.

4.2 Setting the stage

Here I introduce a way to test the topicalizability of each item from the last section. For the present purpose, I adopt the following schema.

(72) $[\alpha\text{-}wa]_1$, ... [NP-*ga* ... e_1 ... PRED-*mas*]

The schema (72) involves *wa*-marking and preposing of the test item "α". As noted in Section 3.1, Japanese topics involve *wa*-marking, but for a *wa*-phrase to be a topic, it must be preposed: recall that the in-situ *wa*-phrase in (73a) can only be a contrast-marker, whereas the preposed one in (73b) can be the topic of the sentence.

(73) a. *John-ga Bill-wa hometa.*
John-NOM Bill-TOP praised
'John praised Bill (but he didn't praise others).'
b. *Bill-wa*$_1$ *John-ga* e_1 *hometa.*
Bill-TOP John-NOM praised
'As for Bill, John praised him.'

(72) also involves an NP that is marked by the nominative case "*-ga*". Nominative NPs generally receive exhaustive focus in root clauses in Japanese (e.g., (73b) implies that John *and only John* praised Bill; Heycock 1994, 2008; Kuno 1973). The presence of a phrase receiving focus in a lower position facilitates the establishment of a topic-focus configuration, which helps further ascertain the status of the *wa*-marked item as a topic. To force a root environment, the schema involves the verbal honorific suffix "*-mas*", which can only appear in matrix clauses (Harada 1976).[24]

Finally, as noted in Section 3.1, preposed *wa*-phrases may optionally obtain contrastive focus to become contrastive topics, but my focus here, just as in Section 3, is primarily on whether the test items can function as non-contrastive topics (see

[24]Except in direct discourse environments (e.g., in the complement of speech verbs like *iu* ('say')), *-mas* cannot appear in embedded clauses (see Harada 1976). For instance, *-mas* cannot appear in the complement of *omou* ('think'), or within a relative clause.

(i) a. *John-wa* [*Bill-ga* {*kur-u* / **ki-**mas**-u*} *to*] *omotteiru.*
John-TOP Bill-NOM come-NPST come-HON-NPST C think
'John thinks that Bill will come.'
b. [*John-ga* {*kat-ta* / **kai-**masi**-ta*}] *hon.*
John-NOM buy-PAST buy-HON-PAST book
'The book that John bought.'

Appendix A.3 for justifications for concentrating on non-contrastive topics for the purpose of the present study). As noted in Section 3.1, non-contrastive topics are typically characterized by the lack of phonological prominence on themselves and the absence of strong reduction of the pitch peaks on the following phrases. In our case at hand, prominence is most naturally placed on the nominative NP, which is assumed to bear exhaustive focus. The presence of prominence on the nominative NP is at odds with the intonational properties of contrastive topics (which would force a strong reduction of the pitch peak on the nominative NP), so it can be used as a clue to the status of the test item as a non-contrastive topic. I indicate phonological prominence with CAPITALS. See also Appendix A.3 for a comparison with contrastive topics with respect to some of the items here.

To summarize, the criteria are the following: for each test item α, if the sentence of the form in (72) is acceptable with α, α is considered topicalizable; otherwise, it is deemed untopicalizable.

4.3 Restrictions explained

Let me set a benchmark with elidable items. In the AE case, (74), the meaning of *3-tu-izyoo-no mati* ('at least three cities') in the first sentence can be recovered in the object of the second sentence, thus this item can be targeted by AE. Furthermore, as shown in (75), the sentence that conforms to the schema (72) is completely acceptable, thus the item can be considered topicalizable.

(74) *John-wa* [*3-tu-izyoo-no mati-ni*] *itta. Mary-wa* ___ *ikanakatta.*
John-TOP 3-CL-at.least-GEN city-DAT went Mary-TOP didn't.go
'John went to at least three cities. Mary didn't go (to at least three cities).' (ok: 5/5)

(75) [*3-tu-izyoo-no mati-ni-wa*], *JOhn-ga iku koto-ga deki-masi-ta.*
3-CL-at.least-GEN city-DAT-TOP John-NOM go fact-NOM able-HON-PAST
lit. 'As for at least three cities, John was able to go there.' (ok: 5/5)

Using this as a baseline, the four items from Section 4.1 will be tested below.

4.3.1 *Wh*-phrases

(76) shows that *wh*-phrases cannot be topicalized: with a high pitch peak accent on the nominative NP, all the speakers found (76) simply unacceptable. The observation that *wh*-phrases cannot be topics is in fact not new: see Kuno 1973 and Miyagawa 1987.

(76) [*Doko-ni-wa*], *JOhn-ga iku koto-ga deki-masi-ta ka?*
where-DAT-TOP John-NOM go fact-NOM able-HON-PAST Q
lit. 'As for where, was John able to visit it?' (*: 5/5)

4.3.2 Downward-monotonic quantifiers

(77) shows that the downward-monotonic quantifier "*miman*" ('less than') cannot be topicalized: all the speakers except one found the sentence unacceptable.[25] Grohmann (2006) observed that downward-monotonic quantifiers cannot be topicalized in German either; see also Constant 2012, 2014 for the observation that downward-monotonic quantifiers cannot be contrastive topics in English.

(77) [*3-tu-miman-no mati-ni-wa*], *JOhn-ga iku koto-ga deki-masi-ta.*
3-CL-less.than-GEN city-DAT-TOP John-NOM go fact-NOM able-HON-PAST
lit. 'As for less than three cities, John was able to visit them.' (ok: 1/5, *: 4/5)

Note that there are actually predicates in the scope of which downward-monotonic quantifiers can undergo ellipsis. For instance, as shown in (78), downward-monotonic quantifiers can be elided when they appear under the verb "*osaeru*" ('limit').

(78) a. *Tokyo-wa (sinki yooseesya-o) [300-nin-miman-ni] osaeta.*
Tokyo-TOP new positive.case-ACC 300-CL-less.than-DAT limited
'Tokyo limited new positive cases to less than 300.'
b. *Nagoya-mo ___ osaeta.*
Nagoya-also limited
'Nagoya, too, limited the number (to less than 300).' (ok: 5/5)

Strikingly, as shown in (79), downward-monotonic quantifiers can be topicalized if they originate within the scope of this verb. This further confirms that topicalizability and elidability indeed correlate.

(79) [*300-nin-miman-ni-wa*], *TOKYO-TO NAgoya-ga osae-masi-ta.*
300-CL-less.than-DAT-TOP Tokyo-and Nagoya-NOM limit-HON-PAST
lit. 'As for less than 300, Tokyo and Nagoya limited the number to it.' (ok: 4/5, ?: 1/5)

4.3.3 *Only*

(80) shows that the focus operator "*dake*" cannot be topicalized: again except for one speaker, the speakers all found (80) significantly or extremely degraded.

