A Theory of Coordinate Structure Formation and "Across-the-Board Movement"

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Abstract

This paper offers a new analysis of "Across-the-Board (ATB)-movement" based on a particular theory of coordinate structure formation. It proposes an operation for forming coordinate structures that can conjoin not only (i) roots but also (ii) non-roots, which I dub Coordinate Structure Formation (CSF). It is then proposed that "ATB-movement" should be taken to be a result of application of CSF of the type (ii). To support this hypothesis, it will be shown (a) that an element to be "ATB-moved" has two (or more) occurrences at early stages of the derivation, one occurrence each in the two or more (constituents that later become) conjuncts, (b) that each of these occurrences of the element to be "ATB-moved" is moved successive cyclically within a constituent that later becomes a conjunct but they are later unified into one occurrence, and (c) that the stage of the derivation where they are unified can be identified with the stage of the derivation where the relevant conjunction structure is formed.

Keywords: Across-the-board movement, Coordinate structure constraint, Coordinate structure formation

1. Introduction

"Across-the-Board (ATB) movement" (e.g. (1)) is a curious phenomenon.

(1) Which book does [$_{TP}$ Peter like _] and [$_{TP}$ Susan hate _]?

First, the conjuncts contain a gap position each, suggesting that extraction has taken place from two (or more) positions. However, on the surface only one element appears in the landing site. I dub this issue the problem of *One-to-Many Correspondence*. Second, although it involves extraction from the conjuncts in a coordinate structure, "ATB-movement" does not result in ungrammaticality, unlike typical violations of the Coordinate Structure Constraint or the ban against extraction from conjuncts. I call this issue the problem of *Lack of CSC-Violation*.

This paper offers a new analysis of "ATB-movement" based on a particular theory of coordinate structure formation. Section 2 introduces an operation for forming coordinate structures that can conjoin not only (i) roots but also (ii) non-roots, which I call Coordinate Structure Formation (CSF). Section 3 proposes that so-called "ATB-movement" should be understood to be a result of application of CSF of the type (ii), which solves *the Problem of Lack of CSC-Violation* and makes the state of *One-to-Many Correspondence* fall into place. Section 4 and Section 5 show evidence for the proposed analysis of "ATB-movement", examining the trail of "ATB-movement". More specifically, they show that (a) <u>the element</u>

to be "ATB-moved" has two (or more) occurrences at early stages of the derivation, one occurrence each in the two or more (constituents that later become) conjuncts, (b) each of these occurrences of the element to be "ATB-moved" is moved successive cyclically within a (constituent that later becomes a) conjunct but later they are unified into one occurrence, and (c) the stage of the derivation where they are unified can be identified with the stage of the derivation where the relevant conjunction structure is formed. Section 6 critically examines recent previous studies of "ATB-movement". Section 7 considers the anaphora-reconstruction in "ATB-movement", which seems to be problematic to the present analysis, and offers some speculations on it. Section 8 concludes this paper, offering a theoretical implication of the proposed analysis of "ATB-movement".

2. A Theory of Coordinate Structure Formation

This paper proposes that "ATB-movement" should be understood to be a result of the operation (2), which is responsible for formation of coordinate structures.

(2) Coordinate Structure Formation (CSF)

If (i) there are n ($n \geq 2$) syntactic objects (α_1, ..., α_n) that are each roots (i.e. that have not been merged with any other element), (ii) A_1, ... A_n differ from each other (where A_i is a term of α_i ($n \geq i \geq 1$), see Fortuny (2024)) and (iii) α_1, ..., α_n are identical except for A_1, ..., A_n, the operation of Coordinate Structure Formation is optionally applied to:

(a) replace A_1, ..., and A_n with a dummy symbol (Δ);
(b) conjoin A_1, ..., and A_n to form a syntactic object that is separate from α_1, ..., and α_n;
(c) unify α_1, ..., and α_n, which have become identical due to (a), into a syntactic object;
(d) and place Δ in the single syntactic object obtained in (c) with the conjunction structure resulting from (b).

The definition of the notion 'term' is given in (3) (see Chomsky (1995: 247)).

(3) In a syntactic object K,
a. K itself is a term of K;
b. if L is a term of K, an immediate constituent of L is also a term of K.

Let us now consider the stage of a syntactic derivation in (4a).

(4) a. i. $\alpha_1 = [_Y B [_X A_1 C]]$ ii. $\alpha_2 = [_Y B [_X A_2 C]]$
b. i. $\alpha_1 = [_Y B [_X \Delta C]]$ ii. $\alpha_2 = [_Y B [_X \Delta C]]$
c. $[_{A1/A2} A_1 \text{ Conj } A_2]$
d. $\alpha = [_Y B [_X \Delta C]]$
e. $\alpha = [_Y B [_X [_{A1/A2} A_1 \text{ Conj } A_2] C]]$

α_1 in (4a-i) and α_2 in (4a-ii) are both roots. A_1 is a term of α_1 and A_2, a term of α_2. Suppose that A_1 and A_2 are different (although they can be categorially identical). Then α_1 and α_2 can count as identical except for A_1 and A_2. CSF can be applied here ((4b-e)): A_1 in α_1 and A_2 in α_2 are both replaced with Δ ((4b)); A_1 and A_2 are conjoined to form a syntactic object separate from α_1 and α_2 ((4c));[1] since α_1 and α_2 have become identical in (4b), they are unified into a single syntactic object ((4d)); Δ in (4d) is replaced with the conjunction structure in (4c)

((4e)). I assume that derivations like (4) underlie classical cases of Conjunction Reduction (Akiyama 2024b).[2] Hereafter the application of CSF as depicted in (4a-e), in which non-roots are conjoined, is dubbed *Internal CSF*, in order to differentiate it from its application discussed in Note 2, in which roots are conjoined.

CSF (2) allows non-roots to be conjoined (Internal CSF, (4)). However, I will later argue that A_1, ..., A_n in (2) cannot be arbitrarily deeply embedded. It should be emphasized that A_1, ..., A_n in (2) should count as different in order for CSF to be applied. This point means that the difference(s) between A_1, ..., and A_n should be visible to the computational system at the derivational stage where CSF is applied. In order for an element that has already been introduced into the structure to be visible, that element must remain untransferred. It is thus natural to consider that CSF can be applied if what differentiates A_1, ..., and A_n has not been transferred but it cannot be if what differentiates them has already been transferred.

3. A Proposal: (Internal) CSF and "ATB-Movement"

Let us now turn to "ATB-movement". (5) is an abstract representation of "ATB-movement", where a single element X seems to have been extracted from both the conjuncts and to have landed in a position immediately dominated by Z.

(5) $[_Z$ X $[_U$ W $[_{Y1/Y2}$ $[_{Conjunct1\ (=Y1)}$ B t_X C] Conj $[_{Conjunct2\ (=Y2)}$ D t_X E]]]]

I propose that the configuration of "ATB-movement" in (5) is derived by Internal CSF ((6)). First, Y1 and Y2, which are to become the conjuncts later, are formed independently of each other. One occurrence of X, the element to be "ATB-moved", is introduced as a constituent of Y1 (and of U1) and another occurrence of X is introduced as a constituent of Y2 (and of U2) ((6a)). Then X is moved in both U1 and U2 to form Z1 and Z2, respectively ((6b)). Z1 and Z2 in (6b) are both roots and they are identical except for Y1 and Y2. Internal CSF can be applied: Y1 and Y2 in (6a) are each replaced with Δ ((6c)); Y1 and Y2 are conjoined to form a syntactic object separate from Z1 and Z2 ((6d)); (6c-i) and (6c-ii) are unified into a single syntactic object ((6e)); the conjunction structure (6d) replaces Δ in (6e) ((6f)).

(6) a. i. $[_{U1}$ W $[_{Y1}$ A X B]] ii. $[_{U2}$ W $[_{Y2}$ C X D]]
b. i. $[_{Z1}$ X $[_{U1}$ W $[_{Y1}$ A t_X B]]] ii. $[_{Z2}$ X $[_{U2}$ W $[_{Y2}$ C t_X D]]]
c. i. $[_{Z1}$ X $[_{U1}$ W Δ]] ii. $[_{Z2}$ X $[_{U2}$ W Δ]]
d. $[_{Y1/Y2}$ $[_{Y1}$ A t_X B] Conj $[_{Y2}$ C t_X D]]
e. $[_Z$ X $[_U$ W Δ]]
f. $[_Z$ X $[_U$ W $[_{Y1/Y2}$ $[_{Y1}$ A t_X B] Conj $[_{Y2}$ C t_X D]]]]

Importantly, X has undergone the relevant movement to form Z1 and Z2 before CSF is applied to form the conjunction structure in (6d). Therefore, so-called "ATB-movement" in fact does not involve any extraction from a coordinate structure. It is then straightforwardly predicted that "ATB-movement" does not violate the Coordinate Structure Constraint (or the ban on extraction from conjuncts). The problem of *Lack of CSC Violation* can thus be solved. Also notice that, under the present approach, two (or more) occurrences of the element to be "ATB-moved" (i.e. X in (6)) are introduced separately into distinct constituents that will later become conjuncts by the application of CSF (i.e. Y1 and Y2 in (6)). After each being moved to form Z1 and Z2, the two occurrences of X are unified by CSF. This is the reason why, in “ATB-movement”, the conjuncts contain a gap position each, but only one element appears in the single landing site. The problem of *One-to-Many Correspondence* thus falls into place.

The following two sections turn to evidence for the present analysis of “ATB-movement”, focusing on “ATB wh-movement” in English and “ATB-scrambling” in Japanese. I will discuss the “derivational history” of “ATB-movement” by examining its trail.

4. The Trail of “ATB-Movement” (1): “ATB wh-movement” in English

This section examines the trail of “ATB wh-movement” in English to support the present analysis of “ATB-movement” based on Internal CSF. I begin by discussing the distribution of the adverb *exactly* that is associated with wh-phrases (Davis 2021: 320; McCloskey 2000: 63; Zyman 2022). *Exactly* associated with a wh-phrase is assumed to be introduced as an adjunct of the wh-phrase ((7a)). Importantly, *exactly* can also appear in the postverbal position ((7b)) or immediately before the embedded clause in case the wh-phrase is extracted from an embedded clause ((8)). Postverbal *exactly* is taken to be stranded by wh-movement in the complement of V (Davis 2021; McCloskey 2000) or to be stranded by wh-movement in [Spec, *v*] and extraposed (Zyman 2022: 107).[3] *Exactly* in (8) is taken to be stranded in the embedded [Spec, C].

(7) a. What exactly was she doing?
b. What was she doing exactly?[4]

(8) What did he say exactly (that) he wanted?

If this analysis of *exactly* associated with wh-phrases is on the right track, the distribution of *exactly* associated with an “ATB-moved” wh-phrase can shed light on the “derivational history” of “ATB” wh-movement.

Consider (9a-c), in which the embedded clauses (i.e. CPs or TPs) are coordinated and the embedded wh-object is “ATB-moved” to the matrix [Spec, C].

(9) a. What did you say [John likes] and [Bill hates]?
b. What did you say that [John likes] and [Bill hates]?
c. What did you say [that John likes] and [that Bill hates]?

