Unifying Gapping and Subject-Verb Deletion in Japanese via ATB Remnant Movement: Its Theoretical Consequences*

Kazuma Kimura
University of Tsukuba / National Institute of Informatics

1. Introduction

It has been argued that *Gapping* is derived from the movement of shared elements in a coordinate structure, called *Across-the-Board* (ATB) movement (Johnson (1994, 2008, 2009), Zoerner and Agbayani (2000), Agbayani and Zoerner (2004), Abe (2023), Orth and Yoshida (forthcoming)). In line with this, Abe (2023) claims that *Backward Gapping* (hereafter, BG) in Japanese is derived from ATB-V-movement (in a Right-Node-Raising fashion) as shown in (2).[1]

(1) *Backward Gapping* (BG)

John-ga	Mary-o	(sosite)	Bill-ga	Susan-o	hometa.
John-NOM	Mary-ACC	(and)	Bill- NOM.	Susan- ACC	praised

Lit. 'John [$_V$ e] Mary, and Bill praised Susan.'

(2) [$_{TP}$ [$_{VP1}$ John [$_{V'}$ [Mary <praise>] and [$_{VP2}$ Bill [$_{V'}$ Susan <praise>]] <praise> + T]

Note that the shared Vs in each conjunct (VP_1 and VP_2) is rightward moved into T head node. Under the movement approach to elliptic sentences, the (apparently) gapped domain is created by syntactic movement rather than some ellipsis operation.

A series of analyses have been proposed that extend such ATB-derivation of *Gapping* to a similar phenomenon, Left-peripheral Ellipsis (LPE) (Sag (1976), Zoerner and Agbayani (1999), Takano (2002)). There is an agreement that *Subject-verb Deletion* in Japanese (hereafter, SV deletion) is descriptively a variant of LPE (Sag (1976)).

(3) *Subject-verb Deletion* (SV deletion)

John -ga	Mari-ni	hon-o	~~ageta~~, ~~John -ga~~ Susan-ni	empitsu-o	ageta.
John-NOM	Mary-DAT	book-ACC	Susan-DAT	pencil-ACC	gave

'John gave a book to Mary, and a pencil to Susan.'

SV deletion is distinct from BG in that it allows the deletion of the subject ("John-ga") in the second conjunct. Thus, the interpretation of SV deletion is slightly different from that of BG in

* I would like to express my gratitude to Shungo Imai, Kasumi Takahashi, and Hyoma Suzuki for their helpful comments on the earlier version of this paper.

[1] Note that *Gapping* in Japanese is "backward" in that the elided domain lies in the first conjunct unlike "forward gapping" languages such as English (Kato (2003, 2006)). We assume in this paper that the difference between both types of *Gapping* lies in head-parameter: a head-final language undergoes first conjunct deletion, but a head-initial language second conjunct deletion (cf. Sag (1976), Zoerner and Agbayani (1999)).

that in the former the subject is shared by both conjuncts.

However, it is still unclear whether SV deletion falls under ATB-movement derivation. The primary focus of this paper is to modify the Abe's proposal and extend it to SV deletion in Japanese. After pointing out that SV deletion exhibits parallelism with BG in terms of *P-(omission) stranding* and *Sprouting* (Chung et al (1995)), we propose that both BG and SV deletion are derived from ATB remnant (VP) movement rather than ATB-head(V)-movement.

Furthermore, this unification leads us to address a deeper theoretical issue: how ATB remnant movement can be derived from theory of displacement. Given that Copy Theory of Movement (Nunes (1995, 2001, 2011)) and multi-dominance theory (Citko (2005, 2011), Citko and Gracian-Yuksek (2021)) cannot properly define the ATB remnant movement, we claim that such remnant movement should be reduced to the creation of sloppy-binding dependency at LF. ATB remnant movement can be decomposed into two steps: $\overline{\text{A}}$-movement to create a bound variable and a subsequent A-movement to yield an existentially quantified boundary (Higginbotham (1983), Heim (1993), Kennedy (2008)). We finally conclude that the ATB-movement of elliptic sentences cannot be reduced to "deletion under identity" operation (Salzmann (2012), Blümel (2017)), and it is indispensable for UG to generate certain elliptic sentences such as BG and SV deletion in Japanese.