(80) [*Tokyo-ni-dake-wa*], *JOhn-ga iku koto-ga deki-masi-ta.*
Tokyo-DAT-only-TOP John-NOM go fact-NOM able-HON-PAST
lit. 'As for only Tokyo, John was able to visit it.' (ok: 1/5, ??: 2/5, *: 2/5)

4.3.4 Distributive readings for *each other*, *same* and *different*

To begin with the reciprocal, (81) shows that the distributive reading (i.e., for each couple, the wife and the husband attended each other's class) becomes difficult if the reciprocal is topicalized.

[25] I leave open why some speakers like one of my consultants may find the sentence acceptable. I note that the same consultant likewise found the sentence involving topicalized *only* (shown in (80)) acceptable.

(81) [*Otagai-no zyugyoo-ni-wa*], *SUbete-no fuufu-ga sankasi-masi-ta.*
each.other-GEN class-DAT-TOP every-GEN couple-NOM attend-HON-PAST
lit. 'Each other's class, every couple attended.' (Dist. ok: 1/5, ?: 1/5, *: 3/5)

Turning to *onazi* ('same'), (82) shows that the distributive reading (i.e., the wife and the husband of Couple A attended Class X, the wife and the husband of Couple B attended Class Y, and so on) becomes difficult if the phrase involving this modifier is topicalized.

(82) [*Onazi zyugyoo-ni-wa*], *SUbete-no fuufu-ga sankasi-masi-ta.*
same class-DAT-TOP every-GEN couple-NOM attend-HON-PAST
lit. 'The same class, every couple attended.' (Dist. ?: 2/5, *: 3/5)

Finally for *betubetu* ('different'), (83) shows that the distributive reading (i.e., for each couple, the wife and the husband attended different classes) becomes difficult if the phrase involving this modifier is topicalized.

(83) [*Betubetu-no zyugyoo-ni-wa*], *SUbete-no fuufu-ga sankasi-masi-ta.*
different-GEN class-DAT-TOP every-GEN couple-NOM attend-HON-PAST
lit. 'Different classes, every couple attended.' (Dist. ??: 2/5, *: 3/5)

Thus, for all the three cases, distributive readings are unavailable when the target phrase is topicalized, just as they are unavailable when AE applies.[26]

4.4 Summary

The four restrictions outlined in Section 4.1 all involve items that cannot be topicalized. Various restrictions that have been independently observed in the literature thus

[26] As shown in (i), distributive readings are much easier in the scrambling counterparts, suggesting the effect of topicalization (I note that some speakers find distributive readings difficult even with scrambling).

(i) a. [*Otagai-no zyugyoo-ni*], *SUbete-no fuufu-ga sankasi-masi-ta.*
each.other-GEN class-DAT every-GEN couple-NOM attend-HON-PAST
'Every couple attended each other's class.' (Dist. ok: 4/5, ??: 1/5)
b. [*Onazi zyugyoo-ni*], *SUbete-no fuufu-ga sankasi-masi-ta.*
same class-DAT every-GEN couple-NOM attend-HON-PAST
'Every couple attended the same class.' (Dist. ok: 4/5, ??: 1/5)
c. [*Betubetu-no zyugyoo-ni*], *SUbete-no fuufu-ga sankasi-masi-ta.*
different-GEN class-DAT every-GEN couple-NOM attend-HON-PAST
'Every couple attended different classes.' (Dist. ok: 4/5, ?: 1/5)

I also note that there is slight variability among the three items regarding the difficulty of distributive readings. For instance, the speaker who rated the reciprocal (81) as "ok" rated *onazi* (82) as "?" and *betubetu* (83) as "??", suggesting a gradation of acceptability among the three items (n.b., this speaker rated all the scrambling data in (i) as "ok").

fall out from a simple explanation: what cannot be topicalized cannot undergo AE.[27] This result lends strong empirical support to the present account.

5 A unified perspective on AE and discourse *pro*-drop

I have been showing how the topic-deletion account of AE brings fruitful results for a variety of phenomena. Another advantage of the proposed account is that it enables a unified perspective on AE and discourse *pro*-drop (i.e., *pro*-drop that is not licensed by rich verbal agreement, also known as "radical *pro*-drop").

Following Tsao (1977), Huang (1984) suggested that discourse *pro*-drop is derived by a rule of "Topic NP Deletion", which operates across discourse to delete the topic of a sentence under the identity with an established topic. Consider Mandarin (84) (slightly modified from Huang 1984: 55). All the sentences after the first one are analyzed as involving a silent topic, which is identified with the overt topic of the first sentence, namely *China*. The same holds for Japanese (85).

(84) [***Zhongguo***$_1$, *difan hen da.*] [*Renkou hen duo.*] ... [*Women dou xihuan.*]
China place very big population very many we all like
'(As for) China$_1$, (its$_1$) land area is very large. (its$_1$) population is very large. ... We all like (it$_1$).'

(85) [***Tyuugoku-wa***$_1$ *hiroi kokudo-o motteiru.*] [*Zinkoo-mo totemo ooi.*] ... [*Watasitati-wa mina aisiteiru.*]
China-TOP large land.area-ACC have population-too very many we-TOP all love
'(As for) China$_1$, (its$_1$) land area is very large. (its$_1$) population, too, is very large. ... We all love (it$_1$).'

[27] A murky case is exceptive *-sika*-phrases (the suffix "*-sika*" typically attaches to NPs and requires negation for its licensing; see, e.g., Tanaka 1997). Takita (2011) argues that AE can apply to *-sika*-phrases, reporting that sloppy readings are available in the null object in (i).

(i) a. *Taroo-wa [zibun-no tukutta ringo-**sika**] tabe-na-katta.*
Taroo-TOP self-GEN grew apple-SIKA eat-NEG-PAST
'Taroo didn't eat anything but apples that he grew himself.'
b. *Hanako-mo* ___ *tabe-na-katta.*
Hanako-also eat-NEG-PAST
'Hanako, too, didn't eat (anything but apples that she grew herself).'

Given that *-sika*-phrases with the particle "*-wa*" are simply ungrammatical (e.g., **John-sika-wa*), Takita's observation seems to be a potential counterexample to the topic-deletion account of AE. However, Takita's argument still leaves room for discussion. Ikawa (2013) points out that there are cases in which AE cannot apply to *-sika*-phrases: in (ii), the meaning of the *-sika*-phrase cannot be recovered in the second sentence.

(ii) *John-wa [zibun-no hon-**sika**] kari-na-katta. Mary-wa* ___ *kaw-ana-katta.*
John-TOP self-GEN book-SIKA borrow-NEG-PAST Mary-TOP buy-NEG-PAST
Not available: 'John borrowed no book but his. Mary bought (no book but hers).'

Such an uncertain status of the data makes it difficult to provide a clear argument regarding the predicted correlation between the elidability of *-sika*-phrases and their topicalization counterpart at this point. Further investigation is left for future work.