Let us examine how *exactly* associated with the “ATB-moved” wh-phrase behaves in sentences like (9a-c). Consider (10), in which the two conjuncts contain one occurrence of postverbal *exactly* each.

(10) a. ? What did you say [John likes exactly] and [Bill hates exactly]?
b. ? What did you say that [John likes exactly] and [Bill hates exactly]?
c. ? What did you say [that John likes exactly] and [that Bill hates exactly]?

The fact that (10a-c) are acceptable shows that a sentence involving “ATB-movement” contains, at early stages of the derivation, two (or more) occurrences of the element to be “ATB-moved”: one occurrence each in the two or more (constituents that later become) conjuncts.

Now let us turn to (11) and (12).

(11) a. What did you say exactly John likes and Bill hates?
b. What did you say exactly that John likes and Bill hates?
c. What did you say exactly that John likes and that Bill hates?

(12) a. * What did you say exactly John likes and exactly Bill hates?
b. * What did you say exactly that John likes and exactly that Bill hates?

In (11a-c), only one occurrence of *exactly* appears immediately before the entire conjunction structure ((11a, c)) or immediately before the complementizer that takes the conjunction of two TPs as its complement ((11b)). In (12a, b), there are two occurrences of *exactly*, one of them occurring immediately before the first conjunct and the other immediately before the second conjunct. The acceptability of (11a-c) shows that "ATB wh-movement" in (9) makes use of the embedded [Spec, C]. Interestingly, the unacceptability of (12a, b) shows that, in (9), there can be only one [Spec, C] (immediately) before the entire conjunction structure. In other words, in (9), it is not possible for two CPs to be conjoined and to each have their own [Spec, C]. Rather, it seems that the two (or more) occurrences of the wh-phrase to be "ATB-moved" that were each introduced into one of (the constituents that later become the) conjuncts (see (10a-c)) are somehow unified into a single occurrence, which then occupies the sole embedded [Spec, C] in (11). The contrast between (10a-c) and (12a, b) and the contrast between (11a-c) and (12a, b) suggest that this unification takes place at the same time as the formation of the relevant conjunction structure.

The facts in (10)-(12) can be explained by the present analysis of "ATB-movement". The embedded clause in (9b)/(11b), for example, is derived by Internal CSF from the two CPs in (13a). In each of the CPs in (13a), an occurrence of the wh-phrase (with *exactly*) has been raised to [Spec, C]. CP1 and CP2 can be taken to be identical except for TP1 and TP2. Therefore, Internal CSF can be applied: TP1 and TP2 are each replaced with Δ ((13b)); TP1 and TP2 are conjoined to form a syntactic object separate from CP1 and CP2 ((13c)); CP1 and CP2 in (13b) are unified ((13d)); the conjunction structure (13c) replaces Δ in (13d) ((13e)).

(13) a. i. $[_{CP1}$ what (exactly) $[_{C'1}$ that $[_{TP1}$ John $[_{T'1}$ T $[_{vP1}$ t_{wh} $[_{v'1}$ t_{Subj} $[_{v'1}$ v $[_{VP1}$ like(s) t_{wh}]]]]]]]]
ii. $[_{CP2}$ what (exactly) $[_{C'2}$ that $[_{TP2}$ Bill $[_{T'2}$ T $[_{vP2}$ t_{wh} $[_{v'2}$ t_{Subj} $[_{v'2}$ v $[_{VP2}$ hate(s) t_{wh}]]]]]]]]
b. i. $[_{CP1}$ what (exactly) $[_{C'1}$ that Δ]]
ii. $[_{CP2}$ what (exactly) $[_{C'2}$ that Δ]]
c. $[_{TP1/TP2}$ $[_{TP1}$ John $[_{T'1}$ T $[_{vP1}$ t_{wh} $[_{v'1}$ t_{Subj} $[_{v'1}$ v $[_{VP1}$ like(s) t_{wh}]]]]]] and $[_{TP2}$ Bill $[_{T'2}$ T $[_{vP2}$ t_{wh} $[_{v'2}$ t_{Subj} $[_{v'2}$ v $[_{VP2}$ hate(s) t_{wh}]]]]]]]
d. $[_{CP}$ what (exactly) $[_{C'}$ that Δ]]
e. $[_{CP}$ what (exactly) $[_{C'}$ that $[_{TP1/TP2}$ $[_{TP1}$ John $[_{T'1}$ T $[_{vP1}$ t_{wh} $[_{v'1}$ t_{Subj} $[_{v'1}$ v $[_{VP1}$ like(s) t_{wh}]]]]]] and $[_{TP2}$ Bill $[_{T'2}$ T $[_{vP2}$ t_{wh} $[_{v'2}$ t_{Subj} $[_{v'2}$ v $[_{VP2}$ hate(s) t_{wh}]]]]]]]]]

It is possible to regard CP1 and CP2 in (13a) as identical except for C'1 and C'2 too, which leads to the derivation of the embedded clause in (9c)/(11c) ((14)).

(14) a. i. $[_{CP1}$ what (exactly) Δ]
ii. $[_{CP2}$ what (exactly) Δ]
b. $[_{C'1/C'2}$ $[_{C'1}$ that $[_{TP1}$ John $[_{T'1}$ T $[_{vP1}$ t_{wh} $[_{v'1}$ t_{Subj} $[_{v'1}$ v $[_{VP1}$ like(s) t_{wh}]]]]]]] and $[_{C'2}$ that $[_{TP2}$ Bill $[_{T'2}$ T $[_{vP2}$ t_{wh} $[_{v'2}$ t_{Subj} $[_{v'2}$ v $[_{VP2}$ hate(s) t_{wh}]]]]]]]]

c. $[_{CP}$ what (exactly) $\Delta]$

d. $[_{CP}$ what (exactly) $[_{C'1/C'2}$ $[_{C'1}$ that $[_{TP1}$ John $[_{T'1}$ T $[_{vP1}$ t_{wh} $[_{v'1}$ t_{Subj} $[_{v'1}$ v $[_{VP1}$ like(s) $t_{wh}]]]]]]]$ and $[_{C'2}$ that $[_{TP2}$ Bill $[_{T'2}$ T $[_{vP2}$ t_{wh} $[_{v'2}$ t_{Subj} $[_{v'2}$ v $[_{VP2}$ hate(s) $t_{wh}]]]]]]]]]$

The embedded clause in (9a)/(11a) is derived in the same way as (9b)/(11b) or (9c)/(11c) except that the complementizer is null rather than overt. CP in (13e) and CP in (14d) are merged with the matrix verb, and the single wh-phrase, which has been obtained by the unification induced by Internal CSF, is raised to the matrix [Spec, *v*] and then to the matrix [Spec, C] (stranding *exactly* in the embedded [Spec, C] in the derivations of (11a-c)).

In (13e) and (14d), the wh-phrase in (13a-i) and the one in (13a-ii) have been unified, and thus there is only one [Spec, C] occupied by a single wh-phrase, which explains the acceptability of (11a-c) and partially explains the unacceptability of (12a, b). Stranding *exactly* in the complement of the embedded V in each conjunct (Davis 2021; McCloskey 2000) or stranding *exactly* in the embedded [Spec, *v*] and then extraposing it in each conjunct (Zyman 2022: 107) results in (10a-c).[5, 6]

I proposed in Section 2 that (Internal) CSF can be applied if what differentiates A_1, ..., and A_n in (2) has not been transferred but it cannot be if what differentiates them has already been transferred. Here I assume that *v* and C are phase heads. Chomsky (2000) proposed that the complement of a phase head H is transferred at the point when the (maximal) projection of H (i.e. HP) is completed and merged with a head. Alternatively, Chomsky (2001) proposed that the complement of a phase head H is transferred when the next higher phase head H' is introduced. What distinguishes TP1 from TP2 and C'1 from C'2 in (13a) is the content of TP1 and TP2. Whichever of the two proposals about phasal spell-out/transfer is adopted, TP1 and TP2 have not been transferred at the derivational stage (13a): TP1 and TP2 can count as different at this derivational stage and so can C'1 and C'2. The applications of Internal CSF in (13b-e) and (14a-d) are thus allowed. Now consider the derivational stage in (15a). In (15a), the matrix V and the matrix *v* have been introduced to form the matrix *v*P3 containing CP1 and the matrix *v*P4 containing CP2, and the wh-phrase has been moved to (the outer) [Spec, *v*] stranding *exactly* in the embedded [Spec, C] in each *v*P. One might think that CSF can be applied to (incorrectly) derive (15b) (= (12a, b)) from (15a), conjoining CP1 and CP2.

(15) a. i. $[_{vP3}$ [what] $[_{v'3}$ you $[_{v'3}$ v $[_{VP3}$ say $[_{CP1}$ [_ exactly] $[_{C'1}$ C $[_{TP1}$ John $[_{T'1}$ T $[_{vP1}$ t_{wh} $[_{v'1}$ t_{Subj} $[_{v'1}$ v $[_{VP1}$ like(s) $t_{wh}]]]]]]]]]]]]$

ii. $[_{vP4}$ [what] $[_{v'4}$ you $[_{v'4}$ v $[_{VP4}$ say $[_{CP2}$ [_ exactly] $[_{C'2}$ C $[_{TP2}$ Bill $[_{T'2}$ T $[_{vP2}$ t_{wh} $[_{v'2}$ t_{Subj} $[_{v'2}$ v $[_{VP2}$ hate(s) $t_{wh}]]]]]]]]]]]]$

b. $[_{vP}$ [what] $[_{v'}$ you $[_{v'}$ v $[_{VP}$ say $[_{CP1/CP2}$ $[_{CP1}$ [_ exactly] $[_{C'1}$ C $[_{TP1}$ John $[_{T'1}$ T $[_{vP1}$ t_{wh} $[_{v'1}$ t_{Subj} $[_{v'1}$ v $[_{VP1}$ like(s) $t_{wh}]]]]]]]]$ and $[_{CP2}$ [_ exactly] $[_{C'2}$ C $[_{TP2}$ Bill $[_{T'2}$ T $[_{vP2}$ t_{wh} $[_{v'2}$ t_{Subj} $[_{v'2}$ v $[_{VP2}$ hate(s) $t_{wh}]]]]]]]]]]]]]$

Importantly, however, TP1 and TP2 have already been transferred at the stage (15a): CP1 and CP2 cannot be counted as different at (15a). For this reason, Internal CSF cannot be applied to derive (15b) from (15a).[7]

Now I turn to evidence that (an occurrence of) the element to be "ATB-moved" is moved successive cyclically in each (constituent that later becomes a) conjunct. A piece of evidence comes from facts about wh-possessor extraction (Davis 2021). Davis (2021) shows that, in colloquial English, a wh-possessor can be extracted from the possessum DP stranding the possessive affix and possessum NP and that wh-possessor extraction in question is restricted to a wh-phrase that is located at an intermediate [Spec, C] in the possessor's movement path ((16a, b)). In cases where extraction occurs from a CP embedded in an embedded CP, wh-possessor extraction allows stranding of the possessum either at the edge of the higher CP or at the edge of the lower CP ((16c, d)) (Davis 2021: 318).