2. Parallelism between BG and SV deletion

In the literature, it has been argued that ATB-movement is only applicable if two target conjuncts are structurally or contently identical to each other (Ross (1967), Kasai (2004)). Thus, the structural parallelism is a reasonable test for examining the possibility of elliptic sentences to be derived by ATB-movement (Johnson (1994, 2008, 2009), Orth and Yoshida (forthcoming)). We hypothesize in this paper that the applicability of ATB-remnant-movement can be scrutinized by the possibility of *Sprouting* and *P-stranding* in coordinate structure environments.

2.1 The ban on sprouting

Firstly, *Sprouting* is not possible in BG and SV deletion: sentences with a directional PP appearing only in the first conjunct are impossible (cf. Chung et al (1995), Overfelt (2024), Orth and Yoshida (forthcoming)).[2]

(4) ?*John-ga Bill-o eki-made (sosite) Mary-ga Susan-o mukaeni-itta.
John-NOM Bill-ACC station-at (to) (and) Mary-NOM Susan-ACC picked-up
Lit 'John [$_V$ e] Bill at the station and Mary picked up Susan.'

(5) ?*John-ga Bill-o eki-made (sosite) Susan-o mukaeni-itta.
John-NOM Bill-ACC station-at(to) (and) Susan-ACC picked-up
Lit 'John [$_V$ e] Bill at the station and picked up Susan.'

In the literature, it has been pointed out that the ban on sprouting is a diagnostic of structural parallelism. If coordination holds for a smaller constituent (i.e., V head), then the spouting should be permissible.

[2] Note that a missing PP in the second conjunct is avoided here since it cannot be distinguished from a smaller coordinate in the SV deletion case. When sprouting occurs in the second conjunct (e.g., "… Bill-o ϕ (soshite) Susan-o eki-made …"), the coordinate structure is easily interpreted as a single VP with a DP and a single PP coordinated ("[$_{VP}$ [$_{DP}$ Bill-o sosite Susan-o] [$_{PP}$ eki-made] mukaeni-itta]"), which is not our primary fucus.

This is because in such a case parallelism does not involve with larger constituents (VPs) to which the directional PP is attached. Thus, the sentences should be ruled in, contrary to the fact. This suggests that coordination in BG and SV deletion should obey a phrasal parallelism, not head-level.

2.2 P-(omission) stranding

Secondly, we find that both BG and SV deletion in Japanese allow P-(omission) stranding in the first conjunct (cf. Abe and Hoshi (1997), Takano (2002), Abe (2023)). As shown in (6) and (7), a prepositional head "-nituite (about)" is optional in the first conjunct.

(6) John-ga Bill(-nituite) (sosite) Mary-ga Susan-nituite hanashita.
John-NOM Bill(-about) (and) Mary-NOM Susan-about talked
Lit 'John [$_V$ e] (about) Bill and Mary talked about Susan.'

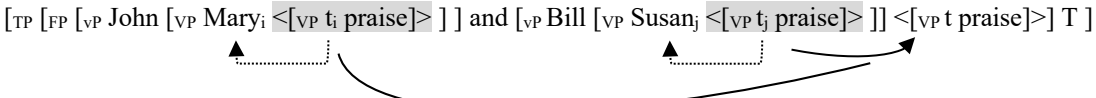
(7) John-ga Bill(-nituite) (sosite) Susan-nituite hanashita.
John-NOM Bill(-about) (and) Susan-about talked
Lit 'John [$_V$ e] (about) Bill and talked about Susan.'