The topic-deletion account of AE now merges with this well-established account of discourse *pro*-drop: AE and discourse *pro*-drop are different realizations of topic deletion. This unified view is favorable from a typological standpoint. The literature has observed a profound correlation between languages having AE and languages having discourse *pro*-drop (Saito 2007; Sakamoto 2020): AE has been attested in Japanese, Korean (Kim 1999; Sakamoto 2020), Chinese (H.-T. Cheng 2013; Sakamoto 2020), Mongolian (Sakamoto 2020), Turkish (Şener and Takahashi 2010; D. Takahashi 2014), American Sign Language (Koulidobrova 2012), Colloquial Singapore English (Sato 2014), Javanese (Sato 2015), and Persian (Sato and Karimi 2016), all of which also attest discourse *pro*-drop.[28] This correlation would be surprising if AE and discourse *pro*-drop were completely independent phenomena.[29] A unified treatment of the two phenomena is thus desirable both theoretically and empirically. My account suggests that such unification can be fruitfully achieved through the notion of topic deletion.[30]

How could the correlation between AE and discourse *pro*-drop be derived under the current analysis? Under the topic-deletion account of discourse *pro*-drop, the silent *pro* in an in-situ position is analyzed as co-indexed with the topic in the sentence. One possibility that is worth pursuing is that the topic that licenses discourse *pro*-drop is situated in a special TopicP projection in the matrix left periphery, which would be present in discourse *pro*-drop languages but possibly absent in others. Then *pro* would be licensed in two ways, via agreement, as in Spanish for instance, or via co-indexing with the topic generated in this special projection, which implies discourse *pro*-drop. The projection would link the element in its specifier to the preceding discourse, thus helping establish an inter-sentential discourse coherence. Arguments in AE would similarly occupy the specifier of this projection via movement, thus deriving the correlation between AE and discourse *pro*-drop in the relevant languages (see

[28] To the best of my knowledge, no language has ever been observed that has discourse *pro*-drop but not AE. The opposite direction, however, is controversial. While Sakamoto (2020) speculates that the presence of AE requires the presence of discourse *pro*-drop, hence doubting the possibility of languages that have AE but not discourse *pro*-drop, Landau (2018, 2023a, 2023b) argues that some null arguments in Hebrew, which is not generally categorized as a discourse *pro*-drop language, do involve AE. Although Hebrew may constitute a counterexample to Sakamoto's speculations, I still agree with Sakamoto and other researchers that the correlation between AE and discourse *pro*-drop is fairly robust, and that there are plausibly some linguistic traits shared by the relevant languages that enable the two types of null arguments simultaneously.

[29] This typological correlation has led some authors to speculate that the two phenomena are derived from one single syntactic mechanism. For instance, Saito (2007) argued that the lack of obligatory agreement in the relevant languages enables liberal use of "LF-copying", an operation which copies elements into null positions from a set of contextually given materials: Saito conjectured that this operation governs both AE and discourse *pro*-drop. I cannot fully evaluate Saito's claim here, but one worry is that it is unclear under his account specifically how the set of discourse materials is constrained, which, under the present account, is captured in a principled way by the notion of topicality.

[30] Unification of AE and discourse *pro*-drop leads us to the question of whether it is even possible to reduce either one to the other. The literature (e.g., Bošković 2011; Saito 2007) has argued that such reduction is not viable, on the grounds that readings that correlate with AE (in particular, sloppy and quantificational readings, e.g., (2) and (4)) are possible only when there is a linguistic antecedent, while null arguments in general do not require a linguistic antecedent, with discourse *pro*-drop being one such case (as far as I can see, Huang 1984 was open about whether discourse *pro*-drop derived by his rule of Topic NP Deletion always requires the presence of a linguistic antecedent like AE). This difference between AE and discourse *pro*-drop with respect to selectivity of antecedents suggests that they may not completely overlap in terms of status, hence that both are needed to capture the entirety of null argument phenomena. I leave further discussion of relevant issues for future work, being open to both the possibility and impossibility of such a reductive account. That said I emphasize that, no matter how the discussion turns out, the point that I have made in this paper would not lose its validity; whether linguistic antecedents are required or not, being a deleted topic will remain as a necessary condition for AE and discourse *pro*-drop, and in this respect the two phenomena can be viewed from a unified perspective.

Appendix C for more discussion of related issues, especially of the syntactic options for filling the specifier of this TopicP for AE).

Of course, this would not be the only factor that would characterize discourse *pro*-drop/AE languages. One prerequisite that has been argued to be shared by both AE and discourse *pro*-drop is that a language must be an NP-language in the sense of the "NP/DP" split in Bošković 2008, 2012, that is, it must lack definite articles. Bošković (2008, 2012) argues that only NP languages allow discourse *pro*-drop; H.-T. Cheng (2013) argues that only NP languages allow AE.

The lack of agreement is another potential factor. As Oku (1998) observes, null arguments in agreement *pro*-drop languages like Spanish do not induce sloppy readings and hence defy the AE analysis. Saito (2007) generalizes this idea and speculates that the presence of obligatory agreement blocks AE in Spanish and English (for a way of combining the lack of articles and the lack of agreement requirements, see Bošković 2018).

The necessary and sufficient explanation of the correlation between AE and discourse *pro*-drop would involve a complicated interplay between various factors like these, detailed investigation of which goes beyond the scope of this paper. Although further research is left for another occasion, the present work underscores that the notion of topicality and the relevant syntactic projection are plausibly another requirement for the licensing of AE and discourse *pro*-drop, shedding new light on the study of the typological correlation between the two phenomena.

6 Conclusion

I conclude this paper with several conjectural remarks. First, while I have focused on ellipsis of NPs, my topic-deletion account is also expected to account for ellipsis of CPs (Saito 2007; Sakamoto 2018, 2020; Shinohara 2006). For instance, just like null NPs, the null CP complement in (86b) allows for sloppy readings of the reflexive pronoun involved in it, suggesting that the CP complement has undergone ellipsis.

(86) a. *John$_1$-wa* [$_{\text{CP}}$ *zibun$_1$-no teean-ga saiyoosareru to*] *omotteinai.*
John-TOP self-GEN proposal-NOM is.accepted C not.think
'John$_1$ doesn't think that his$_1$ proposal will be adopted.'

b. *Bill-mo* ___ *omotteinai.*
Bill-also not.think
'Bill$_2$ doesn't think (that his$_2$ proposal will be adopted), either.'

Crucially, CPs are known to be topicalizable (see Alrenga 2005; Koster 1978; Moulton 2013; S. Takahashi 2010), and (87) shows that CPs can be topicalized in Japanese too.

(87) [[$_{\text{CP}}$ *Zibun$_1$-no teean-ga saiyoosareru to*]-*wa*]$_2$ *Bill$_1$-mo* t_2 *omotteinai.*
self-GEN proposal-NOM is.accepted C-TOP Bill-also doesn't.think
'That his$_1$ proposal will be adopted, Bill$_1$ doesn't think either.'