(16) a. Who do you think [$_{CP}$ [_ 's book] [Mary read _]]?
b. * Who do you think [$_{CP}$ [Mary read [_ 's book]]]?
c. Who do you think [$_{CP}$ [_ 's cat] [he said [$_{CP}$ [_ is cute]]]]?
d. Who do you think [$_{CP}$ [he said [$_{CP}$ [_ 's cat] [_ is cute]]]]?

Now let us observe wh-possessor extraction in an "ATB"-context ((17)).

(17) a. Who do you think [_ 's book] [Jane said [_ was interesting]] and [Beth said [_ was boring]]?
b. ? Who do you think [Jane said [[_'s book] [_ was interesting]]] and [Beth said [[_'s paper] [_ was boring]]]?

In (17a), only one occurrence of the remnant of wh-possessor extraction appears immediately before the entire conjunction structure (i.e. conjunction of C's or TPs), which again shows that, in the case of "ATB-movement" from conjoined clauses, it is possible for there to be only one [Spec, C] immediately before the entire clausal conjunction.[8] (17b), in which a remnant of possessor extraction appears in the intermediate [Spec, C] in each conjunct, is acceptable. The acceptability of (17c) shows that an element to be "ATB-moved" is moved successive cyclically within each (constituent that later becomes a) conjunct.

A second piece of evidence for successive cyclic movement within each conjunct is offered by (18c).

(18) a. Which picture of himself$_{\{i/j\}}$ did [John$_i$ say [that [Bill$_j$ likes _]]]?
b. Which picture of himself$_{\{i/*j\}}$ does [[John$_i$ like _] and [David$_j$ hate _]]?
c. Which picture of himself$_{\{i/j/m*/n*\}}$ did [[John$_i$ say [that [Bill$_j$ likes _]]] and [David$_m$ say [that [Roger$_n$ likes _]]]]?

In non-ATB long-distance wh-movement (e.g. (18a)), an anaphor to be locally bound can either be bound by a noun phrase in the embedded clause (e.g. *Bill* in (18a)) or by one in the matrix clause (e.g. *John* in (18a)). The latter interpretation is due to the anaphor in the copy of the wh-phrase in the intermediate [Spec, C] being locally bound by a noun phrase in the matrix clause ((19)). Here and in what follows, <X> is intended to be an unpronounced copy of X

(19) [Which picture of himself] did [**John**$_i$ say [<[which picture of **himself**$_i$]> that [Bill$_j$ likes <[which picture of himself]>]]]

As has been recognized in the literature on "ATB wh-movement" in English (e.g. Citko (2005)), an anaphor contained in an "ATB-moved" phrase can be interpreted as bound by a noun phrase in the initial/first conjunct but at least hard to interpret as bound by one in a non-initial conjunct ((18b)). With this in mind, let us consider (18c). In (18c), the local anaphor contained in the "ATB-moved" wh-phrase cannot be interpreted as bound by either of the noun phrases in the second conjunct, which is naturally expected given the fact observed in (18b). On the other hand, the anaphor can be interpreted as bound either by a noun phrase in the embedded clause in the first conjunct or by one in the matrix clause in the same conjunct. The availability of the latter interpretation shows that (an occurrence of) the "ATB-moved" phrase in (18c) is moved through the intermediate [Spec, C] (at least as far as the first conjunct is concerned). The question of why reconstruction into the second conjunct is impossible (or difficult) in "ATB wh-movement" in English is addressed in Section 7.

This section has shown that (a) the element to be "ATB-moved" has two (or more) occurrences at early stages of the derivation, one occurrence each in the two or more (constituents that later become) conjuncts, (b) each of these occurrences of the element to be "ATB-moved" is moved successive cyclically within the constituent that later becomes a conjunct but later they are unified into one occurrence, and (c) the stage of the derivation where they are unified can be identified with the stage of the derivation where the relevant conjunction structure is formed. The point (a) and the point (b) should be captured by any theory of "ATB-movement". Furthermore, the point (c) makes it reasonable to think that the unification in question is caused by the process that is responsible for the formation of the conjunction structure. The present analysis of "ATB-movement" based on Internal CSF can offer the best solution to these issues.

5. The Trail of "ATB-movement" (2): "ATB-Scrambling" (of *sika*-NPIs) in Japanese

This section turns to "ATB-Scrambling" in Japanese (e.g. (20), see Abe and Nakao (2009), Kato (2006) and Nakao (2009, 2010)) to offer further evidence for the present analysis of "ATB-movement", focusing especially on "ATB-scrambling" of *sika*-NPIs.

(20) Keeki-o, Mary-ga tukur-i, John-ga tabe-ta
cake-ACC Mary-NOMmake-NONFINITE John-NOM eat-PAST
'The cake, Mary made _ and John ate _.'

The discussions in this section are based on the following assumptions. First, I assume that Japanese has the clause structure in (21).

(21) $[_{TP}\ [_{T'}\ ([_{NegP})\ [_{vP}\ \text{SUBJ}\ [_{v'}\ [_{VP}\ \text{OBJ V}]]]\ (\text{Neg}])\ \text{T}]]$

Second, it is assumed that T in Japanese has an EPP-feature that attracts the nominal closest to it. In usual cases, it attracts the subject to [Spec, T] ((22a), see Kishimoto (2001)). I assume that a non-subject is also allowed to move to [Spec, T] through the outer [Spec, *v*], inducing short scrambling ((22b), see Miyagawa (2001, 2003) too).

(22) a. $[_{TP}\ \text{SUBJ}\ [_{T'}\ ([_{NegP})\ [_{vP}\ t_{SUBJ}\ [_{v'}\ [_{VP}\ \text{OBJ V}]\ v]]\ (\text{Neg}])\ \text{T}]]$
b. $[_{TP}\ \text{OBJ}\ [_{T'}\ ([_{NegP})\ [_{vP}\ t_{OBJ}\ [_{v'}\ \text{SUBJ}\ [_{v'}\ [_{VP}\ t_{OBJ}\ \text{V}]\ v]]]\ (\text{Neg}])\ \text{T}]]$

I propose that sentences involving (short) "ATB-scrambling" are derived by CSF. (20), for example, is derived from the two TPs in (23a) that each contain an occurrence of the object to be "ATB-moved". In (23a), the object has been moved to [Spec, T] in each TP. Because TP1 and TP2 are both roots and are identical except for *v*P1 and *v*P2, CSF can be applied: *v*P1 and *v*P2 in (23a) are replaced with Δ ((23b)); *v*P1 and *v*P2 are conjoined to form a syntactic object separate from TP1 and TP2 ((23c)); TP1 and TP2 are unified into a single syntactic object ((23d)); the conjunction structure (23c) replaces Δ in (23d) ((23e)).

(23) a. i. [$_{TP1}$ keeki-o [$_{T'1}$ [$_{vP1}$ t$_{OBJ}$ [$_{v'1}$ Mary-ga [$_{v'1}$ [$_{VP1}$ t$_{OBJ}$ tukur(i)] *v*]]] T]]
ii. [$_{TP2}$ keeki-o [$_{T'2}$ [$_{vP2}$ t$_{OBJ}$ [$_{v'2}$ John-ga [$_{v'2}$ [$_{VP2}$ t$_{OBJ}$ tabe] *v*]]] T]][9]
b. i. [$_{TP1}$ keeki-o [$_{T'1}$ Δ T]]
ii. [$_{TP2}$ keeki-o [$_{T'2}$ Δ T]]
c. [$_{vP1/vP2}$ [$_{vP1}$ t$_{OBJ}$ [$_{v'1}$ Mary-ga [$_{v'1}$ [$_{VP1}$ t$_{OBJ}$ tukur(i)] *v*]]] Conj
[$_{vP2}$ t$_{OBJ}$ [$_{v'2}$ John-ga [$_{v'2}$ [$_{VP2}$ t$_{OBJ}$ tabe] *v*]]]]
d. [$_{TP}$ keeki-o [$_{T'}$ Δ T]]
e. [$_{TP}$ keeki-o [$_{T'}$ [$_{vP1/vP2}$ [$_{vP1}$ t$_{OBJ}$ [$_{v'1}$ Mary-ga [$_{v'1}$ [$_{VP1}$ t$_{OBJ}$ tukur(i)] *v*]]] Conj
[$_{vP2}$ t$_{OBJ}$ [$_{v'2}$ John-ga [$_{v'2}$ [$_{VP2}$ t$_{OBJ}$ tabe] *v*]]]] T]]

Long "ATB-scrambling" is also possible ((24)).

(24) Keeki-o, Bill-ga [[Mary-ga tukur-i, John-ga tabe-ta]-to]
cake-ACC Bill-NOM Mary-NOM make-NONFINITE John-NOM eat-PAST-COMP
omot-ta
think-PAST
'The cake, Bill thought that Mary had made _and John had eaten _.'

In "ATB long scrambling" ((24)), the single element "to be ATB-moved" that is obtained by CSF (see (23e)) is further moved to the periphery of the matrix clause via the embedded [Spec, C] and the matrix (outer) [Spec, *v*] ((25)).

(25) Keeki$_j$-o, [$_{TP}$ Bill$_i$-ga [$_{T'}$ [$_{vP}$ t$_j$ [$_{v'}$ t$_i$ [$_{v'}$ [$_{VP}$ [$_{CP}$ t$_j$ [$_{C'}$ [$_{TP}$ t$_j$ [$_{T'}$ [$_{vP1/vP2}$ [$_{vP1}$ t$_j$ [$_{v'1}$ Mary-ga
[$_{v'1}$ [$_{VP1}$ t$_j$ tukur] *v*]]] Conj [$_{vP2}$ t$_j$ [$_{v'2}$ John-ga [$_{v'2}$ [$_{VP2}$ t$_j$ tabe]-*v*]]]]-ta]] to]] omot]-*v*]]]-ta]][10]

For the evidence that Short and Long "ATB-scrambling" at least can involve A-movement into local [Spec, T], see Akiyama (2024a).

Evidence for the present analysis of "ATB-scrambling" comes from facts about *sika*-NPIs. Before turning to "ATB-scrambling" of *sika*-NPIs, let us consider the examples in (26).

(26) a. Jane-wa [John-ga Mary-ni-sika tegami-o
Jane-TOP [John-NOM Mary-DAT-SIKA letter-ACC
das-anakat-ta to] omot-ta
send-NEG-PAST COMP think-PAST
'Jane thought that John had sent letters only to Mary.'
b. ?* Jane-wa [John-ga Mary-ni-sika tegami-o dasi-ta
Jane-TOP [John-NOM Mary-DAT-SIKA letter-ACC send-PAST
to] omow-anakat-ta
COMP think-NEG-PAST
c. ? Mary-ni-sika Jane-wa [John-ga _ tegami-o
Mary-DAT-SIKA Jane-TOP [John-NOM letter-ACC

dasi-ta to] omow-anakat-ta
send -PAST COMP think-NEG-PAST

A *sika*-NPI in an embedded clause can be licensed by Neg in the embedded clause ((26a)) but not by Neg in the matrix clause ((26b)). Interestingly, the acceptability of (26b) can be improved by long-scrambling of the *sika*-NPI ((26c), see Yamashita (2009: 447-448)). These facts suggest that a *sika*-NPI is licensed by entering into a clausemate relation with Neg at some point in the syntactic derivation: (a) at the "base-position" in (26a); (b) at the derived position in (26c). Here I propose to formalize what was stated above by saying that a *sika*-NPI has an uninterpretable Neg-feature [uiNeg] and that [uiNeg] is checked (represented as [√uiNeg]) immediately when it encounters a clausemate Neg that c-commands it in the course of the syntactic derivation (see Yamashita (2009: 446, Note 20)). With this in mind, I turn to (long) ATB-scrambling of *sika*-NPIs.