Note that, even if P-head is missing in the first conjunct, coordination is permitted. This suggests that coordinated categories are smaller than as expected. There are at least two directions to capture the distribution of P-head: (i) assuming that coordination is at the head level and (ii) assuming that coordination is a phrase level, but there exists some derivational step in which DP and P-head do not from a constituent. It is obvious that the first option is not possible since such head-level coordination cannot capture the ungrammaticality of the sprouting cases discussed above. Thus, it is reasonable to assume that the second option is preferable, although not excluding the possibility of additional options. This leads us to tentatively conclude that in BG and SV deletion phrasal coordination is established while the DP and P head (optionally) do not form a constituency at some point during the derivation.

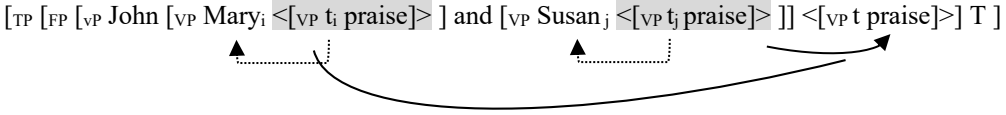
3. Proposal: ATB-VP movement

Given the observations above, we propose that both BG and SV deletion are derived from ATB-remnant (VP) movement as shown in (8) and (9).

(8) BG



(9) SV deletion



Before ATB-movement is applied to the shared verbal elements, the DP in each conjunct is (evacuation) moved out of the constituent (cf. Johnson (1994, 2009)). ATB-movement is now applied to remnant VPs containing the trace of the evacuated DPs. The derivations can properly capture the distribution of BG and SV deletion observed above.

First, the optionality of P head in (6) and (7) appeared as the one of evacuation movement. When evacuation movement is applied to the DP inside PP, the ATB-moving VPs

contain the P head, resulting in a surface structure where a P-head is absent in the first conjunct as in (10).

(10) a. [TP [FP [vP Mary$_i$ <[VP [PP t_i about] praise]>] and [vP Bill [VP Susan$_j$ <[VP [PP t_j about] praise]>]] <[VP [PP t about] praise]>] T]

b. [TP [FP [vP Mary$_i$ <[VP [PP t_i about] praise]>] and [VP Susan$_j$ <[VP [PP t_j about] praise]>] <[VP [PP t about] praise]>] T]

In that case, strictly speaking, the P head is present in neither the first conjunct nor second conjunct since P head is included in the ATB-moving VPs. Thus, the P head indeed appears in FP domain, the landing site of ATB-VP movement. In the P-stranding cases, the entire PPs undergo evacuation movement, yielding a surface structure where P head is left in each conjunct.

Secondly, the ban on sprouting in BG and SV deletion is nicely accounted for under the current proposal. Consider the derivation of (4) and (5). Since the PP ("at the station") attaches only to the first conjunct, the coordinated (boxed) VPs are asymmetry in terms of evacuation-moving categories.

(11) a. [VP [DP Mary] [VP send t_{DP} t_{PP}]] [PP at the station]]
b. [VP [DP Mary] [VP send t_{DP}]]]

Under the assumption that ATB movement targets the entire VPs rather than V heads, the phrases are subject to some structural parallelism requirement. While the second VP (11b) contains only the trace of DP, the first VP (11a) contains the traces of DP and PP. Syntax finds that such a coordinate structure is not parallel, exhibiting the application of ATB movement. It is unclear how Abe's ATB-V-movement approach eliminates (4) and (5) in a principled way. Since the target of ATB movement is restricted to V head under the Abe's analysis, it predicts that even in (4) and (5) ATB movement is itself applicable. To rule out these cases, it should depend on another rule or condition specific to non-parallel coordinate structures.[3]

Additionally, the ATB-VP-movement analysis provides a straightforward account of the puzzling cases for the previous analyses. Abe (2023) adopts a tentative assumption that the traces created by movement prior to ATB movement can be wiped out to rule in an exceptional Left Branching Extraction (LBE) sentence given below. Moving the dative-marked possessor DPs ("Mary-DAT" and "Susan-DAT") out of the entire DP ([DP children-ACC]) should result in ungrammaticality due to the general ban on LBE. Nevertheless, the BG with LBE in (12) is attested as acceptable.