The topic-deletion account is thus expected to extend easily to ellipsis of CPs. A full investigation of this conjecture is left for future work.[31]

Furthermore, while I have focused on Japanese, other languages that exhibit AE also seem to show the same interaction with *wh*-phrases as observed in Japanese, as suggested by Mandarin. For instance, the object position in Mandarin has been noted to allow sloppy readings (see H.-T. Cheng 2013), as shown in (88).

(88) *Yuehan*$_1$ *biaoyang le* [*ziji*$_1$*-de mama*]. *Bier ye biaoyang le* ___.
John praise ASP self-GEN mother Bill also praised ASP
'John$_1$ praised his$_1$ mother. Bill$_2$ praised (his$_2$ mother), too.'

Notably, once the subject NP is replaced by a *wh*-phrase as in (89), sloppy readings in the object position become very difficult.[32]

(89) a. ***Nage nanhai***$_1$ *biaoyang le* [*ziji*$_1$*-de mama*]*?*
which boy praise ASP self-GEN mother
'Which boy$_1$ praised his$_1$ mother?'
b. *Wo zhi zhidao* [***nage nühai*** *biaoyang le* ___]
I only know which girl praised ASP
Not Available: 'I only know which girl$_2$ praised (her$_2$ mother).'

Though preliminary, the observation here suggests that the *Wh*-Scope Generalization is a general phenomenon for AE languages. Further cross-linguistic investigation is left for future work.

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[31] The proposed account of AE may also be linked to the analysis of so-called Particle-Stranding Ellipsis (PSE; Goto 2014; Nasu 2012; Sato 2012; Sato and Maeda 2019; Shibata 2014; among others), which involves the ellipsis of an argument that leaves the associated particle stranded, as shown in (i).

(i) A: *Tanaka-kun-wa?*
Tanaka-TITLE-TOP
'How about Tanaka?'
B: ~~*[Tanaka-kun]*~~*-wa-ne, kaisya-o yameta-yo.*
Tanaka-TITLE-TOP-PRT company-ACC quit-SFP
'He quit his company.'

As observed in the literature, the null argument in PSE generally refers back to the topic of the discourse (see Goto 2014; Nasu 2012; Sato 2012): one can assume that in (iB), Spec,TopicP is filled by the relevant element and ellipsis takes place there. If the analysis endorsed here is on the right track, it may be possible to provide a comprehensive account of null argument phenomena that unifies AE, discourse *pro*-drop, and PSE under the notion of topic deletion (though the licensing of PSE is plausibly constrained by additional factors, such as adjacency to an utterance boundary; see Shibata 2014 and Sato and Maeda 2019). I leave further investigation for future work.

[32] I thank Muyi Yang for her help with the Mandarin data here. The judgment is based on hers.

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Appendix A Some more remarks on topicalization

A.1 (Non-)D-linking

As shown extensively in Section 3, the presence of a *wh*-phrase that c-commands the launching site of topicalization at LF leads to degradation of the sentence. This effect can be seen from the contrast between (90) and (91) (repeated from (31) and (34)).

(90) [*Zibun*$_1$*-no* *sensee-ni-wa*]$_2$ ***dare***$_1$*-ga* t_2 *kansyazyoo-o* *okura-na-katta* *no?*
self-GEN teacher-DAT-TOP who-NOM letter.of.thanks-ACC send-NEG-PAST Q
lit. 'His$_1$ teacher, who$_1$ didn't send a letter of thanks?' (ok: 1/5, ?: 1/5, ??: 2/5, *: 1/5)

(91) [*Zibun*$_1$*-no kodomo-ni-wa*]$_2$ *John*$_1$*-wa* t_2 ***nani****-o* *age-na-katta* *no?*
self-GEN child-DAT-TOP John-TOP what-ACC give-NEG-PAST Q
lit. 'His$_1$ child, what did John$_1$ not give?' (ok: 5/5)

Although there is a clear difference between (90) and (91) regarding the overall distribution of judgments, there is some speaker variation in how degraded (90) appears. What accounts for this variation? I suggest that *(non-)D-linking* plays a role.

D(iscourse)-linked *wh*-phrases refer to *wh*-phrases that presuppose a salient set of alternatives that both the speaker and the hearer have in mind. As Pesetsky (1987) pointed out, D-linking is obligatory for *which*-phrases but optional for *who* or *what*. D-linking for *who* or *what* can be signaled by contextual clues or by an overt adverbial that introduces a fixed set of individuals. In fact, when (90) is preceded by an adverbial that designates salient individuals, the sentence becomes ameliorated (if not perfect) for some speakers:

(92) *John-to Bill-to Tom-no uti,* [*zibun*$_1$*-no sensee-ni-wa*]$_2$ ***dare***$_1$*-ga* t_2 *kansyazyoo-o* *okura-na-katta* *no?*
John-and Bill-and Tom-GEN among self-GEN teacher-DAT-TOP who-NOM letter.of.thanks-ACC send-NEG-PAST Q
lit. 'Among John, Bill and Tom, his$_1$ teacher, who$_1$ didn't send a letter of thanks?' (ok: 1/5, ?: 3/5, ??: 1/5)

Non-D-linking for *who* or *what* can be forced by adding *the hell* or *on earth*; in Japanese, it can be forced by adding *ittai* (Pesetsky 1987). With *ittai* on the *wh*-phrase, (90) becomes further deteriorated. Crucially, the speaker who rated (90) as "ok" rated (93) as "??". The impact of the *wh*-phrase on topicalization thus becomes clearer once non-D-linking of the *wh*-phrase is forced.

(93) [*Zibun*$_1$*-no* *sensee-ni-wa*]$_2$ ***ittai*** ***dare***$_1$*-ga* t_2 *kansyazyoo-o*
self-GEN teacher-DAT-TOP on.earth who-NOM letter.of.thks-ACC
okura-na-katta no?
send-NEG-PAST Q
lit. 'His$_1$ teacher, who$_1$ on earth didn't send a letter of thanks?' (?: 1/5, ??: 1/5, *: 3/5)

Note that the presence of *ittai* has no impact if the *wh*-phrase does not intervene in topicalization (94) or if the movement is scrambling (95).

(94) [*Zibun*$_1$*-no* *sensee-ni-wa*]$_2$ *John*$_1$*-wa* t_2 ***ittai*** ***nani-o***
self-GEN teacher-DAT-TOP John-TOP on.earth what-ACC
teesyutusi-na-katta no?
submit-NEG-PAST Q
lit. 'To his$_1$ teacher, what on earth did John$_1$ not submit?' (ok: 4/5, ?: 1/5)

(95) [*Zibun*$_1$*-no* *sensee-ni*]$_2$ ***ittai*** ***dare***$_1$*-ga* t_2 *kansyazyoo-o*
self-GEN teacher-DAT on.earth who-NOM letter.of.thanks-ACC
okura-na-katta no?
send-NEG-PAST Q
'Who$_1$ on earth didn't send his$_1$ teacher a letter of thanks?' (ok: 5/5)

Why does (non-)D-linking affect the acceptability of relevant sentences? I suggest that this is because non-D-linking preserves, but D-linking nullifies, the operator feature of in-situ *wh*-phrases. In Section 3.4, I suggested that *wh*-phrases count as Ā-elements even in situ because of their inherent operator feature, which renders topicalization crossing them a violation of the Relativized Minimality. Non-D-linking triggered by *ittai* forces the operator status of in-situ *wh*-phrases. D-linking, however, suppresses the operator feature of in-situ *wh*-phrases (Cinque 1990; Pesetsky 1987): once in-situ *wh*-phrases lose their operator feature, they cease to count as Ā-elements for intervention effects, thus accounting for the amelioration effect in (92).