First, a *sika*-phrase can be "ATB-scrambled" if the two conjuncts both contain Neg ((27)).

(27) Mary-ni-sika, Jane-wa [[[John-ga _ tegami-o kak-azu] katsu
Mary-DAT-SIKA Jane-TOP John-NOM letter-ACC write-NEG and
[Bill-ga _ denwa-o si-nakat]-ta] to] omot-ta
Bill-NOM telephone-ACC do-NEG-PAST COMP think-PAST
'Jane thought that it was only to Mary that John wrote letters and Bill made phone calls.'

(27) is derived from two TPs each containing an occurrence of the *sika*-NPI ((28a, b)). In (28), the *sika*-NPI has been moved to [Spec, T], and importantly [uiNeg] is checked by the clausemate Neg in each TP (when the NPI is c-commanded by the clausemate Neg in its VP-internal position).

(28) a. [$_{TP1}$ Mary-ni-sika$_{[\surd \mathbf{uiNeg}]}$ [$_{T'1}$ [$_{NegP1}$ [$_{vP1}$ t$_{sika}$ [$_{v'1}$ John-ga [$_{v'1}$ [$_{VP1}$ t$_{sika}$ tegami-o kak] *v*]]] Neg] T]]
b. [$_{TP2}$ Mary-ni-sika$_{[\surd \mathbf{uiNeg}]}$ [$_{T'2}$ [$_{NegP2}$ [$_{vP2}$ t$_{sika}$ [$_{v'2}$ Bill-ga [$_{v'2}$ [$_{VP2}$ t$_{sika}$ denwa-o si] *v*]]] Neg] T]]

With the *sika*-NPIs both having **[√uiNeg]**, the two TPs in (28) count as identical except for NegP1 and NegP2: CSF can be applied ((29)). After that, the NPI undergoes long scrambling.

(29) [$_{TP}$ Mary-ni-sika$_{[\surd \mathbf{uiNeg}]}$ [$_{T'}$ [$_{NegP1/NegP2}$ [$_{NegP1}$ [$_{vP1}$ t$_{sika}$ [$_{v'1}$ John-ga [$_{v'1}$ [$_{VP1}$ t$_{sika}$ tegami-o kak] *v*]]] Neg] Conj [$_{NegP2}$ [$_{vP2}$ t$_{sika}$ [$_{v'2}$ Bill-ga [$_{v'2}$ [$_{VP2}$ t$_{sika}$ denwa-o si] *v*]]] Neg]] T]]

Second, if only one of the conjuncts contains Neg, a *sika*-NPI cannot be "ATB-scrambled" ((30)). In (30), the first conjunct contains Neg but the second one does not. For an analysis of complex issues that arise in cases where the first conjunct does not contain Neg while the second one does (or seems to), see Akiyama (2024a).

(30) *Mary-ni-sika, Jane-wa [[[John-ga _ tegami-o kak-azu]
Mary-DAT-SIKA Jane-TOP John-NOM letter-ACC write-NEG
katsu [Bill-ga _denwa-o si]-ta] to] omot-ta
and Bill-NOM telephone-ACC do -PAST COMP think-PAST

(30) is intended to be derived from the two TPs in (31). In (31), TP1 contains Neg while TP2 does not. For this reason, the *sika*-NPI has **[√<u>ui</u>Neg]** in TP1 but **[<u>ui</u>Neg]** in TP2. Due to this featural distinction between the NPIs, the two TPs do not count as identical except for NegP1

and *v*P2. CSF cannot apply here, which prevents (30) from being generated.

(31) a. [$_{TP1}$ Mary-ni-sika$_{[\surd uiNeg]}$ [$_{T'1}$ [$_{NegP1}$ [$_{vP1}$ t$_{sika}$ [$_{v'1}$ John-ga [$_{v'1}$ [$_{VP1}$ t$_{sika}$ tegami-o kak] *v*]]] Neg] T]]

b. [$_{TP2}$ Mary-ni-sika$_{[uiNeg]}$ [$_{T'2}$ [$_{vP2}$ t$_{sika}$ [$_{v'2}$ Bill-ga [$_{v'2}$ [$_{VP2}$ t$_{sika}$ denwa-o si] *v*]]] T]]

Third, even when neither of the conjuncts contains Neg, a *sika*-NPI that is "ATB long scrambled" can be licensed if Neg occurs in the matrix clause ((32)).

(32) ?

Mary-ni-sika,		Jane-wa	[John-ga _		tegami-o	kaki] katsu
Mary-DAT-SIKA		Jane-TOP	John-NOM	letter-ACC	write	and
[Bill-ga	_	denwa-o		si]-ta	to	omow-anakat-ta
Bill-NOM		telephone-ACC		do-PAST	COMP	think-NEG-PAST

'It was only to Mary that Jane thought that John had written letters and Bill had made phone calls to.'

(32) is derived from two TPs in (33) that both do not contain Neg. Therefore, the *sika*-NPI in each TP has not had its [uiNeg] checked.

(33) a. [$_{TP1}$ Mary-ni-sika$_{[uiNeg]}$ [$_{T'1}$ [$_{vP1}$ t$_{sika}$[$_{v'1}$ John-ga [$_{v'1}$ [$_{VP1}$ t$_{sika}$ [$_{V'1}$ tegami-o kak]] *v*]]] T]]

b. [$_{TP2}$ Mary-ni-sika$_{[uiNeg]}$ [$_{T'2}$ [$_{vP2}$ t$_{sika}$ [$_{v'2}$ Bill-ga [$_{v'2}$ [$_{VP2}$ t$_{sika}$ [$_{V'2}$ denwa-o si]] *v*]]] T]]

With the *sika*-NPIs still both having **[uiNeg]**, the two TPs in (33) count as identical except for *v*P1 and *v*P2: CSF can be applied ((34a)). The single *sika*-NPI obtained by the application of CSF is moved to the matrix outer [Spec, *v*]. When the matrix Neg is introduced, [uiNeg] is checked ((34b)). After that, the single *sika*-NPI is moved to the initial position of the matrix clause.

(34) a. [$_{TP}$ Mary-ni-sika$_{[uiNeg]}$ [$_{T'}$ [$_{vP1/vP2}$ [$_{vP1}$ t$_{sika}$[$_{v'1}$ John-ga [$_{v'1}$ [$_{VP1}$ t$_{sika}$ [$_{V'1}$ tegami-o kak]] *v*]]] Conj [$_{vP2}$ t$_{sika}$ [$_{v'2}$ Bill-ga [$_{v'2}$ [$_{VP2}$ t$_{sika}$ [$_{V'2}$ denwa-o si]] *v*]]]] T]]

b. [$_{NegP}$ [$_{vP}$ Mary-ni-sika$_{[\surd uiNeg]}$ [$_{v'}$ SUBJ [$_{v'}$ [$_{VP}$ [$_{CP}$ t$_{sika}$ [$_{C'}$ [$_{TP}$ t$_{sika}$ [$_{T'}$ [$_{vP1/vP2}$ [$_{vP1}$ t$_{sika}$ [$_{v'1}$ John-ga [$_{v'1}$ [$_{VP1}$ t$_{sika}$ [$_{V'1}$ tegami-o kak]] *v*]]] Conj [$_{vP2}$ t$_{sika}$ [$_{v'2}$ Bill-ga [$_{v'2}$ [$_{VP2}$ t$_{sika}$ [$_{V'2}$ denwa-o si]] *v*]]]] T]] to]] omow] *v*]]] Neg]

Under the present analysis, "ATB-scrambling" of a *sika*-phrase underlyingly involves two (or more) occurrences of the relevant *sika*-NPI: one occurrence each in the constituents that later become the conjuncts. (i) If checking of [uiNeg] on the *sika*-NPI to be "ATB-scrambled" occurs before CSF, the constituents that later become the conjuncts must each have Neg so that both/all the occurrences of the *sika*-phrase bear [√uiNeg] and can be unified by CSF ((27), (30)). (ii) If checking of [uiNeg] on the *sika*-NPI to be "ATB-scrambled" occurs after CSF, one occurrence of Neg suffices, because there is only one occurrence of the *sika*-NPI at the relevant stage due to CSF ((32)). (i) and (ii) are what is expected under the present analysis, where two or more occurrences of the element to be "ATB-moved" are unified by CSF.

6. On (Recent) Previous Analyses of "ATB-Movement"

On the basis of what has been observed so far, this section critically examines recent previous studies of "ATB-Movement". Here I focus on how they try to solve the problem of *One-to-Many Correspondence*, putting aside how they solve the problem of the *Lack of CSC-violation*, for the reason of space.

First of all, it should be noticed that "ATB movement" in fact does not involve movement of two (or more) occurrences of the same element directly out of **both/all** the conjuncts. This point can be shown by (12a, b).

(12) a. * What did you say exactly John likes and exactly Bill hates?
b. * What did you say exactly that John likes and exactly that Bill hates?

I continue to assume that CP is a phase. If "ATB-movement" were movement out of both the conjuncts, which are expected to be CPs in these examples, there would have to be an intermediate landing site at the edges of both the conjuncts and *exactly* could be stranded in both of them. On the contrary, the unacceptability of (12a, b) shows that "ATB-movement" does not move two (or more) occurrences of the same element from both/all the conjuncts. For this reason, any analysis that postulates such direct movement from both/all the conjuncts (e.g. Williams (1978)) should be rejected.

Bošković (2019, 2020), Hornstein and Nunes (2002) and Nunes (2001, 2004) propose that "ATB-movement" should be analyzed as an instance of sideward movement. Their analysis is illustrated below referring to example (9c).

(9) c. What did you say [that John likes] and [that Bill hates]?

They all propose that the element to be "ATB-moved" is first merged in a θ-position in the second conjunct and is later sideward moved into a θ-position in the first conjunct. In the derivation of (9c), the wh-phrase is first merged as the complement of V in the second conjunct, raised to the outer [Spec, *v*] and then raised to [Spec, C] ((35a)). The last step is required for the wh-phrase to be moved into the first conjunct without violating the Phase-Impenetrability Condition.[11] Then the element to be "ATB-moved" is sideward moved from the edge of the second conjunct and merged in a θ-position in the first conjunct, and then raised to [Spec, C] of the first conjunct ((35b)). After the two conjuncts are conjoined, ConjP is merged with V of the matrix clause. Finally, the element to be "ATB-moved" in [Spec, C] of the first conjunct is moved to [Spec, *v*] and then to [Spec, C] of the matrix clause ((35c)) and its lower copies are deleted in PF (which is indicated by strikethrough).

