



The right node raising analysis of coordinated *wh*-questions in Japanese

Jun Abe¹

Received: 25 February 2022 / Accepted: 7 April 2023 / Published online: 8 July 2023

© The Author(s), under exclusive licence to Springer Nature B.V. 2023. This article is published with open access at Springerlink.com

Abstract In this paper, I argue for the right node raising (RNR) analysis of coordinated *wh*-questions in Japanese, according to which verbs or their larger projections are moved rightward across-the-board in the coordinated structures, with the conjoined *wh*-phrases staying in their original VP domains. I demonstrate that this analysis can properly capture the following properties of this construction: (i) the conjoined *wh*-phrases retain the in-situ property of *wh*-phrases in this language; (ii) they behave as if they make a constituent; (iii) they are sensitive to the clause-mate condition. The most crucial theoretical implication of my arguments for the RNR analysis is that the backward ellipsis analysis is inaccessible to coordination in this language. This is further confirmed by the behaviors of what I call backward gapping, which is also amenable to the RNR analysis. I also examine whether this implication holds cross-linguistically, and reach only the tentative conclusion that it might not accord with what has been found out by the bi-clausal analysis of coordinated *wh*-questions in other languages.

Keywords Right node raising · Coordinated *wh*-question · Backward ellipsis · Backward gapping

1 Introduction

In this paper, I argue that Japanese coordinated *wh*-questions are most properly analyzed in terms of right node raising (RNR), that is, rightward across-the-board (ATB) movement of verbs or their larger projections a la Johnson's (2009) analysis

✉ Jun Abe
jabeling27@gmail.com

¹ Tomiya-shi, Miyagi, Japan

of English gapping. It is shown that this new analysis is made possible due to the well-known properties of this language: head-finality and in-situ *wh*-phrases. As far as I know, it has been standard to analyze Japanese coordinated *wh*-questions as an instance of backward ellipsis (cf. Ishii 2014; Kasai 2016). Thus, according to this analysis, an instance of this construction such as (1a) is analyzed roughly as in (1b):¹

(1) a. Dare-ga sosite nani-o Mary-ni katte-agetā no?

who-NOM and what-ACC Mary-DAT buy-gave Q

‘Lit. Who₁ and what₂ t₁ bought t₂ for Mary?’

b. [_{CP} who₁-NOM ~~Mary-for bought~~] and [_{CP} what-ACC pro₁ Mary-for bought]

In (1b), the material except for *who*-NOM in the first conjunct gets deleted since it is recoverable from the corresponding material in the second conjunct. I argue against this analysis, pointing out some serious empirical problems. I propose an alternative analysis of this construction that involves rightward ATB movement of verbs or their larger projections. According to this proposal, (1a) will be analyzed roughly as follows:

(2) [who₁-NOM [_{VP} Mary-for bought]] and [pro₁ what-ACC [_{VP} Mary-for bought]]



I argue that this analysis solves the problems pointed out for the ellipsis analysis in a natural way.

The paper is organized as follows: In Sect. 2, I argue against the backward ellipsis analysis of Japanese coordinated *wh*-questions, pointing out several empirical problems with it. In Sect. 3, I argue for the RNR analysis of this construction, demonstrating that these problems are accommodated in natural ways and providing further consequences of this analysis. In Sect. 4, I examine what implications my RNR analysis of Japanese coordinated *wh*-questions has for analyzing coordinated *wh*-questions in other languages. In Sect. 5, I consider another Japanese construction that has given rise to the debate between the backward ellipsis analysis and the RNR analysis and argue for the latter.

2 Arguments against the backward ellipsis analysis

As Ishii (2014) observes, Japanese coordinated *wh*-questions do not show any restriction with respect to the possible combination of the coordinated *wh*-phrases, as shown below:

¹ Throughout this paper, English glosses are often used instead of Japanese words when the structures of Japanese sentences are represented.

- (3) a. (Ittai) dare-ga sosite nani-o Mary-ni ageta no? (two argument *wh*'s)
 (the hell) who-NOM and what-ACC Mary-DAT gave Q
 'Lit. Who₁ and what₂ (the hell) *t*₁ gave Mary *t*₂?'
 b. (Ittai) nani-o sosite doko-de kimi-wa tabeta no? (argument-adjunct *wh*'s)
 (the hell) what-ACC and where you-TOP ate Q
 'Lit. What₁ and where (the hell) did you eat *t*₁?'
 c. (Ittai) itu sosite doko-de kimi-wa John-ni atta no? (adjunct-adjunct *wh*'s)
 (the hell) when and where you-TOP John-DAT saw Q
 'When and where (the hell) did you see John?'
(Ishii 2014: 89)

This pattern of facts is similar to that found in coordinated *wh*-questions in multiple *wh*-fronting languages such as Bulgarian, Polish and Russian, and is dissimilar to that found in non-multiple *wh*-fronting languages such as English and German, which do not allow two *wh*-arguments to be coordinated, as shown below with English examples:

- (4) a. *Who and what bought?
 b. *Who and what gave to Mary?
 (5) a. What and why did you eat?
 b. When and where did you see John? (Ishii 2014: 90)

Ishii (2014) follows Citko and Gračanin-Yuksek (2013) in assuming the mono-clausal analysis for coordinated *wh*-questions in multiple *wh*-fronting languages, according to which the multiple *wh*-phrases are coordinated during the derivation and the resulting amalgam is moved to the Spec of an interrogative clause. Given that Japanese is not a multiple *wh*-fronting language, Ishii assumes the alternative bi-clausal analysis for Japanese coordinated *wh*-questions, according to which the multiple *wh*-phrases of this construction move to the Spec's of separate interrogative clauses. Although Ishii mentions two types of bi-clausal analysis for the construction in question, one in terms of multi-dominant structure, proposed by Gračanin-Yuksek (2007) and Citko and Gračanin-Yuksek (2013), and the other in terms of backward ellipsis, proposed by Kazenin (2002) and Lipták (2003, 2011), he simply adopts the latter analysis without any argument and tries to account for the difference between Japanese and English coordinated *wh*-questions by the availability of scrambling.²

According to Ishii's (2014) analysis, (1a), for instance, is analyzed roughly as follows:

- (6) a. [_{TP} [_{VP} Mary-for what-ACC buy] T], [_{TP} who-NOM [_{VP} Mary-for what-ACC buy] T]
 b. [_{CP} who₁-NOM [_{TP} ~~Mary-for what₂-ACC bought~~]] and [_{CP} [_{TP} what₂-ACC [_{TP} *t*₁
 Mary-for *t*₂ bought] Q]

² I do not quite understand how Ishii (2014) derives the difference in question in terms of the availability of scrambling, so I will not discuss it in this paper. See Sect. 4 for relevant discussion.

(6a) shows the underlying structures of the two conjuncts that are built up till TP. Ishii claims that from these underlying structures, *who-NOM* in the second conjunct undergoes sideward movement to Spec-TP in the first conjunct, and then undergoes further movement to Spec-CP. Assuming the mechanism of clausal typing proposed by Cheng (1991), according to which interrogative clauses need to be marked as such either by overt interrogative Cs or overt *wh*-movement into their Spec's, Ishii claims that the overt movement of *who-NOM* is necessary since the interrogative C of the first conjunct is null. The second *wh*-phrase *what-ACC* in the second conjunct, on the other hand, does not have to undergo *wh*-movement to Spec-CP since the second conjunct is overtly marked by the Q-marker *no*, so Ishii assumes that it instead undergoes scrambling, adjoining to TP in the second conjunct. These series of operations give rise to the representation given in (6b), and the output form of (1a) is derived by deleting the TP of the first conjunct under identity with the corresponding part of the second conjunct.

One may raise a couple of questions about the technical implementation of this analysis. It seems odd to assume that the first conjunct lacks an underlying subject, unlike the second conjunct, as shown in (6a), and obtains one by way of sideward movement from the latter. Why not assume instead that *who-NOM* in (6a) is simply base-generated in Spec-TP of the first conjunct and *pro* is posited for the subject of the second conjunct?³ Further, there seems to be no reason to assume that *what-ACC* in the second conjunct undergoes scrambling, other than deriving the correct word order, given that Japanese is a *wh*-in-situ language. Note that in this case, the scrambling in question is obligatory, given the unacceptability of the following sentence:

- (7) *Dare-ga sosite Mary-ni nani-o katte-ageta no?
 who-NOM and Mary-DAT what-ACC buy-gave Q
 'Lit. Who₁ and for Mary what₂ t₁ bought t₂?'

I will not dwell on these technical questions any further here but rather point out more general and serious problems with the ellipsis analysis. First of all, there is a factual question about the possible positions the conjoined *wh*-phrases may occupy in coordinated *wh*-questions in Japanese. As expected from his ellipsis analysis, Ishii (2014) holds that the conjoined *wh*-phrases cannot appear in situ. This does not

³ In fact, Kasai (2016) observes that the *pro* posited for the second conjunct that takes the first *wh*-phrase as its antecedent is actually overtly realized, so that (1a) may have the following variety:

- (i) Dare-ga sosite nani-o soitu-ga Mary-ni katte-ageta no?
 who-NOM and what-ACC the guy-NOM Mary-DAT buy-gave Q
 'Lit. Who₁ and what₂ the guy₁ bought t₂ for Mary?'

sound right, however, as witnessed by the fact that (3b, c) have their variants in which the conjoined *wh*-phrases appear in situ:⁴

- (8) a. Kimi-wa (ittai) nani-o sosite doko-de tabeta no?
 you-TOP (the hell) what-ACC and where ate Q
 ‘Lit. You ate what and where (the hell)?’
 b. Kimi-wa (ittai) itu sosite doko-de John-ni atta no?
 you-TOP (the hell) when and where John-DAT saw Q
 ‘Lit. You saw John when and where (the hell)?’

One might object that in these cases, the topic phrase *kimi-wa* ‘you-TOP’ occupies a position higher than the interrogative CPs, so that they may be compatible with Ishii’s analysis in which the first conjoined *wh*-phrase moves to Spec-CP. However, (8a, b) can be embedded without changing their grammaticality:

- (9) a. Watasi-wa [kimi-ga (ittai) nani-o sosite doko-de tabeta ka] wakara-nai.
 I-TOP you-NOM (the hell) what-ACC and where ate Q know-not
 ‘Lit. I don’t know [Q you ate what and where (the hell)].’
 b. Watasi-wa [kimi-ga (ittai) itu sosite doko-de John-ni atta ka]
 I-TOP you-NOM (the hell) when and where John-DAT saw Q
 wakara-nai.
 know-not
 ‘Lit. I don’t know [Q you saw John when and where (the hell)].’