A.2 Rescue by A-movement?

Besides the speaker variation discussed in Appendix A.1, another instance of speaker variation was noted in Section 3. Recall that (96) (repeated from (41)) was judged to be degraded by four speakers, while one speaker found it acceptable.

(96) [*Zibun*$_1$*-no* *buka-ni-wa*]$_2$ *John*$_1$*-wa* [***dare-ga*** t_2 *ankeeto-o*
self-GEN subordinate-DAT-TOP John-TOP who-NOM questionnaire-ACC
teesyutusi-na-katta ka] *kyoomigaaru.*
submit-NEG-PAST Q is.curious
lit. '[To his$_1$ subordinate]$_2$, John$_1$ is curious to know who did not submit questionnaires t_2.' (**ok: 1/5**, ??: 2/5, *: 2/5)

It was suggested in Appendix A.1 that the impact of *wh*-phrases can be made more salient by adding *ittai*. However, the speaker who found (96) acceptable still judged (97) to be acceptable.

(97) [*Zibun*$_1$*-no* *buka-ni-wa*] *John*$_1$*-wa* [***ittai*** ***dare****-ga* t_2
self-GEN subordinate-DAT-TOP John-TOP on.earth who-NOM
ankeeto-o *teesyutusi-na-katta* *ka*] *kyoomigaaru.*
questionnaire-ACC submit-NEG-PAST Q is.curious
lit. '[To his$_1$ subordinate]$_2$, John$_1$ is curious to know who on earth did not submit questionnaires t_2.' (**ok: 1/5**, ??: 1/5, *: 3/5)

What accounts for the judgment pattern of this speaker? I suspect that those who find (96) and (97) acceptable are able to have the following parse, which I assume is hard to access for those who find (96) and (97) degraded.

(98) [$_{\text{TopicP}}$ α-*wa*$_1$ [... [$_{\text{TP}}$ ... $t_{1(\bar{\text{A}})}$ ... [... ***wh*** ... [... $t_{1(\text{A})}$ ...] ...

In (98), the *wa*-phrase first undergoes clause-internal A-movement past the embedded subject *wh*-phrase (illustrated by the A-trace "$t_{1(\text{A})}$"). From there, it further undergoes Ā-movement to Spec,TopicP (illustrated by the Ā-trace "$t_{1(\bar{\text{A}})}$"). Since the first movement is A-movement, it is not hindered by the presence of an Ā-element (i.e., the subject *wh*-phrase), hence no violation of the Relativized Minimality. If this parse is possible, the sentence is acceptable; if not, the sentence becomes degraded.

It is an intriguing issue why there is speaker variation regarding the accessibility of this derivation, which I leave for future work. I note, however, that if a sentence precludes the possibility of clause-internal A-movement, the sentence is judged to be degraded even by those who find (96) and (97) acceptable. Consider (99): in this case, the reflexive within the topicalized IO is bound by the embedded subject rather than by the matrix subject. All the speakers found (99) extremely degraded.

(99) [*Zibun*$_1$*-no* *sensee-ni-wa*]$_3$ *John-wa* [***dare***$_1$*-ga* t_3 *kansyazyoo-o*
self-GEN teacher-DAT-TOP John-TOP who-NOM letter.of.thanks-ACC
okur-ana-katta *ka*] *kyoomigaaru.*
send-NEG-PAST Q is.curious
lit. '[To his$_1$ teacher]$_2$, John is curious to know who$_1$ did not send a letter of thanks t_2.' (*: 5/5)

The possibility of A-movement is precluded in (99). Since A-movement affects binding relations, if the embedded IO were to undergo clause-internal A-movement past the embedded subject, the relation between the reflexive within the IO and the embedded subject would be changed. With A-movement unavailable, the only option for the *wa*-phrase is to undergo topicalization directly from the embedded IO. However, this option is also ruled out: if it were to occur, it would be an Ā-movement crossing an Ā-element (in this case, the *wh*-phrase in the embedded subject), thus violating the Relativized Minimality. The unacceptability of (99) thus follows.

As correctly predicted by my account, the corresponding AE example in (100) also does not allow for sloppy readings for null arguments. The context ensures that Mary

knows that the culprits who did not send a letter of thanks to their own teachers last year did send ones to some other teachers in the same year. The target sloppy reading for (100b) was found to be difficult by the Japanese speakers, paralleling the difficulty of topicalization in (99).

(100) **Context**: It is common ground that every student sent a letter of thanks to at least one teacher both last year and this year.

a. *John-wa* [***dare***$_1$*-ga* *kotosi* [*zibun*$_1$*-no* *sensee-ni*]
John-TOP who-NOM this.year self-GEN teacher-DAT
kansyazyoo-o *okur-ana-katta* *ka*] *kyoomigaaru.*
letter.of.thanks-ACC send-NEG-PAST Q is.curious
'John is curious to know who$_1$ didn't send a letter of thanks to his$_1$ teacher this year.'

b. *Mary-wa* [***dare****-ga* *kyonen* ___ *kansyazyoo-o* *okur-ana-katta*
Mary-TOP who-NOM last.year letter.of.thanks-ACC send-NEG-PAST
ka] *kyoomigaaru.*
Q is.curious
'Mary is curious to know who$_2$ didn't send a letter of thanks (to his$_2$ teacher) last year.' (?: 1/5, ??: 1/5, *: 3/5)

A.3 Non-contrastive topics vs. contrastive topics

As noted in Section 3, preposed *wa*-phrases may function as non-contrastive topics (Non-CTs) or contrastive topics (CTs), typically disambiguated by distinct intonational patterns (see Nakanishi 2007; Tomioka 2010). CTs are characterized by the presence of a prominent high pitch accent on some part of themselves and a radical lowering of the pitch accent of the phrases following them; Non-CTs are conversely characterized by the lack of both features. In Non-CT, as shown in (101a), prominence (indicated in CAPITALS) is most naturally placed on the nominative phrase, with a low-to-high pitch contour (indicated by _/‾) observed between it and the topic. In CT, prominence is placed on the NP in the topic (101b) or the particle *-wa* (101c), and the pitch peaks on the phrases that follow them are all strongly reduced (as indicated by ‾_). Notably, contrastive focus on CTs semantically implies the presence of alternatives (see Hara 2006; Tomioka 2010), which is not implied by Non-CTs.