(35) a. [$_{CP2}$ [$_{DP}$ what]$_i$ [$_{C'2}$ that [$_{TP2}$ Bill$_j$ [$_{T'2}$ T [$_{vP2}$ [$_{DP}$ what]$_i$ [$_{v'2}$ t$_j$ [$_{v'2}$ *v* [$_{VP2}$ hate [$_{DP}$ what]$_i$]]]]]]]]

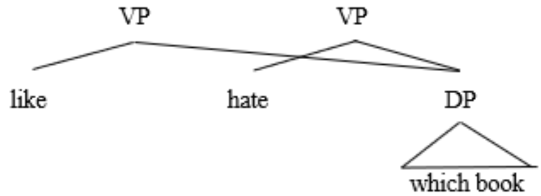
b. [$_{CP1}$ [$_{DP}$ what]$_i$ [$_{C'1}$ that [$_{TP1}$ John$_k$ [$_{T'1}$ T [$_{vP1}$ [$_{DP}$ what]$_i$ [$_{v'1}$ t$_k$ [$_{v'1}$ *v* [$_{VP1}$ like [$_{DP}$ what]$_i$]]]]]]]]

c. [$_{CP}$ [$_{DP}$ what]$_i$ [$_{C'}$ did [$_{TP}$ you$_l$ [$_{T'}$ t$_T$ [$_{vP}$ ~~[$_{DP}$ what]$_i$~~ [$_{v'}$ t$_l$ [$_{v'}$ *v* [$_{VP}$ say [$_{ConjP}$ [$_{CP1}$ ~~[$_{DP}$ what]$_i$~~ [$_{C'1}$ that [$_{TP1}$ John$_k$ [$_{T'1}$ T [$_{vP1}$ ~~[$_{DP}$ what]$_i$~~ [$_{v'1}$ t$_k$ [$_{v'1}$ *v* [$_{VP1}$ like ~~[$_{DP}$ what]$_i$~~]]]]]]]] [$_{Conj'}$ Conj [$_{CP2}$ ~~[$_{DP}$ what]$_i$~~ [$_{C'2}$ that [$_{TP2}$ Bill$_j$ [$_{T'2}$ T [$_{vP2}$ ~~[$_{DP}$ what]$_i$~~ [$_{v'2}$ t$_j$ [$_{v'2}$ *v* [$_{VP2}$ hate ~~[$_{DP}$ what]$_i$~~]]]]]]]]]]]]]]]]]]

Under this analysis, the state of *One-to-Many Correspondence* is understood to be a result of sideward movement of a single element.

Citko (2005, 2011) proposes that the element to be "ATB-moved" is merged both with an element in the first conjunct and with an element in the second conjunct as in (36) (which is dubbed parallel merge) and thus it is dominated by both the conjuncts. The wh-DP shared by both the conjuncts is wh-moved to [Spec, C] (which helps avoid linearization problems.)

(36)



Under this analysis, the state of *One-to-Many Correspondence* arises because **a single element** is shared by both/all the conjuncts and then is moved to the final landing site (as a single constituent, of course).

The facts about the adverb *exactly* associated with "ATB-moved" wh-phrases that were discussed in Section 4 are worth emphasizing here. First, for the analysis based on sideward movement, the acceptability of (10a-c) is potentially problematic.

(10) a. ? What did you say [John likes exactly] and [Bill hates exactly]?
b. ? What did you say that [John likes exactly] and [Bill hates exactly]?
c. ? What did you say [that John likes exactly] and [that Bill hates exactly]?

Because a single element is sideward moved from within a conjunct into the other one under this analysis, to generate (10a-c), they must allow a single wh-phrase to be associated with two occurrences of *exactly*: one occurrence in one of the conjuncts; another one in the other conjunct. It is unclear whether this auxiliary assumption is independently motivated. Second, even if it is assumed that this auxiliary assumption is plausible, the unacceptability of (12a, b) is problematic to the analysis based on sideward movement. Importantly, there is predicted to be an intermediate landing site in both the edge of the first conjunct and that of the second conjunct (see (35c)). Therefore, it is incorrectly predicted that (12a, b) are acceptable. One might think that the sideward movement-based analysis can rule out (12a, b), if the element to be "ATB-moved" merged in the θ-position in the second conjunct is moved directly into the θ-position in the first conjunct without moving through the edge of the second conjunct. However, this revision is equivalent to claiming that sideward movement is not subject to the Phase-Impenetrability Condition and thus to claiming that sideward movement is a different type of movement than ordinary instances of movement that are subject to that constraint, which should be said to be undesirable. In addition, the question arises of why sideward movement as movement of an unordinary kind in the sense stated above is allowed in syntactic contexts involving coordination and it will remain unsolved. This is in sharp contrast to the present analysis based on Internal CSF. Under the analysis based on Internal CSF, two (or more) occurrences of the same element to be "ATB-moved" are unified when the relevant conjunction structure is formed. This unification is an integral part of CSF as an operation forming coordinate structures.

The acceptability of (10a-c) and the contrast between (10a-c) and (12a, b) are problematic to the analysis based on parallel merge too. Under this analysis, a single element undergoes parallel merge with (elements in) both/all the conjuncts. If *exactly* associated with a wh-phrase is adjoined to the wh-phrase in one of its lower positions, there will not be enough room to accommodate two occurrences of *exactly* to be adjoined to a single wh-phrase. If some workaround is postulated to allow two occurrences of *exactly* associated with the wh-phrase in *v*P in (10a-c), it will be unclear why the same mechanism does not allow two occurrences of *exactly* associated with the wh-phrase in the intermediate position in [Spec, C] in (12a, b).[12]

Furthermore, the facts about "ATB-scrambling" of *sika*-NPIs that were observed in Section 5 cannot be straightforwardly explained by the analysis featuring sideward movement or the analysis featuring parallel merge. The contrast between (27) and (30) shows that, in cases involving "ATB-scrambling" of a *sika*-phrase, if one of the conjuncts happens to contain Neg, the other conjunct(s) must too. This fact can be naturally explained under the present analysis featuring CSF: when checking of [uiNeg] on the *sika*-phrase happens to take place before the application of CSF, both (or all) the occurrences of the *sika*-phrase must have their [uiNeg] checked in order to be unified by CSF. Under the analysis featuring sideward movement, **a single *sika*-NPI** is sideward moved from one conjunct into the other. It should be recalled that a single *sika*-NPI needs to be licensed **only once**, in one of the positions it occupies in the course of the derivation (see (26)). For this reason, an incorrect prediction arises under the sideward movement analysis that a *sika*-NPI that is "ATB-moved" must be licensed **either** in (one of the positions it occupies in) the second conjunct **or** in (one of the positions it occupies in) the first conjunct. Then it is unclear why both the conjuncts in the examples like (27) and (30) must contain Neg. The analysis based on parallel merge also claims that **a single *sika*-NPI** undergoes parallel merge with an element in the first conjunct and an element in the second conjunct. For this reason, the same incorrect prediction that a *sika*-NPI that is "ATB-moved" must be licensed **either** in (one of the positions it occupies in) the second conjunct **or** in (one of the positions it occupies in) the first conjunct arises under this analysis too.[13, 14]

7. Speculations on Anaphora Reconstruction in "ATB-movement"

One of the two reviewers wondered whether the following reconstruction asymmetries induced by an anaphor contained in an "ATB-moved" wh-phrase can be accounted for by the present analysis based on Internal CSF.

(37) a. Which picture of himself did [John paint _] and [Mary buy _]?
b. *Which picture of herself did [John paint _] and [Mary buy _]?
c. Which picture of himself did [John paint _] and [Bill buy _]?

In these examples, which were first pointed out by Munn (1994), the anaphor contained in the "ATB-moved" wh-phrase can be reconstructed back only into the first (or initial) conjunct but not into the second (or non-initial) conjunct. As matters now stand, the present analysis cannot offer a straightforward explanation for this contrast. However, some remarks are in order about this issue.

First, "ATB-scrambling" in Japanese allows an anaphor contained in an "ATB-scrambled" phrase to reconstructed into both (or all) the conjuncts ((38)).

(38)	[[Zibun-ga	Ohtani Shohei-to		issho-ni	utut-tei-ru]			shasin]-o,
	self-NOM	Ohtani Shohei-with		together	be projected-ASP-PRES			picture-ACC
	[John-ga	Feisubukku-ni	_	age,	[Bill-ga	kabe-ni	_	hat]-ta
	John-NOM	Facebook-DAT	post	Bill-NOM	wall-DAT		put-PAST	

'John posted a picture taken of John and Shohei Ohtani on Facebook and Bill put up a picture taken of Bill and Shohei Ohtani on the wall.'

Under the present analysis, (38) can be derived by CSF from the two TPs in (39).

(39) a. [$_{TP1}$ [zibun$_i$-ga Ohtani Shohei-to issho-ni utut-tei-ru] shasin]$_{OBJ}$-o [$_{T'}$ [$_{vP1}$ t$_{OBJ}$ [$_{v'}$ John$_i$-ga Feisubukku-ni t$_{OBJ}$ age]] T]]

b. [$_{TP2}$ [zibun$_j$-ga Ohtani Shohei-to issho-ni utut-tei-ru] shasin]$_{OBJ}$-o [$_{T'}$ [$_{vP2}$ t$_{OBJ}$ [$_{v'}$ Bill$_j$-ga kabe-ni t$_{OBJ}$ hat]] T]]

In (39a), the subject-oriented anaphor *zibun* 'self' in the scrambled phrase is bound by the subject of the first conjunct while in (39b), it is bound by the subject of the second conjunct. The anaphor in (39a) and that in (39b) take different antecedents and thus are not coindexed. However, they are bound by the elements that are in parallel positions. It is important to recall that the "identity" condition on ellipsis can ignore differences of this kind in allowing sloppy identity readings ((40)).

(40) John criticized himself and Bill did too.
'John$_i$ criticized himself$_i$ and Bill$_j$ criticized himself$_j$.'

It is then natural to think that "the identity condition" imposed on the application of CSF (i.e. the condition (iii) in (2)) can also ignore referential differences like the one in (39). If so, the two TPs in (39) can count as identical except for the two *v*Ps: it can be applied to them to derive (41).

(41) [$_{TP}$ [zibun$_{i/j}$-ga Ohtani Shohei-to issho-ni utut-tei-ru] shasin]$_{OBJ}$-o [$_{T'}$ [$_{vP1/vP2}$ [$_{vP1}$ t$_{OBJ}$ [$_{v'}$ John$_i$-ga Feisubukku-ni t$_{OBJ}$ age]] Conj [$_{vP2}$ t$_{OBJ}$ [$_{v'}$ Bill$_j$-ga kabe-ni t$_{OBJ}$ hat]]] T]]

Second, although I cannot offer a principled explanation for it, "ATB-moved" wh-phrases in English strongly tend to be interpreted as binding the identical variable in both/all the conjuncts, yielding 'strict' interpretations (though see de Vries (2017: 27-28), for examples that allow 'sloppy' interpretations).