Ishii (2014) provides the following example to make his point (the judgment of this sentence is his):

- (10) ??John-wa [Bill-ga (ittai) dare-ni sosite nani-o ageta koto]-o
 John-TOP Bill-NOM (the hell) who-DAT and what-ACC gave fact-ACC
 sitteiru no?
 know Q
 ‘Lit. John knows the fact that Bill gave who and what (the hell)?’ (Ishii 2014: 92)

Personally, I find no degradation with this sentence. It is predicted under Ishii’s analysis that if the conjoined *wh*-phrases are preposed sentence-initially, the resulting sentence should be acceptable. (10) is not a good sentence to test this prediction since its embedded clause constitutes a complex NP island. Let us instead compare the following examples:

⁴ See Kasai (2016) for his examples of Japanese coordinated *wh*-questions, most of which involve conjoined *wh*-phrases appearing in situ. Thus, to the extent that this observation is correct, it invalidates the generalization Lipták (2011) holds:

(i) If a language does not have *wh*-fronting, it cannot have coordinated multiple *wh*-questions.
 (Lipták 2011: 179)

- (11) a. John-wa [Bill-ga (ittai) dare-ni sosite nani-o ageta to]
 John-TOP Bill-NOM (the hell) who-DAT and what-ACC gave COMP
 omotteiru no?
 think Q
 ‘Lit. John thinks that Bill gave who and what (the hell)?’
- b. (Ittai) dare-ni sosite nani-o John-wa [Bill-ga ageta to]
 (the hell) who-DAT and what-ACC John-TOP Bill-NOM gave COMP
 omotteiru no?
 think Q
 ‘Lit. Who and what (the hell) does John think that Bill gave?’

There is no significant difference in acceptability between these sentences (to me, (11a) is more natural than (11b)). Furthermore, it is possible to put conjoined *wh*-phrases even within islands:⁵

- (12) a. John-wa [(ittai) dare-ni sosite nani-o ageta] hito-o
 John-TOP (the hell) who-DAT and what-ACC gave person-ACC
 sagasiteiru no?
 is.looking.for Q
 ‘Lit. John is looking for the person who gave who and what (the hell)?’
- b. John-wa [Mary-ga (ittai) dare-ni sosite nani-o ageta node]
 John-TOP Mary-NOM (the hell) who-DAT and what-ACC gave because
 okotteiru no?
 is.angry Q
 ‘Lit. John is angry because Mary gave who and what (the hell)?’

Thus it is reasonable to conclude, contrary to what Ishii (2014) claims, that the in-situ property of *wh*-phrases in Japanese carries over to the conjoined *wh*-phrases in coordinated *wh*-questions. It is not at all clear how such sentences as (11a) and (12a, b) are derived under the backward ellipsis analysis proposed by Ishii (2014).

It is now interesting to compare the above examples of coordinated *wh*-questions with those that Ishii (2014) calls “forward sluicing”. The latter counterpart of (1a) is something like the following:

- (13) Dare-ga Mary-ni katte-agetu no, sosite nani-o?
 who-NOM Mary-DAT buy-gave Q and what-ACC
 ‘Lit. Who bought *e* for Mary and what?’

Ishii claims that this sentence is derived under his ellipsis analysis in such a way that the first and second conjuncts are swapped: while *dare-ga* ‘who-NOM’ in the first

⁵ Pesetsky (1987) claims that *ittai* ‘the hell’ functions like the English counterpart in making *wh*-phrases “aggressively non-D(iscourse) linked” and further that when in-situ *wh*-phrases are accompanied by *ittai*, they show island effects. It is generally the case that coordinated *wh*-questions in Japanese are more natural when *ittai* is accompanied and that this tendency does not change even in (12a, b). This indicates that Pesetsky’s empirical claim about *ittai* may not be correct.

conjunct undergoes scrambling since this clause is headed by the Q-marker *no*, *nani-o* ‘what-ACC’ in the second conjunct undergoes *wh*-movement to Spec-CP since it lacks an overt Q-marker, and deletion applies to the material in the second conjunct except for the fronted *wh*-phrase. Aside from the technical details of this analysis, it is reasonable to claim that the second conjunct of this construction involves ellipsis with a remnant *wh*-phrase. As far as I can determine, there is no reason to assume that the *wh*-phrase in the first conjunct undergoes any movement, as witnessed by the fact that the first conjunct can be embedded within another clause without changing grammaticality:

- (14) Anata-wa [dare-ga Mary-ni katte-ageta to] omotteiru no, sosite nani-o?
 you-TOP who-NOM Mary-DAT buy-gave COMP think Q and what-ACC
 ‘Lit. You think that who bought *e* for Mary and what?’

Suppose, on the other hand, that the remnant *wh*-phrase in the second conjunct undergoes overt *wh*-movement in accord with Ishii’s analysis. Then the second conjunct of (14) will have the following structure:

- (15) [_{CP} what_i-ACC [_{TP} you-TOP [_{pro_{who}} Mary-DAT *t*₁ bought COMP] think] Q]

In this structure, the embedded subject *pro* covaries with whatever value *who-NOM* in the first conjunct takes (cf. (i) in fn. 3). TP then gets deleted under an appropriate identity condition that applies to the ellipsis site against the antecedent clause, i.e., the first conjunct. In this case, the correlate of *what-ACC* in the antecedent clause is an implicit argument, so it is reasonable to regard this case of ellipsis as an instance of the spouting type of sluicing in the sense of Chung et al. (1995) (CLM), whose typical instance is given below:

- (16) a. She’s reading. I can’t imagine what.
 b. This opera was written in the 19th century, but we’re not sure by whom.
 (CLM: 241-242)

In these cases as well, the correlates of the remnant *wh*-phrases *what* and *by whom* are implicit.

It is predicted under this ellipsis analysis that the type of coordinated *wh*-questions under consideration is island sensitive. This is in fact borne out:

- (17) a. ?*John-wa [nani-o ageta] hito-o sagasiteiru no, sosite dare-ni?
 John-TOP what-ACC gave person-ACC is.looking.for Q and who-DAT
 ‘Lit. John is looking for the person who gave *e* what, and who?’
 b. ?*John-wa [Mary-ga nani-o ageta node] okotteiru no, sosite dare-ni?
 John-TOP Mary-NOM what-ACC gave because is.angry Q and who-DAT
 ‘Lit. John is angry because Mary gave *e* what, and who?’

To the extent that such an ellipsis analysis as presented above is tenable, it undermines Ishii’s (2014) claim that much the same analysis applies to the original

type of coordinated *wh*-questions, since the conjoined *wh*-phrases in the latter type behave as if they appear in situ, exhibiting island insensitivity, as shown in (12).

Secondly, the original type of coordinated *wh*-questions shows clause-mate effects that occur between the conjoined *wh*-phrases. Consider the following examples:⁶

- (18) a. ?*Dare-ga sosite nani-o John-ga Mary-ni katte-ageta to Itta no?
 who-NOM and what-ACC John-NOM Mary-DAT buy-gave COMP said Q
 ‘Lit. Who₁ and what₂ *t*₁ said that John had bought Mary *t*₂?’
- b. ?*Dare-ga sosite itu John-ga kubi-ni natta to omotteiru no?
 who-NOM and when John-NOM was.fired COMP think Q
 ‘Who₁ and when₂ *t*₁ thinks that John was fired *t*₂?’

It is not clear at all how an ellipsis analysis such as Ishii’s (2014) can capture these clause-mate effects. Note that the second *wh*-phrases of these examples can undergo long-distance scrambling, as shown below:

- (19) a. Nani-o₁ Bill-wa [John-ga Mary-ni *t*₁katte-ageta to] itta no?
 what-ACC Bill-TOP John-NOM Mary-DAT buy-gave COMP said Q
 ‘What did Bill say [that John had bought Mary *t*]?’
- b. Itu₁ Bill-wa [John-ga *t*₁ kubi-ni natta to] omotteiru no?
 when Bill-TOP John-NOM was.fired COMP think Q
 ‘When does Bill think [that John was fired *t*]?’

Thus nothing will go wrong if we assume that (18a), for instance, has the following structure, in which the TP of the first conjunct gets deleted under identity with that of the second conjunct:

- (20) [_{CP} who₁-NOM [_{TP} ~~*t*₁ [John-NOM Mary-DAT buy-gave COMP] said~~] Q] and
 [_{CP} [_{TP} what-ACC [_{TP} pro₁ [John-NOM Mary-DAT buy-gave COMP] said]] Q]

To make this point stronger, let us compare the examples in (18) with the corresponding ones of the forward sluicing type:

- (21) a. Dare-ga [John-ga Mary-ni katte-ageta to] itta no, sosite nani-o?
 who-NOM John-NOM Mary-DAT buy-gave COMP said Q and what-ACC
 ‘Lit. Who said that John had bought Mary *e*, and what?’
- b. Dare-ga [John-ga kubi-ni natta to] omotteiru no, sosite itu?
 who-NOM John-NOM was.fired COMP think Q and when
 ‘Lit. Who said [that John was fired *e*], and when?’

⁶ These examples become acceptable when the embedded subject *John-ga* is turned into *pro* and the latter is bound by the matrix subject. This fact is known as the bound pronoun effect, discussed in detail by Grano and Lasnik (2018), which makes clause-mate effects nullified in various constructions.

The acceptability of these examples clearly shows that the forward sluicing type of coordinated *wh*-questions exhibits no clause-mate effects between the conjoined *wh*-phrases. This again undermines a parallel treatment of “forward and backward sluicing” in terms of ellipsis, suggesting that an alternative analysis should be sought for the “backward sluicing” type.

Finally, the conjoined *wh*-phrases of the “backward sluicing type” behave as if they make constituents. Thus, in (1a), for instance, the conjoined *wh*-phrases can be clefted, as shown below:⁷

- (22) [Mary-ni katte-ageta no]-wa dare-ga sosite nani-o na no?
 Mary-DAT buy-gave NL-TOP who-NOM and what-ACC COP Q
 ‘Lit. Who₁ and what₂ was it that *t*₁ bought *t*₂ for Mary?’

This is totally unexpected under the backward ellipsis analysis, according to which the conjoined two *wh*-phrases belong to separate clauses.⁸ We have seen above that the original type of coordinated *wh*-questions shows clause-mate effects that occur between the conjoined *wh*-phrases, as exemplified in (18). In fact, these examples are acceptable with different readings, namely ones in which the conjoined *wh*-phrases are interpreted as clause-mates and *John-ga* ‘John-NOM’ is interpreted as the matrix subject. On these readings, the conjoined *wh*-phrases can be clefted, as shown below:

- (23) a. [John-ga Mary-ni katte-ageta to itta no]-wa dare-ga sosite
 John-NOM Mary-DAT buy-gave COMP said NL-TOP who-NOM and
 nani-o na no?
 what-ACC COP Q
 ‘Lit. Who₁ and what₂ was it that John said that *t*₁ had bought Mary *t*₂?’
 b. [John-ga kubi-ni natta to omotteiru no]-wa dare-ga sosite
 John-NOM was.fired COMP think NL-TOP who-NOM and
 itu na no?
 when COP Q
 ‘Who₁ and when₂ was it that John thinks that *t*₁ was fired *t*₂?’

Here again, there will be no way for the backward ellipsis analysis to account for this fact.

⁷ NL and COP in the glosses in (22) stand for nominalizer and copular, respectively.

⁸ I owe this argument to Koizumi (2000), who argues that such coordination as illustrated below involves ATB verb raising:

- (i) Mary-ga [John-ni ringo-o hutatu to Bob-ni banana-o sanbon] ageta.
 Mary-NOM John-DAT apple-ACC two and Bob-DAT banana-ACC three gave
 ‘Mary gave John two apples and Bob three bananas.’

According to this analysis, (i) is derived by raising the verb *age* ‘give’ from each conjunct into the above T in an ATB fashion. Hence the conjoined phrases marked with brackets make a constituent. Koizumi argues for this analysis by demonstrating that they can be clefted. See the next section for relevant discussion.