(12) John-ga Mary-no sosite Bill-ga Susan-no kodomo-o hometa.
John-NOM John-GEN and Bill-NOM Susan-GEN children-ACC praised

According to Abe (2023), the ungrammaticality of (12) can be overridden by wiping out the

[3] A plenty of studies have shown that in natural languages coordinate structure can be non-parallel (cf. Altshuler and Truswell (2022)). This paper does not conclude whether non-parallel coordination is excluded in syntax or pragmatics. It is, however, not unreasonable to assume that a requirement on structural parallelism is inherent in ATB movement.

traces created by LBE.

If this wiping out strategy is on the right track, however, it is not clear why traces in non-parallel coordinate structure as in (11) cannot be wiped out.[4] To capture the cases discussed above together (ruling out (6) and (7), but ruling in (12)), at least the ATB-V-movement analysis is required to explain why wiping out is operative only in the LBE cases. Under the present analysis, the LBE configuration is analyzed as a result of evacuation movement. As such, it can be treated on a per with the DP movement in the P-stranding case, and thus no ungrammaticality is predicted.

Given its theoretical validity and empirical coverage, the current proposal is to be preferred over the ATB-V-movement analysis of Gapping and SV Deletion (Zoerner and Agbayani (1999), Abe (2023)). The following sections turn to more theoretical issues., The focus of the two sections is twofold: first whether ATB-remnant movement can be satisfactorily derived within the traditional frameworks that have been employed to define ATB-movement; and second, what mechanism and derivations might underlie the seemingly complex and redundant movement operation.

4. Challenges for Traditional Theories

This section focuses on the theoretical issue raised in the introduction: the finer-grained definition of ATB-remnant movement within the theory of displacement. As is well known, ATB-movement or the phenomena derived from it have been elaborated within a variety of frameworks. We argue that implementations of the Copy Theory of movement (CTM) and multi-dominance (MD) theory fail to capture the distribution of ATB-remnant movement.[5]

4.1 Copy Theory of Movement

The ATB remnant movement cannot be defied under the Copy Theory of Movement (hereafter, CMT). Considering Minimalism, CMT adopts a strong hypothesis that the trace should be eliminated for the reason of violating *No Tampering Condition* (NTC). NTC banns the introduction of anything which does not exist pre-syntactically in the course of syntactic derivation. Thus, movement (or Internal Merge, IM) of a syntactic object leaves the copy of it, which is contently identical.

To derive ATB-remnant-movement under CTM, it requires that evacuation movement creates a token-for-token identical copy of evacuation-moved categories rather than traces. Consider the CMT derivation of BG in Japanese.

(13) *[…[$_{VP}$ Mary <[$_{VP}$ ~~Mary~~ praise]>]] and [… [$_{VP}$ Susan$_j$ <[$_{VP}$ ~~Susan~~ praise]>]] <[$_{VP}$ **???** praise]>] …]

Note that in (13) each conjunct contains the identical copy of evacuated DPs. In that case, the VPs are not parallel in a strict sense, and thus ATB-movement is not applicable.

Even if it were to be applied in some reason, the resulting movement would create a VP

[4] If we were to keep the Abe's wiping out strategy, it would require a condition to rule in the application of wiping out operation to parallel structures but rule out the one to non-parallel structures. It seems that assuming such a condition suggests that parallelism plays a key role in distinguishing the data discussed in this section.

[5] We argue that other theories or approaches such as sideward movement (Nunes (1995, 2001, 2011)) and vehicle change (Fiengo and May (1994)) also cannot capture the ATB remnant movement for the reasons which are not argued in this paper due to space limitations.