(101) a. *Tomato-wa*$_1$ / *JOhn-ga* e_1 *katta.*
tomato-TOP John-NOM bought
'As for the tomatoes, John bought them.'

b. *TO**mato-wa*$_1$ *John-ga* e_1 *katta.*
tomato-TOP John-NOM bought
'As for the TOMATOES, John bought them. (As for the BEANS, ...)'

c. *Tomato-WA*]$_1$ \ *John-ga* e_1 *katta.*
tomato-TOP John-NOM bought
'As for the TOMATOES, John bought them. (As for the BEANS, ...)'

As mentioned in Section 3, what is more important for my account of AE is a parallelism with Non-CTs, rather than CTs. This is because under my account, elements that move to Spec,TopicP are assumed to undergo *deletion*, which, notice, obligatorily implies the absence of phonological prominence on the topic. Thus, as a reviewer correctly suggested, if Non-CTs and CTs should show distinct patterns of interaction with *wh*-phrases or other elements, AE would more plausibly show a parallelism with those that do *not* involve prominence on topics, that is, with Non-CTs. Crucially, as noted in Section 3 and 4, all the topicalization data that have been shown in the present paper were presented to my consultants with the intonation pattern of Non-CTs: interaction with *wh*-phrases (Section 3) and anti-AE items (Section 4) has been observed for these cases, thus arguing for a parallelism between AE and Non-CTs.

The aim of this Appendix is to provide additional discussion of the observed syntactic effects by comparing Non-CTs and CTs. I show that, as far as my consultants are concerned, AE exhibits a more robust correlation with the former than the latter, thus supporting the assumption that AE parallels with Non-CTs rather than CTs.

I first compare Non-CTs and CTs with respect to their interaction with *wh*-phrases. In addition to the aforementioned phonological clues, relevant Non-CT and CT sentences were shown to the speakers with contexts that would highlight their respective construals (n.b., the judgments on Non-CT data in this Appendix were collected independently of those presented in Section 3; the examples in Section 3 were shown to the speakers without contexts). I focused on the configurations in (31) (the simplex structure with an intervening *wh*), (34) (the simplex structure with no intervening *wh*) and (37) (the complex structure with an intervening *wh* in the matrix clause) as the targets of investigation. For CT examples here, I used versions that place prominence on the particle rather than NPs.

(102) and (103) illustrate the CT/Non-CT comparison for the configuration (31). Two speakers found Non-CT more degraded than CT, one found the former slightly better than the latter, and one found them equally degraded (note that the distribution of judgments in Non-CT (103) replicates the distribution in (31) from Section 3).

(102) **Context (CT)**: At the graduation ceremony, students are supposed to give letters of thanks to their teachers and parents. We know who failed to give letters to their parents.

(Zyaa,) [*zibun*$_1$*-no* *sensee-ni-*$\overline{WA}]_2$ \ ***dare***$_1$*-ga* t_2 *kansyazyoo-o*
then self-GEN teacher-DAT-TOP who-NOM letter-ACC
okura-na-katta *no?*
send-NEG-PAST Q

lit. 'Then, his$_1$ TEACHER, who$_1$ did not send a letter of thanks?'
(Speaker A: ??, Speaker B: ??, Speaker C: ??, Speaker D: ok, Speaker E: ok)

(103) **Context (Non-CT)**: At the graduation ceremony, students are supposed to give letters of thanks to their teachers. Every year we have students who forget to prepare ones. This year was not an exception.

(Sorede,) [*zibun*$_1$*-no* *sensee-ni-wa*]$_2$ / ***DAre***$_1$*-ga* t_2 *kansyazyoo-o*
so self-GEN teacher-DAT-TOP who-NOM letter-ACC
okura-na-katta no?
send-NEG-PAST Q
lit. 'So, his$_1$ teacher, who$_1$ did not send a letter of thanks?'
(Speaker A: *, Speaker B: ?, Speaker C: ??, Speaker D: ok, Speaker E: *)

(104) and (105) illustrate the comparison for the configuration (34). All the speakers found both CT and Non-CT fully acceptable.

(104) **Context (CT)**: There are things that John didn't give his parents and children respectively. We know what he didn't give his parents.
(Zyaa,) [*zibun*$_1$*-no* *kodomo-ni-WA*]$_2$ \ *John*$_1$*-wa* t_2 ***nani****-o*
then self-GEN children-DAT-TOP John-TOP what-ACC
age-na-katta no?
give-NEG-PAST Q
lit. 'Then, his$_1$ CHILDREN, what did John$_1$ not give?' (ok: 5/5)

(105) **Context (Non-CT)**: There are things that John didn't give his children.
(Sorede,) [*zibun*$_1$*-no* *kodomo-ni-wa*]$_2$ / *John*$_1$*-wa* t_2 ***NAni****-o*
so self-GEN children-DAT-TOP John-TOP what-ACC
age-na-katta no?
give-NEG-PAST Q
lit. 'So, his$_1$ children, what did John$_1$ not give?' (ok: 5/5)

As far as the average acceptability rates across five speakers are concerned, Non-CT (103) is slightly worse than CT (102), though the difference does not seem to be very conspicuous. Given the overall contrast with (104)/(105), it seems that Non-CTs and CTs are equally sensitive to the presence of an intervening *wh*-phrase.

(106) and (107) show the comparison for the configuration in (37): many speakers found both fairly degraded. Once again, the average acceptability across five speakers is slightly lower for Non-CT, but the overall contrast is not particularly noticeable (note that, in this case as well, the distribution of judgments in Non-CT (107) nearly replicates that in (37) from Section 3).

(106) **Context (CT)**: Dads are watching the scene where their wives and daughters are playing with the dog called Alex. We know which dads think that the dog didn't show affection to their respective wives.
(Zyaa,) [*zibun*$_1$*-no* *musume-ni-WA*]$_2$ \ ***dare***$_1$*-ga* [*Alex-ga* t_2
then self-GEN daughter-DAT-TOP who-NOM Alex-NOM
kooi-o simes-ana-katta to] *omotteiru no?*
affection-ACC show-NEG-PAST C think Q
lit. 'Then, to his$_1$ DAUGHTER, who$_1$ thinks that Alex did not show affection?'
(Speaker A: ?, Speaker B: *, Speaker C: *, Speaker D: ??, Speaker E: ok)

(107) **Context (Non-CT)**: Dads are watching the scene where their daughters are playing with the dog called Alex.

(Sorede,) [*zibun*$_1$*-no* *musume-ni-wa*]$_2$ / ***DÁre***$_1$*-ga* [*Alex-ga* t_2
so self-GEN daughter-DAT-TOP who-NOM Alex-NOM
kooi-o *simes-ana-katta to*] *omotteiru no?*
affection-ACC show-NEG-PAST C think Q
lit. 'So, to his$_1$ daughter, who$_1$ thinks that Alex did not show affection?'
(Speaker A: *, Speaker B: *, Speaker C: *, Speaker D: ?, Speaker E: ??)