One reviewer suggests an interesting way out of this apparent problem under the ellipsis analysis, according to which the cleft example (22) has the following structure:

- (24) [Mary-DAT buy-gave NL]-TOP who-NOM and [~~Mary-DAT buy-gave NL~~]-TOP
what-ACC COP Q

According to this structure, (22) has two cleft constructions in it, one having the presuppositional part [*Mary-DAT buy-gave NL*]-TOP with *who-NOM* in the pivot position and the other having the same presuppositional part with *what-ACC* in the pivot position. The surface form of (22) is derived from (24) by deleting the presuppositional part of the second conjunct. I see at least two problems with this analysis. First, it is expected under this analysis that a major intonational break should fall right after *who-NOM*, as is the case when (24) is uttered in full. This does not seem to be borne out, however; the most natural way to utter (22) is to do it as if *who-NOM* and *what-ACC* make an intonational phrase. Secondly, it has often been noted (cf. Takano 2015, among others) that the Japanese cleft construction is not comfortable with a nominative-marked phrase in its pivot position. Thus, the first conjunct of (24) is not fully acceptable:

- (25) ??[Mary-ni katte-ageta no]-wa dare-ga na no?
Mary-DAT buy-gave NL-TOP who-NOM COP Q
'Lit. Who₁ was it that *t*₁ bought *e* for Mary?'

(22) does not have any such degradation effect. This effect manifests itself more strongly when the nominative-marked phrase in the pivot position is connected to a gap in the embedded clause of the presuppositional part. According to the reviewer's suggested analysis, the first conjunct of (23a), for instance, will correspond to the following cleft sentence:

- (26) ?*[John-ga Mary-ni katte-ageta to itta no]-wa dare-ga na no?
John-NOM Mary-DAT buy-gave COMP said NL-TOP who-NOM COP Q
'Lit. Who₁ was it that John said that *t*₁ had bought Mary *e*?'

Here again, the degraded status of (26) does not carry over to (23a). This fact undermines the reviewer's suggested analysis of cleft sentences such as in (22) and (23).

I conclude from the above discussion that the problems with the backward ellipsis analysis of coordinated *wh*-questions pointed out in this section are fatal enough to seek an alternative.⁹

⁹ In this paper, I do not consider the possibility of the mono-clausal analysis for Japanese coordinated *wh*-questions, which, as pointed out by a reviewer, would take conjoined *wh*-phrases to be formed by what Takano (2002) calls oblique movement, that is, adjunction of one *wh*-phrase to the other. The main reason is that unlike coordinated *wh*-questions in multiple *wh*-fronting languages, Japanese coordinated

3 Proposal: right node raising analysis

I argue that Japanese coordinated *wh*-questions should be analyzed as involving RNR, that is, ATB raising of a verb or its larger projections. Let us first consider a simple case:

- (27) Dare-ga sosite nani-o nusunda no?
 who-NOM and what-ACC stole Q
 ‘Lit. Who₁ and what₂ t₁ stole t₂?’

In this case, I assume that this sentence has the following underlying structure:

- (28) [CP[TP [VP [VP dare₁-ga nusun] sosite [VP_{PRO1} nani-o nusun]] da] no]
 who-NOM steal and what-ACC steal PAST Q

I basically follow Kasai (2016) in assuming that Japanese coordinated *wh*-questions involve VP coordination with the further assumption that subjects can stay in situ in this language, though I do not assume the so-called split VP hypothesis (i.e., V-*v* distinction) just for simplicity, so that subject simply occupies the highest position of VP. As for unpronounced arguments, I follow Kasai (2016) in assuming that the unpronounced subject in the second conjunct of (28) is an instance of *pro*, which covaries with whatever value *dare-ga* ‘who-NOM’ in the first conjunct takes, as witnessed by the fact that *pro* may be replaced by an overt anaphoric item such as *soitu-ga* ‘the guy-NOM’ (cf. fn. 3). On the other hand, I depart from Kasai (2016) in not positing *pro* in the first conjunct that corresponds to *nani-o* ‘what-ACC’ in the second conjunct. In that case, the anaphoric relation would be backward, so it would be inappropriate to maintain that *pro* covaries with whatever value *nani-o* takes, as witnessed by the fact that *pro* cannot be replaced by an overt anaphoric item without causing unacceptability, as noted by Kasai (2016):

- (29) *Dare-ga sore-o sosite nani-o nusunda no?
 who-NOM it-ACC and what-ACC stole Q

Kasai instead assumes that the *pro* in question is an unpronounced variety of indefinite pronoun, so that the whole sentence is interpreted as ‘who stole something and what did that person steal?’. Though it has been claimed in the literature (cf. Hoji 1998, among others) that indefinite *pro* is available to Japanese, it is dubious to

Footnote 9 continued

wh-questions do not require that no other phrase intervene between conjoined *wh*-phrases, as witnessed by the following example (cf. fn. 3):

- (i) Dare-ga sosite soitu-ga nani-o Mary-ni katte-ageta no?
 who-NOM and the guy-NOM what-ACC Mary-DAT buy-gave Q
 ‘Lit. Who₁ and what₂ the guy₁ bought t₂ for Mary?’

It is not clear how the mono-clausal analysis could explain the acceptability of such a coordinated *wh*-question.

posit such a *pro* in the construction under consideration, as it cannot be replaced with an overt form such as *nanika* ‘something’, as shown below:


- (30) *Dare-ga nanika-o (nusumi) sosite nani-o nusunda no?
 who-NOM something-ACC steal and what-ACC stole Q

For this reason, I do not assume *pro* in this construction that would correlate with a *wh*-phrase backwards, but rather assume that in that case, the unpronounced argument is not syntactically realized and is interpreted implicitly.

Under the backward ellipsis analysis, the output form of (27) can be derived from (28) by simply deleting the verb *nusun* ‘steal’ in the first conjunct, as shown below:

- (31) [CP [TP [VP [VP dare₁-ga ~~nusun~~] sosite [VP *pro*₁ nani-o nusun]] da] no]

Alternatively, I propose, along the lines of Koizumi’s (2000) idea, that the output form of (27) is derived from (28) by applying ATB head raising to both instances of *nusun* ‘steal’ and adjoining them to the above T, as shown below (where the items enclosed with angled brackets represent unpronounced copies):

- (32) [CP [TP [VP [VP dare₁-ga <nusun>] sosite [VP *pro*₁ nani-o <nusun>]] nusun+da] no]
- 

An obvious difference between these two analyses lies in the fact that whereas the conjoined *wh*-phrases *dare-ga sosite nani-o* ‘who-NOM and what-ACC’ make a constituent as conjoined VPs under the RNR analysis, they do not under the backward ellipsis analysis. Thus, contrary to the latter, the RNR analysis immediately explains the fact that the conjoined *wh*-phrases in Japanese coordinated *wh*-questions can be clefted, as demonstrated in the preceding section:

- (33) [Nusunda no]-wa dare-ga sosite nani-o na no?
 stole NL-TOP who-NOM and what-ACC COP Q
 ‘Lit. Who₁ and what₂ was it that *t*₁ stole *t*₂?’

Further, note that (27) is a question about a single event rather than complex events, so that it has basically the same meaning as *who stole what?*. It is not obvious under the backward ellipsis analysis how this fact is captured. Under the RNR analysis, on the other hand, it is natural to assume that this is guaranteed by ATB movement of shared verbs or their larger projections, as stated below.¹⁰

- (34) When V₁, V₂, ... or their projections undergo ATB movement, the resulting chain denotes one and the same event or state.

¹⁰ (34) will be modified in Sect. 5 in such a way that it will not hold when the arguments or modifiers of verbs that undergo ATB movement are contrastively focused.

It follows then that in (32), the implicit object of the first occurrence of *nusun* ‘steal’ denotes whatever *nani-o* ‘what-ACC’ in the second conjunct does and that *pro* in the second conjunct necessarily denotes whatever *dare-ga* ‘who-NOM’ in the first conjunct does.

Let us now consider a slightly more complex case, namely (1a), reproduced below:

- (35) Dare-ga sosite nani-o Mary-ni katte-agetā no?
 who-NOM and what-ACC Mary-DAT buy-gave Q
 ‘Lit. Who₁ and what₂ t₁ bought t₂ for Mary?’

In this case, applying ATB head raising of the verb *katte-age* ‘buy-give’ alone to the following underlying structure will not give rise to the appropriate interpretation of (35):

- (36) [CP [TP [VP [VP dare₁-ga katte-age] sosite [VP pro₁ nani-o Mary-ni
 who-NOM buy-give and what-ACC Mary-DAT
 katte-age]] ta] no]
 buy-give PAST Q

If this underlying structure is uttered in full, it sounds strange in that the first conjunct presupposes that someone bought something for *someone* and asks who made a purchase, whereas the second conjunct presupposes that that person bought something for *Mary* and asks what was bought. Rather, the first conjunct should presuppose that someone bought something *for Mary*, just like the second conjunct. Thus, the underlying structure of (35) should be something like the following:

- (37) [CP [TP [VP [VP dare₁-ga [V₁ Mary-ni katte-age]] sosite [VP pro₁ nani-o
 who-NOM Mary-DAT buy-give and what-ACC
 [V₁ Mary-ni katte-age]]] ta] no]
 Mary-DAT buy-give PAST Q

I propose that the output form of (35) is derived from (37) by applying rightward movement to the V’ [*Mary-ni katte-age*] ‘Mary-DAT buy-give’ in an ATB fashion and adjoining it to VP, as shown below:¹¹

¹¹ It might be argued that the rightward ATB movement involved in coordinated *wh*-questions serves to create a particular informational structure in which V or its larger projection that undergoes this operation functions as background whereas the material left in the coordinated VPs functions as foreground, so that the latter requires some indication of focus. In the case of coordinated *wh*-questions, the conjoined *wh*-phrases serve as such. Thus, in (38), *dare-ga sosite nani-o* ‘who-NOM and what-ACC’ functions as foreground whereas *Mary-ni katte-age* ‘Mary-DAT buy-give’ functions as background. This characterization is motivated by the fact that if the foreground part of (38) is changed into one that involves non-*wh*-arguments, then the resulting sentence is unacceptable:

- (i) *John-ga sosite hon-o Mary-ni katte-agetā.
 John-NOM and book-ACC Mary-DAT buy-gave
 ‘Lit. John₁ and a book₂ t₁ bought t₂ for Mary.’

(38) [CP [TP [VP [VP [VP dare₁-ga [v' <Mary-ni katte-age>]]] sosite [VP pro₁ nani-o

[v' <Mary-ni katte-age>]]] Mary-ni katte-age] ta] no]

Given the standard assumption (cf. Hoji 1985) that indirect object is underlyingly higher than direct object, the V' of the second conjunct must contain the trace of *nani-o* 'what-ACC', which is scrambled to the left of *Mary-ni*. Hence, there is an issue about exactly what is the relevant identity condition that makes ATB movement possible. Since it is beyond the scope of this paper to formulate such a condition, I simply stipulate that some sort of non-distinctness is relevant for determining the applicability of ATB movement, so that when an unpronounced copy in one conjunct has no correlate in the other, it is ignorable for applying ATB movement as long as the target phrases are located in parallel positions in the relevant coordination, V' in VP coordination in this case. In the structure (38), the conjoined *wh*-phrases *dare-ga sosite nani-o* 'who-NOM and what-ACC' make a constituent as conjoined VPs thanks to the rightward ATB movement of the V' [*Mary-ni katte-age*]. Thus, as demonstrated in (22) in the preceding section, they can be clefted:

(39) [Mary-ni katte-ageta no]-wa dare-ga sosite nani-o na no?
 Mary-DAT buy-gave NL-TOP who-NOM and what-ACC COP Q
 'Lit. Was it who₁ and what₂ that t₁ bought t₂ for Mary?'