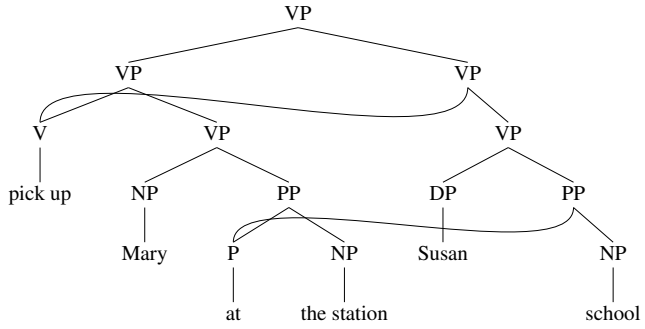
containing both copies of the DPs (i.e., [$_{VP}$ Mary/Susan praise]), which clearly violates NTC, since the syntactic object "Mary/Susan" does not pre-syntactically exist. Hence, we conclude that CMT cannot define the ATB remnant movement without an additional tool.

4.2 Multi-dominance

Multi-dominance (MD) (Citko (2005, 2011), Citko and Gracian-Yuksek (2021)) also does not explain why the requirement on structural parallelism should exist in defining ATB-(remnant) movement. Under the theory, shared elements are merged via *Parallel Merge*, which is a variant of Merge operation, creating a multi-dominant structure.

To derive the ATB-remnant-movement in a MD fashion, the syntax is assumed to build a structure where ATB-moving Vs or VPs are dominated by a single parent node. For instance, consider the MD derivation of BG or SV deletion. We can get a configuration as given in (14).

(14) Multi-dominance the coordination "…pick up Mary at the station, and Susan at school."



MD does not necessarily need to assume evacuation movement to create a phrasal coordination since the parallelism is created by merger operation itself (Parallel Merge). In that structure, V head and P head are simultaneously dominated by the two parent nodes respectively. ATB-remnant movement is not applicable to this configuration since the VPs are not content-wise parallel due to involving distinct DPs ("Mary" and "Susan").

Based on the discussion so far, it seems unreasonable to capture the ATB-VP-movement under CMT and MD. As far as the current proposal is correct, it is the case that BG and SV deletion in Japanese cannot be generated by the two theories. The failure of CMT and MD to capture ATB remnant movement stems from the fact that it produces configurations exhibiting so-called "sloppy binding." Sloppy binding refers to a configuration in which bound variables must be bound by two antecedents, and it is crucial for the appropriate interpretation of Japanese BG and SV deletion. The result is compatible with Orth and Yoshida (forthcoming), which concludes that *Gapping* in English cannot be derived by the theories. What remains to be done is to determine how ATB-remnant-movement, or more specifically sloppy binding relation should be theoretically defined, a question addressed in the following section.

5. Towards a finer-grained definition of ATB remnant movement

In this section, we explore a finer-grained definition of ATB-remnant movement by considering "deletion under identity" approach (hereafter, DUI) (Salzmann (2012), Blümel (2017)). In such an approach, ATB-movement can be decomposed into four steps: (i) evacuation movement, (ii) creating a forked chain, (iii) movement of the first conjunct, and (iv) deletion under identity. The purpose of this

approach is to reduce ATB movement to more primitive syntactic devices such as movement of a single category and deletion.

(15) a. [… [α_i [β t_i] and [γ_j [β t_j] …] (evacuation movement)
b. CH(α): (β), CH(γ): (β) (forked chain formation)
c. [[β t_i] [… [α_i [β t_i] and [γ_j [β t_j] …] (remnant movement)
d. [**[β t_i]** [… [α_i [β t_i] and [γ_j ~~[β t_j]~~ …] (deletion under identity)

In (15b), the chain of the moved categories is defined in terms of the syntactic occurrence of them. Since both α and γ are in the sister-relation with β, the chains of them are indistinguishable. Thus, the second conjunct can delete under an identity condition, after movement from the first conjunct. The resultant structure is considered to produce the same configuration as ATB movement despite involving only a single movement. Ultimately, this line of approach aims to argue that ATB-movement does not exist as an available operation in UG.