As far as these data are concerned, it appears that the *Wh*-Scope Generalization holds equally for Non-CTs and CTs. It is worth noting that two out of five speakers (i.e., Speaker A and Speaker E) consistently found Non-CT more degraded than CT in relevant cases, while none in my speaker sample reported the opposite (a reviewer reported that one of the Japanese speakers they consulted consistently found CTs more degraded than Non-CTs; speaker variation here is left for future work).

For anti-AE items, however, a significant contrast emerges. Unlike in the previous cases, I used CT examples that place prominence on NPs rather than on the particle, as prominence on the latter struck Japanese speakers as an unusual intonation pattern in these instances. Non-CT examples here are simply repeated from Section 4.

(108) illustrates the comparison for *wh*-phrases. While all the speakers found Non-CT (108a) (= (76)) degraded, they all found CT (108b) completely acceptable.

(108) a. [*Doko-ni-wa*]$_2$ / *JÓhn-ga* *iku koto-ga* *deki-masi-ta* *ka?*
where-DAT-TOP John-NOM go fact-NOM able-HON-PAST Q
lit. 'As for where, was John able to visit it?'
(Speaker A: *, Speaker B: *, Speaker C: *, Speaker D: *, Speaker E: *)

b. [*DÓ\ko-ni-wa*] *John-ga* *iku koto-ga* *deki-masi-ta* *ka?*
where-DAT-TOP John-NOM go fact-NOM able-HON-PAST Q
'Which place was John able to visit at least?'
(Speaker A: ok, Speaker B: ok, Speaker C: ok, Speaker D: ok, Speaker E: ok)

(109) shows the comparison for *only*-phrases: with the exception of one speaker (who was noted in footnote 25), the speakers found Non-CT (109a) (= (80)) more degraded than CT (109b).

(109) a. [*Tokyo-ni-dake-wa*]$_2$ / *JÓhn-ga* *iku koto-ga* *deki-masi-ta.*
Tokyo-DAT-only-TOP John-NOM go fact-NOM able-HON-PAST
lit. 'As for only Tokyo, John was able to visit it.'
(Speaker A: *, Speaker B: ??, Speaker C: ??, Speaker D: *, Speaker E: ok)

b. [*Tokyo-ni-daKÉ\-wa*] *John-ga* *iku koto-ga* *deki-masi-ta.*
Tokyo-DAT-only-TOP John-NOM go fact-NOM able-HON-PAST
'(John couldn't go to most cities, but) at least Tokyo, he was able to visit.'

(Speaker A: ?, Speaker B: ok, Speaker C: ok, Speaker D: ok, Speaker E: ok)

Non-CTs and CTs exhibit distinct patterns here, with Non-CTs showing a crucial parallelism with AE. Therefore, while there is no evidence against a parallelism between AE and Non-CTs, there are cases that argue against a parallelism between AE and CTs, which supports the assumption that AE should parallel with Non-CTs rather than CTs (n.b., I also asked the speakers for judgments on the CT counterpart for the downward-monotonic quantifier case in (77), but unlike in the cases discussed here, the CT example was found to be equally degraded as the Non-CT version, suggesting variation among anti-AE items with respect to the compatibility with CTs).

Appendix B Some notes on Landau (2023a, 2023b)

Landau (2023a, 2023b) recently argued, based primarily on data from Hebrew, that only type-e arguments (i.e., those denoting individuals, not properties or generalized quantifiers) can be targeted by AE. I will not delve into the technicalities of Landau's account; instead, I aim to highlight several potential counterexamples to his claims, hoping to prompt further discussion in this research area. My focus here is on issues concerning QPs, which are discussed more extensively in Landau 2023b. For a discussion on the AE of property-denoting phrases, see Landau 2023a and Fujiwara 2022 for corresponding Japanese data.

Given his type-e constraint, Landau argues that many instances of ellipsis of QP observed in the literature actually involve the ellipsis of type-e elements. He posits that when QPs undergo ellipsis, it is not genuine generalized quantifiers (i.e., elements of type $\langle et, t\rangle$) that are elided, but rather *choice functions* whose arguments are saturated by certain properties. Since choice functions are of type $\langle et, e\rangle$ and properties are of type $\langle e, t\rangle$, choice functions with saturated arguments denote elements of type e, thus adhering to the type-e constraint.

One consequence of this account, Landau notes, is that ellipsis of QPs is restricted to "witnessable" determiners (Constant 2012; in Constant 2014, "existence-entailing"): a determiner Det is witnessable iff $Det(P)(Q) \rightarrow \exists x.P(x) \wedge Q(x)$. Since the witness sets of downward-monotonic quantifiers can be empty and choice functions must operate on a non-empty set of individuals, choice functions cannot apply to downward-monotonic quantifiers (see also Kurafuji 2019). Landau claims this is why downward-monotonic quantifiers cannot be targeted by AE: since they defy the choice-function analysis, downward-monotonic quantifiers always count as genuine generalized quantifiers; but then they are of type $\langle et, t\rangle$, thus excluded by the type-e constraint.

While it is true that downward-monotonic quantifiers generally defy AE, we have seen that they do not in some cases. One such case is (110), repeated from (78).

(110) a. *Tokyo-wa (sinki yooseesya-o)* [*300-nin-miman-ni*] *osaeta.*
Tokyo-TOP new positive.case-ACC 300-CL-less.than-DAT limited
'Tokyo limited new positive cases to less than 300.'

b. *Nagoya-mo* ___ *osaeta.*
Nagoya-also limited

'Nagoya, too, limited the number (to less than 300).'

If the unelidability of downward-monotonic quantifiers is "absolute", as Landau argues (Landau 2023b, p.16), the possibility of AE in (110b) is puzzling. However, under the topic-deletion account I propose, this is not problematic, since the object in question can be topicalized (see (79)).

Landau also observes that, at least in Hebrew, indefinite NPs with numerals always scope over negation when elided. In (111) (= Landau 2023b, 29), (111b) implies that Yosi did not blow *any* balloons or Yosi did not blow five specific balloons, but in either case the follow-up is infelicitous. This suggests that negation does not scope over the numeral phrase here.

(111) a. *Dani nipeax xamiša balonim.*
Dani blew.3.M.SG five balloons
'Dani blew five balloons.'

b. *Yosi lo nipeax* ___. # *Hu nipeax rak šloša.*
Yosi not blew he blew only three
Intended: 'Yosi didn't blow (five balloons). He blew only three.'

In Japanese, however, indefinite NPs with numerals can be outscoped by negation when elided: in (112), all five speakers found the follow-up in (112b) completely felicitous. Notice that (112b) would be false if the numeral scoped over negation: if it did, the sentence would imply that there are at least three cities to which Mary did not go (i.e., that Mary went to just one city or none), contradicting the follow-up.