Under this proposal, let us consider why an instance of coordinated *wh*-questions such as (7), reproduced below, is unacceptable:

Footnote 11 continued

In this case, no indication of focus is marked in the foreground part. A reviewer kindly provides examples of the relevant coordination in which other ways of focus marking are involved in the foreground part:

- (ii) a. [Mary-ni katte-ageta no]-wa John-ga sosite hon-o da.
 Mary-DAT buy-gave NL-TOP John-NOM and book-ACC COP
 'Lit. It was John₁ and a book₂ that t₁ bought t₂ for Mary.'
- b. [John-ga sosite hon-o Mary-ni katte-ageta] no da.
 John-NOM and book-ACC Mary-DAT buy-gave NL COP
 'Lit. It was John₁ and a book₂ that t₁ bought t₂ for Mary.'

In (iia), the foreground part is put in the pivot position of a cleft. In (iib), sentence (i) is embedded in what Hiraiwa and Ishihara (2002) call the "no da" in-situ focus construction, and this example is acceptable when *John-ga sosite and hon-o* 'John-NOM and book-ACC' serves as the target of focus in this construction.

- (40) *Dare-ga sosite Mary-ni nani-o katte-ageta no?
 who-NOM and Mary-DAT what-ACC buy-gave Q
 ‘Lit. Who₁ and for Mary what₂ t₁ bought t₂?’

First of all, it is not the case that the conjoined *wh*-phrases in this construction must be adjacent to each other, as witnessed by the acceptability of the following sentence, which differs from (35) only in that the subject *pro* in the second conjunct is replaced by an overt item (cf. fn. 9):

- (41) Dare-ga sosite soitu-ga nani-o Mary-ni katte-ageta no?
 who-NOM and the guy-NOM what-ACC Mary-DAT buy-gave Q
 ‘Lit. Who (bought *e*) and what did that person buy for Mary?’

The unacceptability of (40) is naturally attributed to the discrepancy of the presuppositions that the two conjuncts have, just like (36): while the first conjunct presupposes that someone bought something for *someone*, the second conjunct presupposes that that person bought something for *Mary*. Note that in this case, *Mary-ni* ‘Mary-DAT’ and the verb *katte-age* ‘buy-give’ do not make a constituent, so that they cannot undergo rightward ATB movement. It is then predicted that if *Mary-ni* appears in the first conjunct rather than in the second, so that *pro* can be posited in the latter to refer to it, the resulting sentence should be acceptable. This is in fact borne out:¹²

- (42) ?Dare-ga Mary-ni sosite nani-o katte-ageta no?
 who-NOM Mary-DAT and what-ACC buy-gave Q
 ‘Lit. Who₁ for Mary and what₂ t₁ bought t₂?’

This sentence is derived from the following underlying structure by applying ATB head raising to *buy-give* and adjoining it to the above T:¹³

¹² (42) is somewhat degraded, however, especially so when compared with (35) (one reviewer even rejects it as unacceptable). This might be due to the fact that a non-focused phrase (*Mary-ni*) is sandwiched between the focused phrases (*dare-ga* ‘who-NOM and *nani-o* ‘what-ACC’) in the foreground part (see the previous footnote).

¹³ It is predicted under the present analysis that the conjoined VPs in (43) can be clefted. This does not seem to be borne out, however:

- (i) *[Katte-ageta no]-wa dare-ga Mary-ni sosite nani-o na no?
 buy-gave NL-TOP who-NOM Mary-DAT and what-ACC COP Q
 ‘Lit. It was who₁ for Mary and what₂ that t₁ bought t₂?’

It is natural to attribute the unacceptability of (i) to the fact that *wh*-phrases are mixed with a non-*wh*-phrase in the pivot position. In fact, a simple example of clefts that involves such mixing demonstrates that the ban on such mixing is at work:

- (ii) *[Sono hon-o katte-ageta no]-wa dare-ga Mary-ni na no?
 that book-ACC buy-gave NL-TOP who-NOM Mary-DAT COP Q
 ‘Lit. It was who₁ for Mary that t₁ bought that book?’

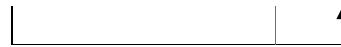
- (43) [_{CP} [_{TP} [_{VP} [_{VP} who₁-NOM Mary₂- DAT buy-give] and [_{VP} pro₁ pro₂ what-ACC buy-give]] PAST] Q]

Given that the conjoined *wh*-phrases can make a constituent as conjoined VPs under the present RNR analysis, it is expected that they may undergo scrambling in the same way as Koizumi (2000) argues with the coordinated structure he discusses (cf. fn. 8). Let us consider Ishii's (2014) example (3b):

- (44) (Ittai) nani-o sosite doko-de kimi-wa tabeta no?
 (the hell) what-ACC and where you-TOP ate Q
 'Lit. What₁ and where (the hell) did you eat *t*₁?'

In this case, the conjoined *wh*-phrases precede the subject *kimi-wa* 'you-TOP'. If it is assumed that this topic marked subject is located in Spec-TP (or probably in a higher specifier position), (44) is derived from the following structure by applying scrambling to the conjoined VPs and adjoining them to TP:

- (45) [_{CP} [_{TP} you-TOP [_{VP} [_{VP} what₁-ACC <eat>] and [_{VP} where pro₁ <eat>]] eat+T] Q]

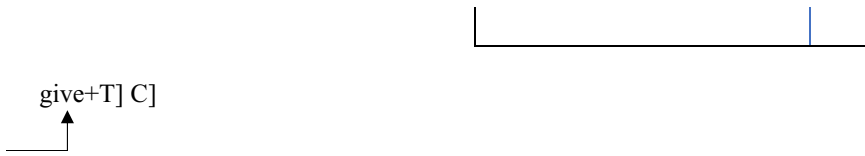


Let us now consider the examples in (11), reproduced below:

- (46) a. John-wa [Bill-ga (ittai) dare-ni sosite nani-o ageta to]
 John-TOP Bill-NOM (the hell) who-DAT and what-ACC gave COMP
 omotteiru no?
 think Q
 'Lit. John thinks that Bill gave who and what (the hell)?'
- b. (Ittai) dare-ni sosite nani-o John-wa [Bill-ga ageta to]
 (the hell) who-DAT and what-ACC John-TOP Bill-NOM gave COMP
 omotteiru no?
 think Q
 'Lit. Who and what (the hell) does John think that Bill gave?'

Recall that I pointed out in the preceding section that cases such as (46a) as well as those given in (12) in which the conjoined *wh*-phrases appear within islands are problematic to the backward ellipsis analysis proposed by Ishii (2014). Under the present proposal, (46a) is analyzed as simply involving V' coordination in the embedded clause with the embedded verb *age* 'give' undergoing ATB head raising into the above T, as shown below:

(47) ... [CP [TP [VP Bill₁-NOM [V' who₂-DAT <give>] and [V' pro₂ what-ACC <give>]]]



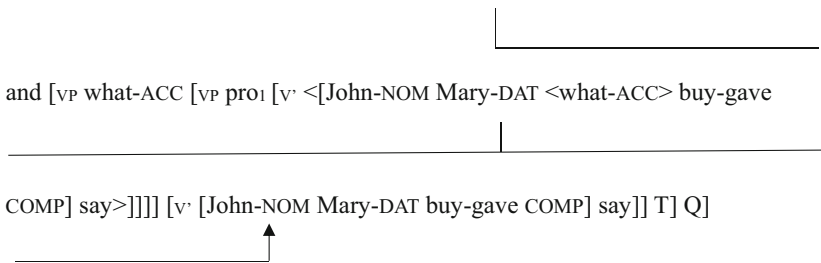
Exactly the same analysis applies to those cases given in (12), which also involve V' coordination within island clauses with the embedded verb *age* 'give' undergoing ATB head raising into the above T. These cases clearly show that no special syntactic operations apply to the conjoined *wh*-phrases in Japanese coordinated *wh*-questions and that they retain their in-situ properties, exactly like normal *wh*-phrases in this language. Now (46b) is derived from the structure partially shown in (47) by scrambling the whole conjoined V's to the top of the sentence.

Finally, let us consider how the clause-mate effects of Japanese coordinated *wh*-questions are derived under the present analysis of this construction. The relevant examples are reproduced below from (18):

- (48) a. ?*Dare-ga sosite nani-o John-ga Mary-ni katte-ageta to itta no?
 who-NOM and what-ACC John-NOM Mary-DAT buy-gave COMP said Q
 'Lit. Who₁ and what₂ t₁ said that John had bought Mary t₂?'
- b. ?*Dare-ga sosite itu John-ga kubi-ni natta to omotteiru no?
 who-NOM and when John-NOM was.fired COMP think Q
 'Who₁ and when₂ t₁ thinks that John was fired t₂?'

The ungrammaticality of these sentences can be attributed to the low coordination of the conjoined *wh*-phrases, namely VP coordination. Under the present proposal, (48a), for instance, will have the following structure:

(49) [CP [TP [VP [VP [VP who₁-NOM [V' <[John-NOM Mary-DAT buy-gave COMP] say>]]]



In this structure, *what-ACC* in the second conjunct has undergone long-distance scrambling from the embedded object position to the matrix VP-adjoined position. Then, the matrix V' [*John-NOM Mary-DAT (<what-ACC> buy-gave COMP] say*] has undergone rightward ATB movement and is adjoined to the matrix VP (note that I have assumed above that an unpronounced copy like *<what-ACC>* is ignorable

for applying ATB movement). With this structure, it is most natural to claim that what is blamed for illegitimacy resides in the landing site of the long-distance scrambling of *what-ACC*. In Abe (2022), I argue that long-distance scrambling in Japanese necessarily gives rise to a focus chain and that this property is captured by assuming that a phrase to be scrambled long-distance must bear a [Focus] feature and the feature is licensed by moving the phrase to the Spec of Focus Phrase (FP), which is located above TP. As a piece of evidence, I refer to Saito's (1985) observation that long-distance scrambling cannot land in a clause-medial position:

- (50) ??John-ga sono hon-o₁ minna-ni [Mary-ga t₁ motteiru to] itta (koto)
 John-NOM that book-ACC all-DAT Mary-NOM have COMP said fact
 'Lit. (the fact that) John, that book₁, told everyone that Mary had t₁.' (Saito 1985: 267)

Given that the matrix subject *John-ga* may be located in Spec-TP, it is most natural to assume that the scrambled phrase *sono hon-o* 'that book-ACC' is adjoined to the matrix VP. Under the assumption that this phrase carries a [Focus] feature, the ungrammaticality of (50) is attributed to the fact that this feature remains unlicensed. Likewise, *what-ACC* in (49) must carry a [Focus] feature and the feature cannot be licensed in the VP adjoined position it has landed on. Note that this *wh*-phrase cannot be adjoined to a higher position, since in that case, it would induce a violation of Coordinate Structure Constraint (CSC), which prohibits a phrase from being extracted from one of the conjoined phrases.¹⁴

3.1 Superiority?

Ishii (2014) observes that there is a word order restriction between the conjoined *wh*-phrases in Japanese coordinated *wh*-questions:

- (51) a. (Ittai) dare-ga sosite nani-o Mary-ni ageta no?
 the hell who-NOM and what-ACC Mary-DAT gave Q
 'Lit. Who₁ and what₂ (the hell) t₁ gave t₂ to Mary?'
 b. ?*(Ittai) nani-o sosite dare-ga Mary-ni ageta no?
 the hell what-ACC and who-NOM Mary-DAT gave Q
 'Lit. What₁ and who₂ (the hell) t₂ gave t₁ to Mary?' (Ishii 2014: 99)

¹⁴ As a reviewer correctly points out, the present analysis presupposes that coordinated *wh*-questions in Japanese involve VP coordination, but not coordination of bigger phrases like TP coordination or FP coordination. If FP coordination were possible for this construction, we could not capture the clause-mate effects of this construction properly, since *what-ACC* in the second conjunct of (49) could reach the Spec-FP without violating the CSC. I have no definite answer to this problem but to speculate that this has something to do with an economy condition on head raising: when VP coordination is involved in the coordinated *wh*-questions under consideration, raising of an ATB moved V to the above T (in the case of (49), raising of *say* in the ATB moved V' to T) is enough to correctly derive this construction, and hence no head raising is necessary in each conjunct. I must leave more detailed consideration of this possibility for future research, however.