However, it has not been attempted to examine whether the DUI is applicable to ATB-movement analysis of elliptic sentences. In other words, the empirical coverage of DUI is limited to the wh-movement, which is relevant to forming an operator-variable relation. We argue that elliptic sentences are not derivable under the UDI approach. Instead, we propose that ATB-remnant movement is necessary for deriving BG and SV deletion. It should occur in order that syntax avoids an improper binding dependency at LF (Higginbotham (1983), Heim (1993), Kennedy (2008)).

Following Johnson (2008), we assume here that evacuation movement is an instance of $\overline{A}$ movement, which creates a bound variable, and the subsequent ATB-remnant movement is A-movement.

(16) a. [… [α [β t]] and [γ [β t]] …]
b. LF: t = λx. (x) → x = α, γ

Note that bound variables are regarded to have the same status for syntax and LF, since it does not introduce any index or copy of the moved categories. However, if the bound variables were to stay in that position, they are bound by two distinct antecedents (α and γ), which might be an improper binding dependency at LF.

It is claimed that ATB-movement occurs in order to avoid the invalid binding relation between an antecedent and a bound variable in coordinated structures. Given that Johnson (2008) assumes that ATB-movement is a type of A-movement, we tentatively conclude that ATB-movement treats the moving elements as a distinct category. Accordingly, the ATB-remnant movement and its semantic properties are defined as follows:

(17) a. A-movement creates a single existentially closed domain for a moved category.
b. An $\overline{A}$ variable needs to be bound by an antecedent within an existentially closed domain.

(18) a. [[β $t_{\alpha/\gamma}$] [… [α t_β] and [γ t_β] …]] (ATB-movement)
b. LF: [β t] = ∃s. λx. (x)(s)
c. [[β t] [… [α **<u>∃[β … x …]</u>**] and [γ **<u>∃[β … x …]</u>**] …]] (Reconstruction)
d. LF: $[\beta t]_1$ = ∃s. λx. (x)(s), $[\beta t]_2$ = ∃s. λx. (x)(s)

As in (18a-b), ATB remnant movement forms a distinct existential domain for the moved VP at the landing site. (18c-d) show that the closed VPs are supposed to be reconstructed into their original

position as a distinct existential domain. The proposal states that sloppy binding is a LF effect arising from $\overline{A}$ movement followed by A-movement of elements containing traces (or bound variables) created by that evacuation movement.

Given the assumptions, let us consider the fine-grained derivation of BG and SV deletion in Japanese, including their LF derivation (reconstruction process). Firstly, the DPs in coordinated VPs undergo evacuation movement, and leaves a bound variable in each remnant. Since the bound variables stayed in that position yields an improper binding relation at LF, more specifically, a configuration where a single variable (but occurring at multiple syntactic positions) is doubly bound by distinct antecedents as in (19b).

(19) a. [… [$_{VP}$ [$_{DP}$ Mary] [$_{VP}$ praise t]] and [$_{VP}$ [$_{DP}$ Susan] [$_{VP}$ praise t]] …]
b. LF: t = λx. (x) → *x = Mary, Susan

To avoid this, ATB-VP-movement is applied, and VPs are moved into a higher position. Since this is a type of A-movement, it gives an existential closure to the VP.[6]

(20) a. [[$_{VP}$ praise t] [$_{VP}$ [$_{DP}$ Mary] t_{VP}] and [$_{VP}$ [$_{DP}$ Susan] t_{VP}]]
b. LF: [$_{VP}$ praise t] = ∃s. λx. (praise (x)(s))

In (20b), it is shown that the ATB-moved VP receives an existential boundary, denoting the presence of the specific event ("someone praises someone" in the current case). Importantly, the bound variable is contained in the entire existential closure, and put it more metaphorically it is taken to be prisoner by a closed event variable denoted by *s*.

At LF, firstly, the moved VPs must be reconstructed into their original position. Since (17a) states that ATB-movement distinguishes the moved VPs from each other, they are reconstructed separately into their original position as in (21).