(112) **Context**: Participants were required to go to as many cities as possible among four major cities in Japan—Tokyo, Fukuoka, Nagoya and Sapporo—in one day.

a. *John-wa* [*3-tu-izyoo-no mati-ni*] *it-ta.*
John-TOP 3-CL-at.least-GEN city-DAT go-PAST
'John went to at least three cities.'

b. *Mary-wa* ___ *ik-ana-katta. Kanozyo-wa 2-tu-no mati-ni-dake it-ta.*
Mary-TOP go-NEG-PAST she-TOP 2-CL-GEN city-DAT-only go-PAST
Mary didn't go (to at least three cities). She only went to two. (ok: 5/5)

Landau suggests that the infelicity of Hebrew (111b) aligns with the claim by Matthewson (1998) that indefinite NPs with numerals take widest scope when interpreted via choice functions. The felicity of (112b) suggests that this analysis may not apply to Japanese.

I leave further discussion of Landau's account for future work. Given the discrepancy between Hebrew (111) and Japanese (112b), there appears to be variation across languages regarding the exact behavior of AE. Such variation is not inconceivable, as previous literature has already noted several such instances (e.g., Japanese allows subjects to undergo AE while Turkish does not; see D. Takahashi 2014).

Appendix C Base-generation for deriving AE?

I suggested in Section 5 that AE and discourse *pro*-drop, which I analyze uniformly as instances of topic deletion, involve different syntactic operations to fill Spec,TopicP: movement for AE (113a) and base-generation for discourse *pro*-drop (113b).

(113) a. $[_{\text{TopicP}}$ ~~α_i~~ ... [... t_i ...] ... (Movement)
b. $[_{\text{TopicP}}$ ~~α_i~~ ... [... pro_i ...] ... (Base-generation)

As noted in Section 2.2, a range of evidence has been provided in the literature that supports the presence of movement in AE (see Fujiwara 2020, 2022). While the assumption of movement constitutes an important basis for my account, a reviewer questioned whether movement is necessary to derive *all* occurrences of AE, suggesting the possibility of assuming base-generation as an additional option for deriving AE.

As the reviewer correctly pointed out, the availability of sloppy readings already suggests that not all occurrences of AE can be analyzed as involving base-generation: in cases involving a reflexive pronoun, reconstruction from Spec,TopicP into the base-position is necessary for it to be bound at LF, which can be explained by movement but not by base-generation. Although it is a formidable task to prove empirically that *no* occurrences of AE involve base-generation, I aim here to strengthen my assumption of movement with an additional piece of data involving ellipsis of QPs, which, like in the case of reflexive pronouns, cannot be explained by base-generation.

The diagnostics exploit the so-called "*de re*/*de dicto*" ambiguity, which pertains to the interaction between intensional operators and other elements in the same sentence (see, e.g., Keshet and Schwarz 2019; von Fintel and Heim 2011). (114) is at least two-way ambiguous with respect to the construal of the attitude verb "*-tagar-*" ('want') and the QP "*2-tu-no zinzya*" (*two shrines*): intuitively, on *de dicto* readings, John wants to visit any two of what he would describe as shrines; on *de re* readings, there are two actual shrines that he wants to visit but may not believe to be shrines.

(114) *John-wa* [***2-tu-no zinzya****-ni*] *iki-****tagat****-tei-ru.*
John-TOP 2-CL-GEN shrine-DAT go-want-ASP-NPST
De dicto: John wants to visit two shrines; any two shrines will do.
De re: John wants to visit two shrines, though he may not know that they are shrines.

The *de re*/*de dicto* ambiguity, as seen in (114), is usually analyzed as arising from different scope relations between the attitude verb and the QP (see Percus 2000 for an alternative view): on *de dicto* readings, the QP scopes *below* the attitude verb at LF, whereas on *de re* readings, it scopes *above* the attitude verb, as shown in (115).

(115) a. ... want ... [... two.shrines ... (LF for *de dicto*)
b. ... two.shrines ... [... want ... (LF for *de re*)

Now, consider cases in which AE applies to the QP in (114). Movement and base-generation would derive it as in (116a) and (116b) respectively.

(116) a. $[_{\text{TopicP}}$ ~~two.shrines$_i$~~ ... [want ... [... t_i ...] ...] ... (Movement)

b. [$_{\text{TopicP}}$ ~~two.shrines$_i$~~ ... [want ... [... pro_i ...] ...] ... (Base-generation)

Crucially, if base-generation is an available option, it is predicted that *de re* readings are possible for elided QPs: base-generated at matrix Spec,TopicP, the QP would obligatorily scope *above* the attitude verb, resulting in *de re* readings. If *de re* readings are available in relevant contexts, that will support the availability of base-generation; if not, that will be a case against it.

The result is that *de re* readings are *not* available for elided QPs. The context in (117) forces *de re* readings for the QP and non-identity of the referents in (117a) and (117b). The Japanese speakers reported that the only possible reading for (117b) is that Mary wants to visit the two shrines that *John* wants to, which is a construal of E-type pronouns rather than ellipsis.

(117) **Context (*de re*)**: John wants to visit Fushimi Inari and Meiji Jingu, two famous shrines in Japan, though he is mistaken in believing that they are *not shrines* but Buddhist temples. Mary wants to visit Ise Jingu and Izumo Taisha, another two famous shrines in Japan, though she is likewise mistaken in believing that they are Buddhist temples.

a. *John-wa* [***2-tu-no*** ***zinzya****-ni*] *iki-tagat-tei-ru.*
John-TOP 2-CL-GEN shrine-DAT go-want-ASP-NPST
'John wants to visit two shrines.'

b. *Mary-mo* ___ *iki-tagat-tei-ru.*
Mary-also go-want-ASP-NPST
'Mary, too, wants to visit (two shrines).' (??: 1/3, *: 2/3)

Note that *de dicto* readings are available for elided QPs, as confirmed by the same three speakers. The context forces *de dicto* readings and ensures that the referents may differ in (118a) and (118b). Notice that the availability of *de dicto* readings is compatible with the assumption of movement: after moving to Spec,TopicP, the QP reconstructs and scopes below the attitude verb at LF.

(118) **Context (*de dicto*)**: John and Mary plan a trip to Japan individually. They want to visit some shrines, but they both think that just two will be enough and *any two* will do.

a. *John-wa* [***2-tu-no*** ***zinzya****-ni*] *iki-tagat-tei-ru.*
John-TOP 2-CL-GEN shrine-DAT go-want-ASP-NPST
'John wants to visit two shrines.'

b. *Mary-mo* ___ *iki-tagat-tei-ru.*
Mary-also go-want-ASP-NPST
'Mary, too, wants to visit (two shrines).' (ok: 3/3)

The unavailability of *de re* readings for QPs thus argues against assuming that base-generation at Spec,TopicP is an available option for deriving AE (the difficulty of *de re* readings also suggests that reconstruction into the launching site is *obligatory* in AE, further investigation of which I leave for future work). The result here further corroborates the assumption of movement.

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