(51a, b) differ only in the order of the conjoined *wh*-phrases *dare-ga* ‘who-NOM’ and *nani-o* ‘what-ACC’. Ishii claims that this contrast follows from the superiority effects that arise in multiple *wh*-questions. Under his backward ellipsis analysis, the first conjunct of (51b) has the following structure:

(52) [_{CP} what₁-ACC [_{TP} ~~who-NOM Mary-DAT *t*₁ gave~~] Q] and ...

In this structure, the lower *wh*-phrase *what-ACC* has crossed the higher *wh*-phrase *who-NOM*, inducing a superiority effect, just like the following English *wh*-question:

(53) *What did who give to Mary?

There are several reasons to maintain that we should reject this way of accounting for the unacceptability of (51b) in terms of superiority. First, as we have seen above, there is no good reason to assume that the conjoined *wh*-phrases in Japanese coordinated *wh*-questions undergo overt *wh*-movement to Spec-CP. Rather they behave just like normal *wh*-phrases in that they can stay in situ. Note that no superiority effect arises in Japanese when a lower *wh*-phrase crosses a higher *wh*-phrase by clause-internal scrambling:

(54) Nani-o₁ dare-ga Mary-ni *t*₁ ageta no?
 what-ACC who-NOM Mary-DAT gave Q
 ‘Lit. What did who give to Mary?’

Thus, it is crucial for Ishii’s (2014) analysis to assume that the first conjoined *wh*-phrase *what-ACC* in (52) undergoes overt *wh*-movement to Spec-CP, but there is no good evidence for such an assumption. Second, as Kasai (2016) claims, it is more appropriate to assume that a sentence like (51b) is interpreted as ‘what did someone give to Mary and who was it that gave it to Mary?’, so that no multiple question is involved in each conjunct. If so, superiority effects are simply irrelevant for coordinated *wh*-questions. Third, such a word order restriction between the conjoined *wh*-phrases as shown in (51) also holds for what Ishii (2014) calls forward sluicing:

(55) a. Dare-ga Mary-ni ageta no, sosite nani-o?
 who-NOM Mary-DAT gave Q and what-ACC
 ‘Lit. Who gave *e* to Mary and what?’
 b. ?*Nani-o Mary-ni ageta no, sosite dare-ga?
 what-ACC Mary-DAT gave Q and who-NOM
 ‘Lit. What did *e* give to Mary and who?’

Here again, (55a, b) differ only in the order of the conjoined *wh*-phrases *dare-ga* ‘who-NOM’ and *nani-o* ‘what-ACC’. The unacceptability of (55b) could not be accounted for even under Ishii’s (2014) analysis, since it must be the second *wh*-

phrase *dare-ga* ‘who-NOM’ that undergoes overt *wh*-movement to Spec-CP and hence no superiority violation should occur.

I propose that the unacceptability of (51b) and (55b) should be attributed to the lack of subject in the first conjuncts. Under my analysis, the first conjuncts of these sentences have the following structure:

(56) [CP [TP [VP what₁-ACC [V₁ Mary-DAT *t*₁ give]] and ...

Crucially, I have been assuming that the implicit argument in the first conjunct that correlates with the *wh*-phrase in the second conjunct is not syntactically present. Hence no subject is present in (56). Given that the subject-predicate relation is a core property of a proposition, it is reasonable to attribute the illegitimacy of (56) to the lack of subject.

In Abe (2019), I demonstrate that the same restriction holds for what I call “predicate ellipsis”. A typical example of this construction is given below:

(57) Bill-ga Susan-o sikatta ra, John-ga Mary-o [_{Pred} *e*].
 Bill-NOM Susan-ACC scolded and John-NOM Mary-ACC
 ‘Bill scolded Susan and John Mary ...’

One might consider (57) as a case of gapping in Japanese where the missing predicate corresponds to that of the first conjunct, hence interpreted as *sikatta* ‘scolded’. This is not the case, however.¹⁵ Rather, the elided clause is interpreted as an unidentified event or state in which John and Mary both participate. Thus, the null predicate could be taken as *hometa* ‘praised’, *tataita* ‘hit’, etc. but since the speaker did not complete the sentence for some reason, the content of the null predicate is unknown to the hearer. Hence, there is no linguistic antecedent for the null predicate in question. One might consider that the grammatical status of these sentences corresponds to that of an English sentence like *I saw, I kissed*, etc. with missing objects. Nonetheless, it is not so difficult for Japanese native speakers to imagine that these sentences can be uttered out of the blue in a situation where the speaker tried to say, for example, John hit Mary severely, but he/she could not complete the sentence because he/she was so shocked or perplexed. Since these fragments describe events or states in which John and Mary are both involved, a natural response to these fragments is, what happened to John and Mary or what did John do to Mary, etc. In Abe (2019), I then make the observation that the null predicate in question requires a subject for its licenser. Compare (57) with the following examples:

(58) a. ?*Bill-ni Susan-o sono sensei-ga syookaisita ra,
 Bill-DAT Susan-ACC that teacher-NOM introduced and
 John-ni Mary-o [_{Pred} *e*].
 John-DAT Mary-ACC
 ‘That teacher introduced Susan to Bill and Mary to John ...’

¹⁵ To get this reading, we need to change the nominative marker *-ga* in *John-ga* into *-mo* ‘also’. See Abe (2019) for details.

- b. ?*Bill-ni hon-o sono sensei-ga ageta ra, John-ni zassi-o [_{Pred} *e*].
 Bill-DAT book-ACC that teacher-NOM gave and John-DAT magazine-ACC
 ‘That teacher gave a book to Bill and a magazine to John ...’

I basically attribute the unacceptability of these sentences to the lack of subject in the second conjuncts.

In Abe (2019), I further argue that the null predicate in question is licensed not only by the subject-predicate relation but also by the topic-comment relation, so that if one of the non-subject remnant arguments of the null predicate is topicalized, then the resulting sentence improves. Compare the examples in (58) with the following, where the dative arguments of the null predicates bear a topic marker:

- (59) a. Bill-ni Susan-o sono sensei-ga syookaisita ra,
 Bill-DAT Susan-ACC that teacher-NOM introduced and
 John-ni-wa Mary-o [_{Pred} *e*].
 John-DAT-TOP Mary-ACC
 ‘That teacher introduced Susan to Bill and Mary to John ...’
- b. Bill-ni hon-o sono sensei-ga ageta ra, John-ni-wa zassi-o [_{Pred} *e*].
 Bill-DAT book-ACC that teacher-NOM gave and John-DAT-TOP magazine-ACC
 ‘That teacher gave a book to Bill and a magazine to John ...’

The significant improvement of these sentences suggests that the topic-comment relation is another way of legitimizing propositions. If so, it is predicted that unacceptable sentences of coordinated *wh*-questions that are accounted for due to the lack of subject, such as (51b) and (55b), should improve when topicalized phrases are added to the first conjuncts. This is in fact borne out:

- (60) a. Mary-ni-wa (ittai) nani-o sosite dare-ga ageta no?
 Mary-DAT-TOP the hell what-ACC and who-NOM gave Q
 ‘Lit. As for Mary, what₁ and who₂ (the hell) *t*₂ gave *t*₁ to her?’
- b. Mary-ni-wa nani-o ageta no, sosite dare-ga?
 Mary-DAT-TOP what-ACC gave Q and who-NOM
 ‘Lit. As for Mary, what did *e* give to her and who?’

Thus it is reasonable to conclude that the unacceptability of such examples of coordinated *wh*-questions as (51b) and (55b) has nothing to do with superiority but rather has to do with the lack of the subject-predicate relation.

3.2 Kasai’s (2016) case of possessor-possessed relationship

Kasai (2016) provides an interesting case of Japanese coordinated *wh*-questions to support his backward ellipsis analysis:

- (61) Taroo-wa dare-no sosite nani-o nusunda no?
 Taro-TOP who-GEN and what-ACC stole Q
 ‘Lit. Whose and what did Taro steal?’

A peculiar property of this example is that it presupposes that Taro stole something and that it asks about one and the same thing whose it is and what it is. Thus, Kasai paraphrases this example as follows:

- (62) Taroo-wa dare-no sosite soitu-no nani-o nusunda no?
 Taro-TOP who-GEN and the guy-GEN what-ACC stole Q
 ‘Lit. Whose and his/her what did Taro steal?’

Note that unlike English, Japanese allows a *wh*-word like *nani* ‘what’ to be modified by a possessor phrase. Note further that *dare-no* ‘who-GEN’ cannot appear on its own in a normal *wh*-question:

- (63) *Taroo-wa dare-no nusunda no?
 Taro-TOP who-GEN stole Q
 ‘Lit. Whose (one) did Taro steal?’

Thus, *dare-no* in (61) is permitted only when it modifies *nani-o* ‘what-ACC’ in the second conjunct. In order to exclude such a case as (63), let us characterize the relevant condition as a filter of the following sort: *_[NP possessor ϕ].

Keeping this in mind, let us consider what Kasai posits as the underlying structure for (61):

- (64) Taroo-wa [_{VP} [_{VP} [_{NP} dare₁-no-pro_{Indef}-o] nusumi] sosite [_{VP} [_{NP} pro₁ nani-o]
 Taro-TOP who-GEN-pro-ACC steal and what-ACC
 nusun]]-da no
 steal-PAST Q

Pro₁ in the second VP conjunct takes whatever value *dare-no* ‘who-GEN’ takes, just as *soitu* ‘the guy’ does in (62). Pro_{Indef} in the first VP conjunct, on the other hand, is an indefinite pronoun that correlates with *nani-o* ‘what-ACC’ in the second conjunct. Kasai claims that from this underlying structure, *dare-no* ‘who-GEN’ moves out of NP and is adjoined to the first VP conjunct. The output form of (61) is then derived by deleting the lower VP of the first conjunct. In this derivation, the movement of *dare-no* ‘who-GEN’ out of NP appears to violate the Left Branch Condition (LBC). Kasai maintains that this violation is remedied by deleting the material inducing the violation, as standardly assumed since Merchant (2001), as shown below:

- (65) He wants a detailed list, but I don’t know how detailed₁ [~~he wants a~~ list].