(42) What does John like and Bill hates?

(42), for example, is interpreted as asking about the thing that is liked by John and is hated by Bill as well. With this preference in mind, let us consider (37c), for example, first examining whether it can be derived from the two CPs in (43).

(37) c. Which picture of himself did [John paint _] and [Bill buy _]?

(43) a. [$_{CP1}$ [which picture of himself$_i$]$_k$ [$_{C'}$ did [$_{TP1}$ John$_i$ paint <[which picture of himself$_i$]$_k$>]]]

b. [$_{CP2}$ [which picture of himself$_j$]$_l$ [$_{C'}$ did [$_{TP2}$ Bill$_j$ buy <[which picture of himself$_j$]$_l$ >]]]

Here I ignore the copies of the wh-phrase in [Spec, *v*] for the sake of simplicity. In (43), the wh-phrase to be "ATB-moved" contains a reflexive in both CP1 and CP2. The reflexive is bound by *John* in (43a) and by *Bill* in (43b). For this reason, the entire wh-phrase in (43a) and that in (43b) are differently indexed and thus each bind a distinct variable. This is in conflict with the preference mentioned above. The preference for the "strict interpretation" can be satisfied, if (37c) is derived from the two CPs in (44).

(44) a. $[_{CP1}$ [which picture of himself$_i$]$_k$ $[_{C'}$ did $[_{TP1}$ John$_i$ paint <[which picture of himself$_i$]$_k$>]]]

b. $[_{CP2}$ [which picture of him$_i$]$_k$ $[_{C'}$ did $[_{TP2}$ Bill$_j$ buy <[which picture of him$_i$]$_k$>]]]

The wh-phrase moved into [Spec, C] contains a reflexive pronoun bound by the subject of TP1 in (44a) and a pronoun coreferential with it in (44b). Because the reflexive in (44a) and the pronoun in (44b) are coreferential, the entire wh-phrase in (44a) and that in (44b) can be coindexed too. Although the reflexive in (44a) and the pronoun in (44b) are different in featural compositions (and in forms), they are coreferential. It is again important to recall that the "identity" condition on ellipsis can ignore differences of this kind in allowing so-called strict identity readings ((45)).

(45) John likes a picture of himself and Bill does too.
'John$_i$ likes a picture of himself$_i$ and Bill$_j$ likes a picture of him$_i$.'

It is natural to think that "the identity condition" imposed on the application of CSF can ignore differences in feature compositions like the one in (44). If so, the two CPs in (44) can count as identical except for the two TPs. Suppose now that, when CSF unifies two (or more) syntactic objects that differ in feature compositions, the resulting syntactic object should retain the one with the more (or most) specific feature specification rather than the one(s) with less specific feature specification(s). A reflexive pronoun contains the feature [reflexive] as well as the φ-features of the corresponding pronoun that is identical to it in person, number and gender. Then the unification of the two CPs results in retention of the reflexive pronoun instead of the pronoun ((46)).

(46) $[_{CP}$ [which picture of himself$_i$]$_k$ $[_{C'}$ did $[_{TP1/TP2}$ $[_{TP1}$ John$_i$ paint <[which picture of himself$_i$]$_k$>] and $[_{TP2}$ Bill$_j$ buy <[which picture of him$_i$]$_k$>]]]]

In (46), the reflexive contained in the "ATB-moved" wh-phrase is reconstructed into the first conjunct while the second conjunct contains a pronoun that is coreferential with the antecedent of the reflexive, which is contained in the first conjunct. It should be noticed that the interpretation of the pronoun in the second conjunct does not violate any constraint imposed on pronouns.

If the reflexive in (37c) were reconstructed into the second conjunct without violating the preference for 'strict reading', it would have to be derived from the two CPs in (47).

(47) a. $[_{CP1}$ [which picture of him$_j$]$_k$ $[_{C'}$ did $[_{TP1}$ John$_i$ paint <[which picture of him$_j$]$_k$>]]]

b. $[_{CP2}$ [which picture of himself$_j$]$_k$ $[_{C'}$ did $[_{TP2}$ Bill$_j$ buy <[which picture of himself$_j$]$_k$>]]]

If the featural difference between a pronoun and the corresponding reflexive is ignored by CSF, (47a) and (47b) can be unified as in (48).

(48) $[_{CP}$ [which picture of himself$_j$]$_k$ $[_{C'}$ did $[_{TP1/TP2}$ $[_{TP1}$ John$_i$ paint <[which picture of him$_j$]$_k$>] and $[_{TP2}$ Bill$_j$ buy <[which picture of himself$_j$]$_k$>]]]]

However, in (48), the pronoun in the first conjunct is coreferential with the antecedent of the reflexive, which is contained in the second conjunct. This configuration can be thought to be an instance of backward pronominalization between one conjunct and another one, which is known to be unacceptable in English and many other languages ((49)).

(49) a. [John$_i$ came in at three] and [he$_i$ went out at four].
b. * [He$_i$ came in at three] and [John$_i$ went out at four].

Therefore, the lack of the reconstruction into the second conjunct in (37) can be attributed to the preference for the 'strict readings' in English and the ban on backward pronominalization between conjuncts.

8. Concluding Remarks: Is There Any "Real" ATB-Movement?

This paper has proposed that "ATB-movement" should be taken to be a result of Coordinate Structure Formation (CSF) (2), which allows conjunction of not only (i) roots (External CSF, see Note 2) but also (ii) non-roots (Internal CSF, see (4)). Under this analysis, the element to be "ATB-moved" underlyingly has two (or more) occurrences, one occurrence each in the constituents that are to later become the conjuncts. Each of the occurrences of the "ATB-moved" element is moved within a constituent that contains the constituent that is to later become a conjunct, before the relevant conjunction structure is formed by CSF. "ATB-movement" in fact does not involve extraction from a coordinate structure, which solves the problem of the *Lack of CSC-Violation*. Furthermore, the two (or more) occurrences of the element to be "ATB-moved" that are introduced separately into distinct constituents that will later become conjuncts are later unified by CSF, which makes the problem of *One-to-Many Correspondence* fall into place.

The present analysis of "ATB-movement" attributes its peculiarities to the operation responsible for formation of coordinate structures (i.e. CSF). "ATB-movement" occurs exclusively in coordinate structures, and not anywhere else. For this reason, it is natural to think that the derivational process that yields coordinate structures gives birth to the peculiar nature of "ATB-movement".

The present analysis of "ATB-movement" and the facts that have been discussed so far have the following theoretical implication. Under the present analysis, so-called "ATB-movement" we are familiar with is movement of occurrences of the same element in two or more separate syntactic objects followed by unification by Internal CSF, but not extraction from a conjunction structure. Therefore "ATB-movement" we are familiar with is not an exception to the Coordinate Structure Constraint or the ban against extraction from conjuncts. This point leads us to think that <u>natural languages do not have any real ATB-movement as movement of a shared constituent out of a conjunction structure</u>. In other words, movement in natural languages always obeys the Coordinate Structure Constraint or the ban against extraction from conjuncts. Real ATB-movement should be taken to be impossible in natural language simply because it violates the Coordinate Structure Constraint or the ban against extraction from conjuncts. In fact, the unacceptability of (12a, b) shows that real ATB-extraction of the wh-phrase that is shared by the two conjoined CPs in (50) is impossible. It should be noted that the conjunction structure in (50) can be formed by External CSF (see Note 2).[15]

(12) a. *What did you say exactly John likes and exactly Bill hates?

b. *What did you say exactly that John likes and exactly that Bill hates?

(50)$[_{CP1/CP2}$ $[_{CP1}$ [[what] exactly] $[_{C'1}$ that $[_{TP1}$ John $[_{T'1}$ T $[_{vP1}$ t_{wh} $[_{v'1}$ t_{Subj} $[_{v'1}$ v $[_{VP1}$ like(s) t_{wh}]]]]]]]] and $[_{CP2}$ [[what] exactly] $[_{C'2}$ that $[_{TP2}$ Bill $[_{T'2}$ T $[_{vP2}$ t_{wh} $[_{v'2}$ t_{Subj} $[_{v'2}$ v $[_{VP2}$ hate(s) t_{wh}]]]]]]]]]

The unacceptability of (12a, b) or the impossibility of real ATB-movement from (50) clearly shows that extraction from a conjunction structure is disallowed, irrespective of whether it is applied in an ATB-fashion or non-ATB-fashion. We can thus eliminate a 'bogeyman' that does not obey an otherwise trustworthy constraint from the universe of syntactic theorizing.

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Endnotes

1 I assume that the entire conjunction structure takes over the categorial status(es) of the conjuncts (i.e. A_1 and A_2), which is represented here as A_1/A_2. See Neeleman et al. (2023), for a recent analysis of the syntax of conjunction structures that derives this assumption (see Oda (2021) too).

2 It is possible for CSF to conjoin roots ((i)). α_1 and α_2 in (i-a) are both roots and distinct from each other. α_1 itself is a term of α_1 and α_2 itself is a term of α_2. α_1 and α_2 are identical except for α_1 and α_2 themselves, simply because the part of α_1 excluding α_1 itself and the part of α_2 excluding α_2 itself are both null and thus are identical. CSF can be applied: α_1 and α_2 are both replaced with Δ ((i-b)); α_1 and α_2 are conjoined to form a syntactic object separate from α_1 and α_2 ((i-c)); (i-b-α) and (i-b-β) are unified ((i-d)); Δ in (i-d) is replaced with the conjunction structure obtained in (i-c). I omit to represent the result of this, because it is identical to (i-c). Derivations like (i) should be taken to underlie coordination of two (or more) clauses at the matrix level (e.g. *John came in and Bill went out.*) and most cases of so-called "deep structure" coordination of XPs (e.g. *[John and Bill] are alike.*). Hereafter the application of CSF depicted in (i) is dubbed *External CSF*.

(i) a. α. $\alpha_1 = [_{Y1}$ B $[_X$ C D]] β. $\alpha_2 = [_{Y2}$ E $[_X$ F G]]

b. α. Δ β. Δ

c. $[_{Y1/Y2}$ $[_{Y1}$ B $[_{X1}$ C D]] Conj $[_{Y2}$ E $[_{X2}$ F G]]]

d. Δ

3 For alternative analyses of postverbal *exactly*, see Zyman (2022: 107).

4 Zyman (2022) claims that *exactly* associated with a(n object) wh-phrase can appear in the preverbal position ((i)). Because the informants I consulted do not allow *exactly* in the preverbal position either in non-ATB-movement or in "ATB-movement", I do not discuss examples with preverbal *exactly*.

(i) (*) What was she exactly doing?

5 Zyman (2022: 104) claims that *exactly* can be stranded in the specifier position of a CP embedded in an embedded clause. My informants judged stranding of *exactly* of this kind to be unacceptable both in "non-ATB" cases ((i)) and in "ATB" cases ((ii)). This paper leaves unanswered the question of why (i) and (ii) sound unacceptable to them.

(i) *What did you hear that Jane said exactly that John likes?