(21) [[$_{VP}$ praise t] [… [$_{VP}$ [$_{DP}$ Mary] **∃[$_{VP}$ praise x]**] and [$_{VP}$ [$_{DP}$ Susan] **∃[$_{VP}$ praise x]** …]]
(22) LF:
a. Existential domain 1 (the first VP): ∃s. λx. (praise (x)(s)) → x: Mary
b. Existential domain 2 (the second VP): ∃s. λx. (praise (x)(s)) → x: Susan

More importantly, in (21), the bound variables are separately included in an existentially closed domain. According to (17b), the interpretation of the bound variables is determined within its (local) existential closure domain. Thus, in (22), the bound variables receive its interpretation in each minimal domain (existential domains 1 and 2) denoted by an existential operator. The derivation and LF representation straightforwardly assign proper semantics to BG and SV deletion sentences, where the objects of each VP receive interpretations as distinct entities.

If DUI is applied to this configuration, LF recovers the second conjunct VP in its original position since it does not undergo A-movement. Consequently, LF treats the traces in each conjunct as a single variable. This means that the interpretation of the bound variable depends on the one in the first conjunct, yielding the doubly bound variable at LF.

(23) a. [**[$_{VP}$ praise t_i]** [… [Mary$_i$ [$_{VP}$ praise t_i] and [Susan$_j$ ~~[$_{VP}$ praise t_j]~~ …]

[6] It is not clear why only ATB A-movement distinguishes the copy of multiple syntactic objects, but ATB-$^{-}${*A*}-movement does not. It requires more theoretical investigations, and we leave this issue for future works.

b. $[_{VP}$ praise t $] = \exists s.\ \lambda x.$ (praise (x)(s))
c. t = λx. (x) → *x = Mary, Susan

This doubly bound variable interpretation does not provide interpretation of BG and SV deletion.

Please note that we are not claiming that a doubly bound interpretation is inherently impossible. In ATB-movement to form operator-variable relationship such as wh-movement (= (24a)), such a problem does not occur. This is because ATB-movement in this case is A-bar movement, which creates a bound variable in each conjunct. We assume that $\overline{A}$-ATB-movement allows the DUI strategy, and it moves only the wh-phrase from the first conjunct.

(24) a. What did John like and Mary dislike?
b. $[_{CP}$ **[$_{DP}$ what]** [… $[_{vP}$ John $[_{VP}$ like t_{DP}] and $[_{vP}$ Susan $[_{VP}$ dislike ~~[$_{DP}$ what]~~ …]]
c. t & ~~[$_{DP}$ what]~~ = λx. (x) → ^{OK}x = what is John likes and Mary dislikes

In that case, the interpretation of the bound variable in the second conjunct relies on the first one. After the second conjunct undergoes deletion under identity, LF allows both variables to be interpreted as being bound by a single antecedent as its LF representation (24c) shows.[7]

So far, we have discussed the fine-grained definition of ATB-remnant movement. The conclusion is followed that ATB-remnant movement in the BG and SV deletion cases cannot be reduced to the UDI strategy. Instead, we claim that ATB-movement is decomposed into two steps: A-bar movement to form a bound-variable dependency, and A-movement to create an existential boundary for a moving category. The two steps of movement rescue the doubly binding of the bound variables in each conjunct by a distinct antecedent. Additionally, we point out that the sequence of A-$\overline{A}$ movements ubiquitously appear in natural languages (e.g., superiority effect). This might be because syntax disallows the sequence of the same type of movement (Kennedy (2008)). It is assumed that A-$\overline{A}$ pattern rescues potential ungrammatical outputs, which enhances the validity of the current proposal. To the extent that the nested movement analysis is correct, Japanese BG and SV deletion may also fall under the A-$\overline{A}$ pattern.