A problem with this analysis arises from whether the underlying structure given in (64) correctly captures the intended meaning of (61), especially the fact that it is a question about one and the same thing even though it involves conjoined *wh*-phrases. Let us consider what reading obtains when (64) is uttered in full:

- (66) Taroo-wa dare₁-no-o nusumi, sosite nani-o nusunda no?
 Taro-TOP who-GEN-ACC steal and what-ACC stole Q
 ‘Lit. Whose one did Taro steal and what did he steal?’

The most natural interpretation of this question is that there were two things that Taro stole and *whose* was one thing and *what* was the other, which is the interpretation unavailable to (61). Thus it is doubtful that (64) expresses the right structure for (61). Moreover, Kasai's analysis of (61) will incorrectly predict that something like the following example is grammatical:

- (67) *Taroo-wa dare-no sosite dare-ni (sore-o) ageta no?
 Taro-TOP who-GEN and who-DAT it-ACC gave Q
 'Lit. Whose and to whom did Taro give?'

In this example, the two conjoined *wh*-phrases clearly denote different entities, unlike (61); *dare-no* 'who-GEN' denotes something possessed by someone and *dare-ni* 'who-DAT' denotes someone who got it from Taro. According to Kasai's analysis, this sentence would have the following underlying structure:

- (68) Taroo-wa [_{VP} *pro*_{Indef.} [_{NP} dare-no-*pro*_{Indef.-o}] age] sosite [_{VP} dare-ni *pro*/*sore*_{1-o}
 Taro-TOP who-GEN-*pro*-ACC give and who-DAT it-ACC
 age]-ta no
 give]-PAST Q

In this structure, *pro*_{Indef.} in the first conjunct correlates with *dare-ni* 'who-DAT' in the second conjunct, and *pro/sore-o* 'it-ACC' in the second conjunct takes whatever value [_{NP} *dare-no-pro*_{Indef.-o}] does. After *dare-no* 'who-GEN' moves out of NP₁ and adjoins to the first conjoined VP, just as *dare-no* does in (64), the output form of (67) could be derived by deleting the lower VP of the first conjunct under identity with the corresponding part in the second conjunct.¹⁶ This overgeneration problem

¹⁶ A reviewer raises the question whether the mismatch of NP₁ in the first conjunct and the corresponding pronoun *pro/sore*₁ in the second conjunct regarding their internal structures violates the identity condition on ellipsis assumed here. The reviewer raises this question since I argue in what follows that this mismatch does matter for the application of ATB movement under my RNR analysis. Under the particular analysis of Kasai (2016), this mismatch should not matter for the identity condition in question, since otherwise he could not derive a coordinated *wh*-question such as the following:

- (i) Taroo-wa nani-o sosite dare-no musume-ni katte-agetata no?
 Taro-TOP what-ACC and who-GEN daughter-DAT buy-gave Q
 'Lit. What and for whose daughter did Taro buy?'

Under Kasai's analysis, *pro* must be posited in the first conjunct as a correlate of *dare-no musume* 'whose daughter' in the second conjunct, and the output form of (i) is derived by deleting the relevant VP in the first conjunct after *nani-o* 'what-ACC' is raised out of it, regardless of the mismatch of the two dative phrases in their internal structures. More generally, it has been standardly assumed that such a mismatch regarding internal structure is tolerable in applying ellipsis as long as the relevant two phrases denote the same entity. This is presupposed by Fiengo and May's (1994) "vehicle change" analysis of such a VP ellipsis construction as the following:

- (ii) Mary corrected her mother₁'s mistakes before she₁ did [_{VP} *e*].

(Fiengo and May 1994: 222)


If the deleted material of the VP ellipsis site contained *her mother*, then this would give rise to a Condition C violation due to the fact that *she* c-commands *her mother*. In order to solve this problem,


indicates that Kasai’s analysis fails to capture the fact that the possessor form *dare-no* ‘who-GEN’ can appear in coordinated *wh*-questions only when it denotes the same entity as the other *wh*-phrase does.

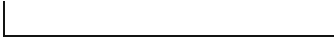
Under my RNR analysis, there is a rather natural way of capturing the above facts. First, I modify the underlying structure given in (64) in such a way that *dare-no-pro*_{Indf.} ‘who-GEN-pro’ in the first conjunct does not have an accusative case marker attached to it, as shown below:

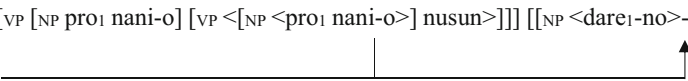
- (69) Taroo-wa [VP [VP [NP dare₁-no-pro_{Indf.}] nusun] sosite [VP [NP pro₁ nani-o]
 Taro-TOP who-GEN steal and what-ACC
 nusun]]-da no
 steal-PAST Q

This modification is natural since *pro* does not have any overt case marker in general. Then, I propose that the output form of (61) is derived from (69) by first adjoining *dare-no* ‘who-GEN’ and [_{NP} *pro*₁ *nani-o*] ‘what-ACC’ to each of the conjoined VPs, as shown in (70a),¹⁷ and then applying the rightward ATB movement to the lower VP in each conjunct that consists of the direct object NP and V, as shown in (70b):

- (70) a. Taroo-wa [VP [VP dare₁-no [VP [NP <dare₁-no>-pro_{Indf.}] nusun]] sosite


 [VP [NP pro₁ nani-o] [VP [NP <pro₁ nani-o>] nusun]]-da no


 b. Taroo-wa [VP [VP [VP dare₁-no [VP <[NP <dare₁-no>-pro_{Indf.}] nusun>]] sosite


 [VP [NP pro₁ nani-o] [VP <[NP <pro₁ nani-o>] nusun>]] [[NP <dare₁-no>-pro_{Indf.}]/


 [NP <pro₁ nani-o>] nusun]]-da no

Here again an issue arises about what identity condition guarantees the applicability of the ATB movement in (70b). It must be the case that [_{NP} <dare₁-no> -pro_{Indf.}] and [_{NP} <pro₁ nani-o>] are regarded as identical under the relevant identity condition on ATB movement. I simply stipulate that as far as unpronounced copies

Footnote 16 continued

Fiengo and May (1994) propose that the deleted material is in fact *correct her mistakes* with *her* referring to *her mother*.

¹⁷ What is moved in the second conjunct must be the whole NP rather than just *nani-o* ‘what-ACC’ since *pro* inside that NP can be overtly realized, as shown in (62).

and *pro* are concerned, they are regarded as identical for applying ATB movement if their internal structures are the same; in this case, they both have N projections with possessor NPs. Recall that we have assumed above the following interpretive rule about ATB movement of verbs and their larger projections:

- (71) When V_1, V_2, \dots or their projections undergo ATB movement, the resulting chain denotes one and the same event or state.

Given this, once the two NPs [_{NP} <dare₁-no>-*pro*_{Indf.}] and [_{NP} <*pro*₁ nani-o>] are raised by ATB movement, they must be regarded as identical in semantic interpretation as well. This will guarantee that in (61) what Taro stole was one (set of) thing and that the apparently two questions in terms of *dare-no* ‘who-GEN’ and *nani-o* ‘what-ACC’ are actually asked about the same thing.

Note that I am following Kasai (2016) in assuming that the LBC violation induced by the movement of *dare-no* ‘who-GEN’ in (70a) is remedied by wiping out its bottom copy, by way of rightward ATB movement in this case.¹⁸ It follows then that in deriving the output form of (61) from (70a), the RNR strategy adopted in (70b) is the only legitimate option; applying ATB movement just to the verb *nusun* ‘steal’ in (70a) could also derive the output form of (61) but this cannot remedy the LBC violation in question. One might object that in that case, *dare-no* would not have to move out of the immediately dominating NP, to begin with. Note, however, that in that case, the resulting structure will violate the filter *_[NP possessor ϕ], which rules out a sentence like (63).

The unacceptability of (67), reproduced below, follows naturally under the present analysis:

- (72) *Taroo-wa dare-no sosite dare-ni (sore-o) ageta no?
 Taro-TOP who-GEN and who-DAT it-ACC gave Q
 ‘Lit. Whose and to whom did Taro give (it)?’

This sentence will have the following underlying structure:

- (73) Taroo-wa [_{VP} [_{VP} [_{NP1} dare-no-*pro*_{Indf.}] age] sosite [_{VP} dare-ni *pro*/sore₁-o
 Taro-TOP who-GEN-*pro* give and who-DAT it-ACC
 age]]-ta no
 give-PAST Q

From this structure, we cannot derive the output form of (72) in the same way as shown in (70). First, we could adjoin the two *wh*-phrases *dare-no* ‘who-GEN’ and *dare-ni* ‘who-DAT’ to each of the VP conjuncts, but we could not move onto the next step; that is, we could not apply rightward ATB movement to the VPs that

¹⁸ A more thorough investigation will be necessary to answer the question whether RNR actually serves to remedy island violations, just as ellipsis does. I leave this task for future research. See also Section 5 for a similar remedy effect of LBC violation in what I call “backward gapping”.

dominate the verbs and the objects since the direct object [_{NP1} *dare-no-pro*_{Indf.}] in the first conjunct and *pro/sore*_{1-o} in the second conjunct do not have the same internal structure. Thus, the only option that could derive the output form of (72) is to apply ATB raising of the verb *age* ‘give’ to the structure (73), but the resulting structure would violate the filter *_[NP possessor φ].

Note further that (61) becomes unacceptable if the conjoined *wh*-phrases are swapped in their word order:

- (74) *Taroo-wa nani-o sosite dare-no nusunda no?
 Taro-TOP what-ACC and who-GEN stole Q
 ‘Lit. What and whose did Taro steal?’

Under the present assumptions, this sentence will have the following underlying structure:

- (75) Taroo-wa [_{VP} [_{VP} [_{NP} nani-o] nusun] sosite [_{VP} [_{NP} dare₁-no-pro_{Indf.}]
 Taro-TOP what-ACC steal and who-GEN
 nusun]]-da no
 steal-PAST Q

In this case, *nani-o* ‘what-ACC’ in the first conjunct does not have *pro* in its Spec position, unlike that in (69), and hence this *wh*-phrase cannot be regarded as identical to the *wh*-object [_{NP} *dare₁-no-pro*_{Indf.}] in the second conjunct so as to allow the dominating VPs to undergo rightward ATB movement after the two *wh*-phrases move out of them. Hence the only way to derive the output form of (74) is to apply ATB head raising to the verb *nusun* ‘steal’ in the structure (75), but the resulting structure would violate the filter *_[NP possessor φ].^{19,20}

¹⁹ As a reviewer correctly points out, if the accusative *-o* is added to *dare-no* ‘who-GEN’ in (74), the resulting sentence becomes acceptable:

- (i) Taroo-wa nani-o sosite dare-no-o nusunda no?
 Taro-TOP what-ACC and who-GEN-ACC stole Q
 ‘Lit. What and whose did Taro steal?’