(ii) *What did you hear that Jane said exactly that John likes and that Beth said exactly that Bill likes?

6 Examples in (i), which all contain one occurrence of *exactly* in the final position, are acceptable.

(i) a. What did you say John likes and Bill hates exactly?

b. What did you say that John likes and Bill hates exactly?

c. What did you say that John likes and that Bill hates exactly?

(i-a) and (i-b) are structurally ambiguous: (a) *exactly* appears in the matrix clause as a result of being adjoined to the wh-phrase when it is moved to the matrix [Spec, *v*] and then undergoing Extraposition or (b) *exactly* appears in the embedded clause as a result of application of Right Node Raising to the two occurrences of *exactly* in (10a, b). The fact that *exactly* can appear in the final position in a sentence involving clausal coordination at the matrix level as in (ii) suggests that the analysis (b) is plausible.

(ii) What does John like and Bill hate exactly?

There is evidence for the analysis (a) above too ((iii)).

(iii) a. What did you say (that) John likes and Bill hates exactly yesterday?

b. What did you say (that) John likes and Bill hates yesterday, exactly?

The temporal adverbial *yesterday* in (iii) is intended to modify the matrix event of *saying*. The fact that *exactly* can follow this adverb shows that it can appear in the matrix clause, which in turn shows that the analysis (a) is on the right track too. With *exactly* appearing to the right of the conjunction of two embedded clauses each headed by *that*, (i-c) can be given the same analysis as (a) above. This is suggested by the acceptability of (iv).

(iv) What did you say that John likes and that Bill hates yesterday, exactly?

7 One of the reviewers recommended me to consider examples like (i), in which only one of the clausal conjuncts contains *exactly* in the initial position.

(i) a. *What did you say John likes and exactly Bill hates?

b. *What did you say that John likes and exactly that Bill hates?

The informants I consulted judged (i-a) and (i-b) to be unacceptable and as bad as (12a, b). (i-a, b) cannot be derived from the two CPs in (ii-a).

(ii) a. [$_{CP1}$ what [$_{C'1}$ (that) [$_{TP1}$ John [$_{T'1}$ T [$_{vP1}$ t$_{wh}$ [$_{v'1}$ t$_{Subj}$ [$_{v'1}$ *v* [$_{VP1}$ like(s) t$_{wh}$]]]]]]]]

b. [$_{CP2}$ [[what] exactly] [$_{C'2}$ (that) [$_{TP2}$ Bill [$_{T'2}$ T [$_{vP2}$ t$_{wh}$ [$_{v'2}$ t$_{Subj}$ [$_{v'2}$ *v* [$_{VP2}$ hate(s) t$_{wh}$]]]]]]]]

Because the wh-phrase occurs with *exactly* in (ii-b) but not in (ii-a), the two CPs cannot count as identical except for TP1 and TP2 or except for C'1 and C'2. However, there is still one possible way of (incorrectly) generating (i-a, b). Consider (iii).

(iii) a. [$_{vP3}$ [what] [$_{v'3}$ you [$_{v'3}$ *v* [$_{VP3}$ say [$_{CP1}$ _ [$_{C'1}$ C [$_{TP1}$ John [$_{T'1}$ T [$_{vP1}$ t$_{wh}$ [$_{v'1}$ t$_{Subj}$ [$_{v'1}$ *v* [$_{VP1}$ like(s) t$_{wh}$]]]]]]]]]]]]

b. [$_{vP4}$ [what] [$_{v'4}$ you [$_{v'4}$ *v* [$_{VP4}$ say [$_{CP2}$ [_ exactly] [$_{C'2}$ C [$_{TP2}$ Bill [$_{T'2}$ T [$_{vP2}$ t$_{wh}$ [$_{v'2}$ t$_{Subj}$ [$_{v'2}$ *v* [$_{VP2}$ hate(s) t$_{wh}$]]]]]]]]]]]]

In (iii), the matrix *v*Ps have been formed and the wh-phrase is moved to the matrix [Spec *v*] in each *v*P (stranding *exactly* in the embedded [Spec, C] in (iii-b)). Although TP1 and TP2 have already been transferred, CP1 and CP2 differ in that the former does not but the latter does contain *exactly*. It is then expected that *v*P3 and *v*P4 count as identical except for CP1 and CP2. As matters now stand, it is predicted that CSF can be applied to (iii-a) and (iii-b) to form (iv).

(iv) [$_{vP}$ [what] [$_{v'}$ you [$_{v'}$ *v* [$_{VP}$ say [$_{CP1/CP2}$ [$_{CP1}$ _ [$_{C'1}$ C [$_{TP1}$ John [$_{T'1}$ T [$_{vP1}$ t$_{wh}$ [$_{v'1}$ t$_{Subj}$ [$_{v'1}$ *v* [$_{VP1}$ like(s) t$_{wh}$]]]]]]]] and [$_{CP2}$ [_ exactly] [$_{C'2}$ C [$_{TP2}$ Bill [$_{T'2}$ T [$_{vP2}$ t$_{wh}$ [$_{v'2}$ t$_{Subj}$ [$_{v'2}$ *v* [$_{VP2}$ hate(s) t$_{wh}$]]]]]]]]]]]

Therefore, to explain the unacceptability of (i-a) and (i-b), the derivation of (iv) from (iii-a) and (iii-b) must somehow be blocked. A plausible analysis is taking CP1 and CP2 in (iii) to be NOT sufficiently different to be able to undergo conjunction by CSF. Given that TP1 and TP2 have already been transferred, the only difference between CP1 and CP2 is the presence/absence of the adverb *exactly*. There actually is reason to believe that the presence or absence of an adverb (or more generally an adjunct) in itself does not allow formation of a conjunction structure. Consider the Japanese examples in (v).

(v) a. John-ga [kimuchi-o tabe] sosite [natto-o tabe]-ta
John-NOM kimchi-ACCeat and n atto-ACC eat-PAST
'John ate kimchi and ate natto.'

b. *John-ga [kimuchi-o tabe] sosite [kimuchi-omusha-musha
John-NOM kimchi-ACC eat and kimchi-ACC ONOMATOPOEIA
tabe]-ta
eat-PAST
'John ate kimchi and devoured kimchi.'

(v-a) and (v-b) involve conjunction of transitive verb phrases. The differences between the two objects in (v-a) allows the formation of the conjunction structure. Interestingly, the presence and absence of the (onomatopoeic) adverb in (v-b) in itself cannot allow it. Then it is natural to think that the presence/absence of *exactly* in (iii) in fact does not allow conjunction of CP1 and CP2.

8 Examples in (i), in which one occurrence of the remnant of wh-possessor extraction appears in the initial position of each of the two (CP) conjuncts, are unacceptable irrespective of whether the possessum noun in the second conjunct is identical to the one in the first conjunct ((i-a)) or not ((i-b)).

(i) a. *Who do you think [[_ 's book] [Jane said [_ was interesting]]] and [[_'s book] [Beth said [_ was boring]]]?

b. *Who do you think [[_ 's book] [Jane said [_ was interesting]]] and [[_'s paper] [Beth said [_ was boring]]]?

The unacceptability of (i-a) may be due to the point that it is not possible for the two (or more) CP conjuncts from which "ATB-movement" takes place to each have their own [Spec, C] (see (12a, b)). More precisely, (i-a) cannot be derived from the two matrix *v*Ps in (ii) by Internal CSF with CP1 and CP2 being conjoined.

(ii) a. [$_{vP1}$ who [$_{v'}$ you [$_{v'}$ *v* [$_{VP}$ say [$_{CP1}$ [_ 's book] [$_{C'}$ C [$_{TP1}$ Jane said [_ was interesting]]]]]]]]

b. [$_{vP2}$ who [$_{v'}$ you [$_{v'}$ *v* [$_{VP}$ say [$_{CP2}$ [_ 's book] [$_{C'}$ C [$_{TP2}$ Beth said [_ was boing]]]]]]]]

What differentiates CP1 and CP2 in (ii) is the content of TP1 and that of TP2. However, these TPs were transferred when CP1 and CP2 were completed or when the matrix *v* was introduced. Thus, at the derivational stage in (ii), CP1 and CP2 cannot count as identical except for TP1 and TP2, which prevents CSF from being applied. Unfortunately, the same explanation cannot be given to the unacceptability of (ii-b), where the two possessum nouns differ ((iii)).

(iii) a. [$_{vP1}$ who [$_{v'}$ you [$_{v'}$ *v* [$_{VP}$ say [$_{CP1}$ [_ 's book] [$_{C'}$ C [$_{TP1}$ Jane said [_ was interesting]]]]]]]]

b. [$_{vP2}$ who [$_{v'}$ you [$_{v'}$ *v* [$_{VP}$ say [$_{CP2}$ [_ 's paper] [$_{C'}$ C [$_{TP2}$ Beth said [_ was boing]]]]]]]]

As matters now stand, in (iii), CP1 and CP2 can be differentiated by the possessum NPs. There are two analytical possibilities that account for (i-b). First, if D is a phase head (Aravind 2016, Bošković 2005, Ochi 2000), the possessum NP, which is (or is contained in) the complement of D is transferred when the D head of the possessive

DP is introduced (or the matrix *v* is introduced) ((iv)). If so, CP1 and CP2 in (iv) cannot count as different at this derivational stage.

(iv) a. [$_{vP1}$ who [$_{v'}$ you [$_{v'}$ *v* [$_{VP}$ say [$_{CP1}$ [$_{DP}$ _ 's [$_{D'}$ D ... [$_{NP}$ book]...]] [$_{C'}$ C [$_{TP1}$ Jane said [_ was interesting]]]]]]]]

b. [$_{vP2}$ who [$_{v'}$ you [$_{v'}$ *v* [$_{VP}$ say [$_{CP2}$ [$_{DP}$ _'s [$_{D'}$ D... [$_{NP}$ paper]...]] [$_{C'}$ C [$_{TP2}$ Beth said [_ was boing]]]]]]]]

Second, the genitive marker *-'s* is phonologically cliticized onto the preceding material (Davis 2021). Whether D is a phase head or not, (i-b) (and (i-a)) can be ruled out, if cliticization of the genitive marker onto a conjunction is prohibited.

9 What differentiates *v*P1 and *v*P2 in (23a) is the subjects in [Spec, *v*] and the main Vs. Whichever of the two conceptions of phasal spell-out/transfer that were introduced in Section 4 is adopted, at least the subjects in [Spec, *v*] remain untransferred at the stage (23a).

10 Alternatively, (24) can be derived from the two CPs in (i).

(i) a. [$_{CP1}$ keeki-o [$_{C'1}$ [$_{TP1}$ t$_{OBJ}$ [$_{T'1}$ [$_{vP1}$ t$_{OBJ}$ [$_{v'1}$ Mary-ga [$_{v'1}$ [$_{VP1}$ t$_{OBJ}$ tukur(i)] *v*]]] T]] C]]

b. [$_{CP2}$ keeki-o [$_{C'2}$ [$_{TP2}$ t$_{OBJ}$ [$_{T'2}$ [$_{vP2}$ t$_{OBJ}$ [$_{v'2}$ John-ga [$_{v'2}$ [$_{VP2}$ t$_{OBJ}$ tabe] *v*]]] T]] C]]]

The embedded subjects in [Spec, *v*] have not been transferred at the stage (i). Therefore, what differentiates *v*P1 and *v*P2 is (partly) visible at this stage, which enables CSF to apply to derive (ii).