6. Concluding remarks

This paper proposes a unified analysis of BG and SV deletion in Japanese, both of which are derived from ATB-remnant(VP) movement. The conclusion comes from the observation that they exhibit the identical behavior in terms of phrasal-level structural parallelism (demonstrated by P-stranding and sprouting). This ATB-VP-movement approach raises a further question on the definition of remnant movement under syntactic theories. The distribution of ATB-remnant movement can be properly captured by the sloppy-binding dependency formation proposed in this paper. The discussion in this paper strongly suggests that ATB-movement cannot be eliminated from the tools available in Universal Grammar: it is necessary to generate the elliptic sentences such as Gapping and left-peripheral deletion. Although some issues remain unsolved (e.g., traces can be distinguished as separate only in ATB A-movement, or differences between standard P-stranding movement and evacuation movement), the revision and expansion are a desirable result from both the theoretical and empirical perspectives.

[7] The UDI approach can capture the distribution of interpretations obtained by reconstruction at LF, known as "reconstruction asymmetry" (cf. Muun (1993), Salzmann (2012), Blümel (2017)).

(ii) a. Which picture of himself did John like and Mary dislike?
b. *Which picture of herself did John like and Mary dislike?

Selected references

Abe, J. and H. Hoshi (1997) "Gapping and P-stranding," *Journal of East Asian Linguistics* 6, 101-136.

Abe, J. (2023) "The right node raising analysis of coordinated wh-questions in Japanese," *Journal of East Asian Linguistics* 32, 261-301.

Agbayani, B. and E. Zoerner. (2004) "Gapping, pseudogapping and sideward movement," *Studia Linguistica* 58(3), 185-211.

Altshuler, D. and R. Truswell. (2022) *Coordination and the Syntax-Discourse Interface*, Oxford University Press.

Blümel, A. (2017) *Symmetry, Shared Labels, and Movement in syntax*, Studia Grammatic, de Gruyter.

Chung, S., W. Ladusaw, and J. McCloskey. (1995) "Sluicing and logical form," *Natural Language Semantics* 3(3), 239-282.

Heim, I. (1993) "Anaphora and semantic interpretation: a reinterpretation of Reinhert's approach," SfS-Report, 7-93.

Higginbotham, J. (1983) "Logical form, binding, and nominals," *Linguistic Inquiry* 26, 574-570.

Johnson, K. (1994) Bridging the gap, *University of Massachusetts*, *Amherst*.

Johnson, K. (2008) "The view of QR from ellipsis," In *Topics in Ellipsis*, edited by Kyle Johnson, 69-94.

Johnson, K. (2009) "Gapping is not (VP-) ellipsis," Linguistic Inquiry 40(2), 289-328.

Kasai, H. (2004) "Two notes on ATB movement," *Language and Linguistics* 5(1), 167-188.

Kato, K. (2003) "On Japanese gapping in minimalist syntax," Proceedings of the 19th Northwest Linguistics Conference (Working Papers of the Linguistics Circle of the University of Victoria), 55-64.

Kato, K. (2006) *Japanese gapping in minimalist syntax*, Ph.D. dissertation, University of Washington.

Kennedy, C. (2008) "Argument contained ellipsis," In *Topics in Ellipsis*, edited by Kyle Johnson, 95-131.

Kim, J-S (1997) *Syntactic focus movement and ellipsis: A minimalist approach*, Ph.D. dissertation, University of Connecticut.

Orth, W. and M. Yoshida (forthcoming) "Gaps that do not sprout," *Linguistic Inquiry*, 1-19.

Sag, I. (1976) *Deletion and Logical Form*, Ph.D. dissertation, MIT.

Salzmann, M. (2012) "A derivational ellipsis approach to ATB-movement," *The Linguistic Review* 29 (3), 397-438.

Takano, Y. (2002) "Surprising constituents," *Journal of East Asian linguistics* 11, 243-301.

Zoerner, E. and B. Agbayani (2000) "Unifying left-peripheral deletion, gapping and pseudogapping," *CLS* 26, 549–561.