Given that Japanese has pronominal *no*, meaning ‘one’, *dare-no-o* is most naturally analyzed as being derived from *dare-no-no-o* ‘who-GEN-PRO-ACC’ by deleting one of the iterated *no* occurrences due to haplogy. Hence (i) is derived from an underlying structure just like (75) except that *dare₁-no-pro*_{Indf.} is modified into *dare₁-no-no-o*, by applying ATB head raising to the shared verb *nusun* ‘steal’.

²⁰ I do not intend that my RNR analysis of coordinated *wh*-questions of Kasai’s (2016) type capture all relevant properties of this construction properly. A reviewer points out that my analysis cannot account for the unacceptability of such a coordinated *wh*-question as the following (I changed the reviewer’s original example slightly):

- (i) *Taroo-wa dare-no sosite nani-o dare-ni ageta no?
 Taro-TOP who-GEN and what-ACC who-DAT gave Q
 ‘Lit. Whose and what to whom did Taro give?’

This sentence is intended to ask the question of what Taro gave to whom and further whose the thing was that Taro gave. As the reader may verify, my RNR analysis over-generates this unacceptable sentence. At an intuitive level, what is wrong about this sentence seems to be attributed to the fact that even though this question asks about three things, two of them are related to the same entity while the other is related

4 Implications for the cross-linguistic perspectives in analyzing coordinated *wh*-questions

In Sect. 2, I pointed out mainly three problems to the backward ellipsis analysis of Japanese coordinated *wh*-questions. Two of them, i.e., the fact that the conjoined *wh*-phrases behave as if they make a constituent and the fact that they show the normal in-situ properties, just like single *wh*-phrases, so that they appear in embedded contexts, are under-generation problems. Thus, only with these problems, we cannot conclude that the backward ellipsis strategy is not an option for analyzing Japanese coordinated *wh*-questions, since it might be the case that the effects of this strategy are covered up due to the availability of the RNR strategy. One more problem, however, i.e., the fact that the conjoined *wh*-phrases show clause-mate effects, is an over-generation problem for the backward ellipsis analysis, so this problem clearly indicates that this analysis is not an option for Japanese coordinated *wh*-questions.

There is further evidence for this claim, which comes from what Giannakidou and Merchant (1998) call “reverse sluicing”. A typical English example is given below:

- (76) It’s not clear if and when the police arrested the demonstrators.
(Giannakidou and Merchant 1998: 234)

Giannakidou and Merchant analyze such an example as involving ellipsis of the complement clause of the Q-complementizer *if*, and its content is recovered from the following TP, i.e., [_{TP} *the police arrested the demonstrators*]. Japanese, on the other hand, does not allow such reverse sluicing:

- (77) *John-wa [_{CP} *e ka dooka*] sosite [_{CP} *itu Mary-ga tazunete-kita ka*]
John-TOP whether and when Mary-NOM visit-came Q
oboetei-nai.
remember-not
‘John does not remember if and when Mary came and visited (him).’

If the backward ellipsis strategy were available to this construction, so that the content of the empty TP in the first conjunct could be supplied by the following TP, we could not account for the unacceptability of (77). In Abe (2015), I demonstrate that *ka dooka* ‘whether’ can support “forward sluicing”:

Footnote 20 continued

to a different entity. Such an unbalanced way of asking a question seems to cause an anomaly, though I must leave it for future work how this intuition is best characterized in formal terms.

(78) A: John-wa asu gakkoo-ni kuru daroo.

John-TOP tomorrow school-to come will

‘John will come to school tomorrow.’

B: [CP [TP *e*] ka dooka]-wa wakan-nai yo.

whether-TOP know-not

‘Lit. We don’t know whether [John will come to school tomorrow].’

(Abe 2015: 111)

Thus the contrast between (77) and (78B) strongly indicates that the backward ellipsis analysis is unavailable to Japanese coordinated *wh*-questions.

It will not be unreasonable to conjecture from the above discussion that the unavailability of the backward ellipsis strategy is a universal property of coordinated *wh*-questions, given the standard poverty of stimulus argument: how do Japanese children come to know that the backward ellipsis strategy is unavailable to Japanese coordinated *wh*-questions? There is one thing that should be made clear at this point. We are not maintaining that the backward ellipsis strategy is never allowed in universal grammar, as it has been observed that backward ellipsis is possible in some ellipsis constructions such as VP ellipsis, sluicing and NP ellipsis:

(79) a. If he hasn’t yet [_{VP} *e*], John should try to climb the Eiffel Tower.

(Jackendoff 1971: 27)

b. Although I don’t know why [_{TP} *e*], John takes LSD. (Wasow 1972: 90)

c. ?Because Steve’s [_{NP} *e*] had been stolen, I borrowed Fred’s diagram of a snake’s eye. (Jackendoff 1971: 31)

Even Japanese allows for backward ellipsis, as shown in the following sluicing example:

(80) Dare-to ka wakara-nai keredomo, Mary-wa kinoo
 who-with Q know-not though Mary-TOP yesterday
 yuuenti-ni itta.
 amusement park-to went
 ‘Although (I) don’t know with whom, Mary went to an
 amusement park yesterday.’

Given that all of the examples in (79) and (80) involve backward ellipsis in subordination, it is reasonable to conclude that the unavailability of the backward

ellipsis strategy to coordinated *wh*-questions is due to the fact that this construction involves *coordination*.^{21,22}

Let us then hypothesize that the backward ellipsis strategy is unavailable in coordination and see what implications this hypothesis has for the analysis of coordinated *wh*-questions in general. As briefly mentioned in Sect. 2, there are mainly two types of analysis for this construction: the mono-clausal and the bi-clausal analysis. The mono-clausal analysis is proposed for coordinated *wh*-questions in multiple *wh*-fronting languages, according to which the multiple *wh*-phrases are coordinated during the derivation and the resulting amalgam is moved to the Spec of an interrogative clause. Thus, the backward ellipsis strategy is irrelevant for this type of analysis. The bi-clausal analysis, on the other hand, is proposed for coordinated *wh*-questions in non-multiple *wh*-fronting languages such as English and German, which typically show some restrictions on the conjoined *wh*-phrases. As we saw in (4) Sect. 2, reproduced below, these languages do not allow two *wh*-arguments to be coordinated:

- (81) a. *Who and what bought?
 b. *Who and what gave to Mary?

²¹ If this reasoning is right, it is predicted that *ka dooka* ‘whether’ in Japanese should support backward ellipsis if it appears in a subordinated clause, unlike in (77). This prediction is in fact borne out:

- (i) Ka dooka wakara-nai keredomo, John-wa Mary-ga kuru to omotteiru.
 whether know-not though John-TOP Mary-NOM come COMP think
 ‘Lit. Although (I) don’t know whether [~~Mary will come~~], John thinks that Mary will come.’

Furthermore, this conclusion will require us to reconsider what Giannakidou and Merchant (1998) call “reverse sluicing”, as illustrated in (76). See Park (2006) and Haida and Repp (2011) for the RNR approach to this construction, according to which the shared material of TP in each conjunct is right node raised. However, the following discussion in the text makes it unclear which approach is superior.

²² A reviewer makes the interesting suggestion that the ban on backward ellipsis in coordination may be a special case of a more general constraint, which will also explain the following facts about VP ellipsis (I owe the following data to the reviewer):

- (i) a. Because Jeff did [_{VP} *e*], his children had to go to church last Sunday.
 b. *Jeff did [_{VP} *e*], because his children had to go to church last Sunday.
 c. *Jeff did [_{VP} *e*], and his children had to go to church last Sunday.

The reviewer suggests that this constraint “is reminiscent of Langacker’s (1969) Backwards Anaphora Constraint,” which prohibits pronominalization from taking place if the targeted NP precedes and commands its antecedent, accounting for the following contrast:

- (ii) a. Penelope cursed Peter₁ and slandered him₁.
 b. *Penelope cursed him₁ and slandered Peter₁. (Langacker 1969: 162)

If this constraint is extended to apply to ellipsis, the ungrammaticality of (ib, c) is explained by the fact that the VP ellipsis site precedes and commands its antecedent. Likewise, the ban on backward ellipsis in coordination, such as in coordinated *wh*-questions, will follow from this constraint since the first conjunct precedes and commands the second conjunct.

More generally, Lipták (2011) nicely captures the relevant restrictions as follows: “the grammaticality judgments for CMWQs [= coordinated multiple *wh*-questions] are fully parallel to the judgments on bi-clausal questions”:

(82) *CMWQs in English*

- a. *What and to who did you give?
- b. *What and where did you fix?
- c. What and where did you eat?
- d. When and why did you leave?

(83) *Bi-clausal questions in English*

- a. *[What did you give] and [to who did you give]?
- b. *[What did you fix] and [where did you fix]?
- c. [What did you eat] and [where did you eat]?
- d. [When did you leave] and [why did you leave]? (Lipták 2011: 156)

Thus it is reasonable to posit bi-clausal questions such as in (83) for the underlying structures of CMWQs such as those in (82). Then, as Lipták (2011) puts it, the question comes down to how the underlying structures of the first conjuncts of CMWQs are reduced to their surface forms. One of the strategies proposed for doing this job is the backward ellipsis strategy, according to which the material in the first conjuncts of CMWQs is deleted except for the fronted *wh*-phrases under identity with the corresponding part in the second conjuncts. Our hypothesis, posited above, that the backward ellipsis strategy is unavailable in coordination discourages this option, however.

There are two other strategies proposed in the literature: one is the multi-dominance approach, advocated by Gračanin-Yuksek (2007) and Citko and Gračanin-Yuksek (2013), according to which the repeated material in the two conjuncts shares the relevant structure, i.e., the whole structure of C', and the other is the RNR approach, advocated by Park (2006) and Haida and Repp (2011), according to which the shared material in each conjunct is right node raised and is adjoined to the coordinated CP. These two analyses are compatible with my analysis of Japanese coordinated *wh*-questions, so the latter analysis could be regarded as giving indirect support to the former. Nonetheless, I am not sure at this point if the backward ellipsis analysis is actually not an option for analyzing coordinated *wh*-questions in English and German, given the present stage of understanding according to which there is not really a good independent argument for either the multi-dominance or the RNR analysis. As far as I can determine, Lipták (2011) provides the most powerful argument for the backward ellipsis analysis, which is concerned with what Merchant (2001) calls swiping, as illustrated below:

- (84) a. *Who from did Mary receive a package?
 b. Mary received a package, but I don't know who from. (Lipták 2011: 160)

Swiping is a phenomenon in which the word order of a preposition and the *wh*-word that appears in its complement is flipped, and as the contrast between (84a) and (84b) shows, it occurs only in the sluicing construction, a hall-marked ellipsis phenomenon. Lipták (2011) reports that the English native speakers she consulted with allow for swiping in coordinated *wh*-questions:

- (85) a. Who from and why did Mary receive a package?
 b. Who to and when did Chomsky lecture about syntax? (Lipták 2011: 160)

Though not all English native speakers may allow for this phenomenon (cf. Gračanin-Yuksek 2007), the fact that some do indicates that universal grammar does not prohibit the backward ellipsis strategy from being accessed in coordinated *wh*-questions.