(ii) [$_{CP}$ keeki-o [$_{C'}$ [$_{TP}$ t$_{OBJ}$ [$_{T'}$ [$_{vP1/2}$ [$_{vP1}$ t$_{OBJ}$ [$_{v'1}$ Mary-ga [$_{v'1}$ [$_{VP1}$ t$_{OBJ}$ tukur(i)] *v*]]] Conj [$_{vP2}$ t$_{OBJ}$ [$_{v'2}$ John-ga [$_{v'2}$ [$_{VP2}$ t$_{OBJ}$ tabe] *v*]]]] T]] C]]

11 Bošković (2019, 2020) proposes that every conjunct is a phase, which he claims is a consequence of the contextual determination of phasehood he assumes (see Bošković (2014)).

12 One of the reviewers recommended me to consider examples like (i), in which only one of the clausal conjuncts contains *exactly* in the final position and examine their implications for the discussion in this section.

(i) a. What did you say [[that [John likes]] and [that [Bill hates exactly]]]?

b. What did you say [that [[John likes] and [Bill hates exactly]]]?

c. What did you say [[John likes] and [Bill hates exactly]]?

d. What did you say [[that [John likes exactly]] and [that [Bill hates]]]?

e. What did you say [that [[John likes exactly] and [Bill hates]]]?

f. What did you say [[John likes exactly] and [Bill hates]]?

Because (i-a, b, and c) are string-identical to the examples in (i) in note 6 and they are difficult to disambiguate, I here focus on (i-d, e and f). They are judged to be more acceptable than (12a, b), even better than (10a-c), and seemingly as acceptable as (11a-c). Under the present analysis featuring Internal CSF, they are derived from two CPs in (ii-a), for example.

(ii) a. [$_{CP1}$ what [$_{C'1}$ (that) [$_{TP1}$ John likes t$_{wh}$ exactly]]]

b. [$_{CP2}$ what [$_{C'2}$ (that) [$_{TP2}$ Bill hates t$_{wh}$]]]

CP1 and CP2 can count as identical except for TP1 and TP2 or C'1 and C's: Internal SCF can be applied to form (iii-a) or (iii-b).

(iii) a. [$_{CP}$ what [$_{C'}$ (that) [$_{TP1/TP2}$ [$_{TP1}$ John likes t$_{wh}$ exactly] and [$_{TP2}$ Bill hates t$_{wh}$]]]]

b. [$_{CP}$ what [$_{C'1/C'2}$ [$_{C'1}$ (that) [$_{TP1}$ John likes t$_{wh}$ exactly]] and [$_{C'2}$ (that) [$_{TP2}$ Bill hates t$_{wh}$]]]]

Since examples in (i) contain only one occurrence of *exactly* associated with the wh-phrase, they can be dealt with by the analysis featuring sideward movement and the one featuring parallel merge too. Therefore, they do not tease apart the present analysis and these previous analyses.

13 Proponents of the analysis featuring sideward movement and proponents of the analysis featuring Parallel Merge may redefine the notion 'chain' so that the copy/copies of the "ATB-moved" element in the first conjunct and its copy/copies in the second conjunct count as belonging to different chains (see Kato (2006)). If each chain of a *sika*-NPI has to be licensed, then "ATB-movement" of the *sika*-phrase in (27) and (30) will require both the conjuncts

to contain Neg. Of course, this redefinition of the notion 'chain' is not required under the present analysis featuring Internal CSF.

14 Incidentally, the fact that an "ATB-moved" *sika*-NPI can be licensed either in its base-positions in the conjuncts ((27)) or in its landing site ((32)) is potentially problematic for Chomsky's (2021: 34) analysis of "ATB-movement" in terms of FormCopy, which claims that the "ATB-moved" element in the "landing site" is related by movement to only one of the conjuncts.

15 The conjunction structure (50) (i.e. (i-b)) can be derived by Internal CSF from the two VPs in (i-a) too, if Chomsky's (2001) idea that the complement of a phase head H is transferred when the next higher phase head H' is introduced. Under this conception of phasal transfer, TP1 and TP2 are still visible: VP1 and VP2 can count as identical except for CP1 and CP2.

(i) a. i. $[_{VP1}$ say $[_{CP1}$ [[what] exactly] $[_{C'1}$ C $[_{TP1}$ John $[_{T'1}$ T $[_{vP1}$ t_{wh} $[_{v'1}$ t_{Subj} $[_{v'1}$ v $[_{VP1}$ like(s) t_{wh}]]]]]]]]

ii. $[_{VP2}$ say $[_{CP2}$ [[what] exactly $[_{C'2}$ C $[_{TP2}$ Bill $[_{T'2}$ T $[_{vP2}$ t_{wh} $[_{v'2}$ t_{Subj} $[_{v'2}$ v $[_{VP2}$ hate(s) t_{wh}]]]]]]]]

b. **$[_{VP}$ say $[_{CP1/CP2}$ $[_{CP1}$ [[what] exactly] $[_{C'1}$ C $[_{TP1}$ John $[_{T'1}$ T $[_{vP1}$ t_{wh} $[_{v'1}$ t_{Subj} $[_{v'1}$ v $[_{VP1}$ like(s) t_{wh}]]]]]]]] and $[_{CP2}$ [[what] exactly $[_{C'2}$ C $[_{TP2}$ Bill $[_{T'2}$ T $[_{vP2}$ t_{wh} $[_{v'2}$ t_{Subj} $[_{v'2}$ v $[_{VP2}$ hate(s) t_{wh}]]]]]]]]]**

References

Abe, Jun and Chizuru Nakao (2009). On ATB-movement and parasitic gaps in Japanese. In *Proceedings of the 11th Seoul International Conference on Generative Grammar*, Sun-Woong Kim (ed.), 1-15. Seoul: Hankook.

Akiyama, Masahiro (2024a). A theory of coordinate structure formation and "ATB-scrambling in Japanese". To appear in *The Proceedings of Workshop on Altaic Formal Linguistics 17*.

Akiyama, Masahiro (2024b). A theory of coordinate structure formation, "conjunction reduction," and locality. A poster presented at Seoul International Conference on Generative Grammar 26/ Workshop on Altaic Formal Linguistics 18, Jeonbuk National University, Jeonju.

Aravind, Athulya (2021). Successive cyclicity in DPs: Evidence from Mongolian nominalized clauses. *Linguistic Inquiry* 52: 377-392.

Bošković, Željko (2005). On the locality of left branch extraction and the structure of NP. *Studia Linguistica* 59: 1-45.

Bošković, Željko (2014). Now I'm a phase, now I'm not a phase: On the variability of phases with extraction and ellipsis. *Linguistic Inquiry* 45: 27-89.

Bošković, Željko (2019). On the limits of across-the-board movement. An unpublished manuscript, University of Connecticut, Storrs.

Bošković, Željko (2020). On the coordinate structure constraint, across-the-board-movement, phases, and labeling. In *Recent Developments in Phase Theory*, Jeroen van Craenenbroeck, Cora Pots and Tanja Temmerman (eds), 133-182. Berlin: Mouton de Gruyter.

Chomsky, Noam (1995). *The Minimalist Program*. Cambridge, Massachusetts: MIT Press.

Chomsky, Noam (2000). Minimalist inquiries: The framework. In *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, Roger Martin, David Michaels and Juan Uriagereka (eds.), 89-155. Cambridge, Massachusetts: MIT Press.

Chomsky, Noam (2001). Derivation by phase. In *Ken Hale: A Life in Language*, Michael Kenstowics (ed.), 1-52. Cambridge, Massachusetts: MIT Press.

Chomsky, Noam (2021). Minimalism: Where are we now, and where can we hope to go? *Gengo Kenkyu* 160: 1-41.

Citko, Barbara (2005). On the nature of merge: External merger, internal merge, and parallel merge. *Linguistic Inquiry* 36: 475-496.

Citko, Barbara (2011). *Symmetry in Syntax: Merge, Move, and Labels*. Cambridge: Cambridge University Press.

Davis, Colin P. (2021). Possessor extraction in Colloquial English: Evidence for successive cyclicity and cyclic linearization. *Linguistic Inquiry* 52: 291-332.

Fortuny, Jordi (2024). Deducing the coordinand constraint. *Linguistic Inquiry* 55: 219-253.
Hornstein, Norbert and Jairo Nunes (2002). On asymmetries between parasitic gap and across-the-board constructions. *Syntax* 5: 26-54.
Kato, Takaomi (2006). Symmetries in coordination. Doctoral dissertation, Harvard University, Cambridge, Massachusetts.
Kishimoto, Hideki (2001). Binding of indeterminate pronouns and clause structure in Japanese. *Linguistic Inquiry* 32: 597-633.
McCloskey, James (2000). Quantifier float and wh-movement in an Irish English. *Linguistic Inquiry* 31: 57-84.
Miyagawa, Shigeru (2001). The EPP, scrambling, and *wh*-in-situ. In *Ken Hale*, M. Kenstowics (ed.), 293-338, Cambridge, Massachusetts: MIT Press.
Miyagawa, Shigeru (2003). A-movement scrambling and options without optionality. In *Word Order and Scrambling*, Simin Karimi (ed.), 177-200, Oxford: Blackwell.
Munn, Alan (1994). A minimalist account of reconstruction asymmetries. *NELS* 24: 397-410.
Nakao, Chizuru (2009). Island repair and non-repair by PF strategies. Doctoral Dissertation, University of Maryland, College Park, Maryland.
Nakao, Chizuru (2010). Japanese left node raising as ATB-scrambling. *University of Pennsylvania Working Papers in Linguistics* 16: 156-165.
Neeleman, Ad, Joy Philip, Misako Tanaka and Hans van de Koot (2023). Subordination and branching. *Syntax* 26: 41-84.
Nunes, Jairo (2001). Sideward movement. *Linguistic Inquiry* 32: 303-344.
Nunes, Jairo (2004). *Linearization of Chains and Sideward Movement*. Cambridge, Massachusetts: MIT Press.
Ochi, Masao (2000). Adjunct wh-in-situ and the nominal island. In *Proceedings of the North East Linguistic Society 30, Vol.*2, Masako Hirotani *et al*. (eds.), 557-568. Amherst, Massachusetts: GLSA.
Oda, Hiromune (2021). Decomposing and deducing the coordinate structure constraint. *The Linguistic Review* 38: 605-644.
Williams, Edwin (1978). Across-the-board rule application. *Linguistic Inquiry* 9: 31-43.
Yamashita, Hideaki (2009). *Shika*-NPIs in Tokyo Japanese and the syntax-prosody Interface: Focus intonation prosody and prosody-scope correspondence. *Japanese/Korean Linguistics* 16: 437-451.
Zyman, Erik (2022). Phase-constrained obligatory late adjunction. *Syntax* 25: 84-121