Haida and Repp (2011) present interesting scope-out phenomena to give support to the RNR analysis. They first note, following Sabbagh (2007), that such phenomena are observed with a typical instance of RNR:

- (86) a. Some nurse gave a flu shot to ____, and administered a blood test for ____, **every patient who was admitted last night.** (every > some)
 b. Some nurse gave a flu shot to **every patient**, and administered a blood test for **every patient.** (*every > some)
 (Sabbagh 2007: 365)

(86a) shows that the shared QP *every patient who was admitted last night* takes scope over the indefinite *some nurse*, so that a different nurse may be involved in treating each patient. This is not the case with (86b), in which the QP *every patient* occupies each original position of the right node raised QP in (86a). Sabbagh (2007) argues that these data support the rightward ATB movement approach to RNR, since it correctly predicts that the shared QP in this construction can be scoped out of the coordinated clauses. Now on the model of this scope-out phenomenon of RNR, Haida and Repp (2011) provide the following paradigm:

- (87) a. Tell me if every guest arrived. (IF > \forall , * \forall > IF)
 b. Tell me when every guest arrived. (WHEN > \forall , \forall > WHEN)
 c. Tell me if and when every guest arrived. (IF&WHEN > \forall , \forall > IF&WHEN)
 (Haida and Repp 2011: 384)

Even though the QP *every guest* takes scope under *if* in (87a), it can take scope out of the latter when *if* and *when* are conjoined, as shown in (87c). Haida and Repp argue that these data support the RNR analysis of coordinated *wh*-questions in the same way as the data in (86) do: (87c) is derived by applying rightward ATB

movement to TP in each conjunct, so that *every guest* can scope out of the interrogative clauses.

It is not clear whether the paradigm given in (87) should be accounted for on a par with that in (86). For one thing, what mechanism of scope interaction makes it possible that movement of the whole TP out of the above CP enables its subject QP to take scope over that CP? Under the standard assumption that the scope order of two scope-bearing elements is determined in terms of c-command, the scope ambiguity observed in (87b) is naturally captured as a result of the reconstruction effects of fronted *wh*-phrases; *when* is base-generated lower than the subject QP *every guest* and movement of this *wh*-phrase over the subject makes the scope order of these two phrases ambiguous. In (87a), on the other hand, *if* is base-generated in the interrogative C head, hence always asymmetrically c-commanding the subject QP. This accounts for why the latter cannot take scope over the former. Given this standard account of scope interaction in terms of c-command, it is not immediately clear how the subject QP *every guest* in (87c) is able to take scope over *if* as a result of applying rightward ATB movement to TP in each conjunct.

Furthermore, the paradigm given in (87) can be replicated with what Ishii (2014) calls forward sluicing in Japanese:

- (88) a. Subete-no gesuto-ga tootyakusita ka osiete.
 every-GEN guest-NOM arrived Q tell
 ‘Tell (me) if every guest arrived.’ (IF > \forall , $*\forall$ > IF)
- b. Subete-no gesuto-ga itu tootyakusita ka osiete.
 every-GEN guest-NOM when arrived Q tell
 ‘Tell (me) when every guest arrived.’ (WHEN > \forall , \forall > WHEN)
- c. Subete-no gesuto-ga tootyakusita ka sosite itu ka osiete.
 every-GEN guest-NOM arrived Q and when Q tell
 ‘Tell (me) if every guest arrived and when. (IF&WHEN > \forall , \forall > IF&WHEN)

(88c) is an instance of forward sluicing and can have the reading in which the embedded subject QP *subete-no gakusei* ‘every guest’ can take scope over the *if*- and *when*-clauses, just like (87c). Recall that I have argued in Section 2 that unlike coordinated *wh*-questions, forward sluicing is best analyzed as an instance of ellipsis in Japanese. Further, note that it is quite unlikely that such forward sluicing as illustrated in (88c) is derived from some syntactic operation similar to RNR that enables the embedded QP to scope out of the immediately dominating TP or the CP above it. Thus, the availability of the relevant reading to such a forward sluicing case as (88c) strongly undermines Haida and Repp’s (2011) argument for the RNR analysis on the basis of the paradigm given in (87). After all, this latter paradigm may be turned into supporting evidence for the ellipsis analysis of coordinated *wh*-questions, together with that given in (88), though it remains to be seen how this paradigm is accounted for.

Judging from what we have seen above, it seems hasty to conclude that the backward ellipsis strategy is not an option for reducing the bi-clausal structures posited for coordinated *wh*-questions in languages such as English and German. As for Japanese coordinated *wh*-questions, on the other hand, I believe convincing

arguments have been provided against the backward ellipsis strategy. More work is necessary to fill the gap between these states of affairs.

5 Further consequences

There is another construction in Japanese, as illustrated below, which has given rise to the debate between the backward ellipsis analysis and the RNR analysis:

- (89) 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.'

In this example, the verb *home* 'praise' is missing in the first conjunct. I name this construction "backward gapping" as an analysis-neutral term. It is reasonable to posit (90) as the underlying structure of this example:

- (90) [John-NOM Mary-ACC praise] and [Bill-NOM Susan-ACC praise]+PAST

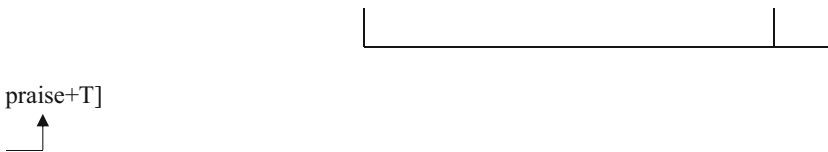
According to the backward ellipsis analysis, advocated by Abe and Hoshi (1997), among others, (89) will be derived from (90) by deleting *praise* in the first conjunct. According to the RNR analysis, advocated by Kuno (1978) and Saito (1987), among others, on the other hand, this example will be derived from (90) by applying ATB head raising to *praise* in each conjunct. Given our conclusion reached above that backward ellipsis is impossible in coordination at least in Japanese, we should opt for the RNR analysis of backward gapping. In this section, I argue that this is the right choice.

Keeping the assumptions made for Japanese coordinated *wh*-questions, I propose that (89) has the following underlying structure, which involves VP coordination with the subject in each conjunct staying in situ:

- (91) [_{TP} [_{VP} [_{VP} John-NOM Mary-ACC praise] and [_{VP} Bill-NOM Susan-ACC praise]]
 T]

From this underlying structure, the output form of (89) is derived by applying ATB head raising to the V *praise* in each conjunct and adjoining it to the above T, as shown below:

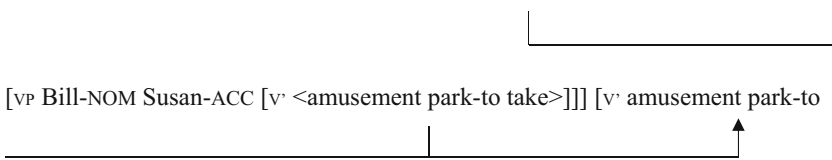
- (92) [_{TP} [_{VP} [_{VP} John-NOM Mary-ACC <praise>] and [_{VP} Bill-NOM Susan-ACC <praise>]]



Let us now consider a little more complicated example of backward gapping:

- (93) John-ga Mary-o sosite Bill-ga Susan-o yuuenti-ni turete-itta.
 John-NOM Mary-ACC and Bill-NOM Susan-ACC amusement park-to took
 ‘Lit. John [_v e] Mary and Bill took Susan to an amusement park.’

This example is interpreted such that John took Mary to an amusement park and Bill did the same thing to Susan. Analyzing such an example on a par with coordinated *wh*-questions, I propose that it involves rightward ATB movement of the verb phrase *yuenti-ni turete-iku* ‘take to an amusement park’, as shown below:

- (94) [TP [VP [VP [VP John-NOM Mary-ACC [_v <amusement park-to take>]]] and

 [VP Bill-NOM Susan-ACC [_v <amusement park-to take>]]] [_v amusement park-to
 take]] T]

On the other hand, there is a crucial difference between coordinated *wh*-questions and backward gapping. Recall that we noted in Sect. 3 that coordinated *wh*-questions express single events and that we attributed this property to ATB movement of shared verbs or their larger projections, as stated in (34), reproduced below:

- (95) When V_1, V_2, \dots or their projections undergo ATB movement, the resulting chain denotes one and the same event or state.

Notice that backward gapping, as illustrated in (89) and (93), clearly expresses complex events, unlike coordinated *wh*-questions. This is naturally attributed to the fact that in this construction, the phrases left in each conjunct after rightward ATB movement is applied are contrastively focused; in both (89) and (93), *John-ga* and *Mary-o* are contrastively focused with *Bill-ga* and *Susan-o*, respectively. To accommodate this fact, I modify (95) into the following:²³

²³ The following example illustrates a case of backward gapping where modifiers are contrastively focused:

- (i) Kinoo kooen-de soiste kyoo taiikukan-de kodomo-tati-ga asonda.
 yesterday park-in and today gym-in child-pl.-NOM played
 ‘Lit. Yesterday [_v e] in the park and today in the gym the children played.’

- (96) When V_1, V_2, \dots or their projections undergo ATB movement, the resulting chain denotes one and the same event or state, *unless each V takes arguments or modifiers that are contrastively focused*.

I simply assume (96) as an interpretive rule for ATB movement of shared Vs or their larger projections, leaving aside the question of why such ATB movement manifests this semantic property.

Recall that one of the advantages of the RNR analysis of Japanese coordinated *wh*-questions over the backward ellipsis analysis was that the former correctly captures the fact that the conjoined *wh*-phrases make a constituent. Here again, if the RNR analysis is right for backward gapping, it is predicted that the conjoined phrases behave as if they make a constituent, whereas the backward ellipsis analysis makes the opposite prediction. As Takano (2002) observes, the prediction made by the RNR analysis is borne out:²⁴

- (97) a. [Hometa] no-wa John-ga Mary-o sosite Bill-ga Susan-o da.
 praised NL-TOP John-NOM Mary-ACC and Bill-NOM Susan-ACC COP
 ‘Lit. It was John [_V e] Mary and Bill [_V e] Susan that e praised e.’
- b. [Yuuenti-ni turete-itta no]-wa John-ga Mary-o sosite Bill-ga
 amusement park-to took NL-TOP John-NOM Mary-ACC and Bill-NOM
 Susan-o da.
 Susan-ACC COP
 ‘Lit. It was John [_V e] Mary and Bill [_V e] Susan that e took e to an amusement park.’

(97a, b) are the cleft versions of (89) and (93), respectively, in which the coordinated phrases are clefted. These data give strong support to the RNR analysis.

In Abe and Hoshi (1997), we argue that the RNR analysis will not account for the grammaticality of the following example:

- (98) John-ga Bill sosite Mary-ga Susan-nituite hanasita.
 John-NOM Bill and Mary-NOM Susan-about talked
 ‘Lit. John [_V e] Bill and Mary talked about Susan.’ (Abe and Hoshi 1997: 111)

In this case, the shared material in the two conjuncts is *-nituite hanasita* ‘talked about’, which does not make a constituent. Hence in order to derive the output form of (98) correctly, we need to apply leftward movement to *Bill* and *Susan* before applying rightward ATB movement to the *V*’ in each conjunct that consists of the PP headed by *-nituite* ‘about’ and the *V* *hanasi* ‘talk’, as shown below:²⁵

²⁴ Takano (2002) does not advocate the RNR analysis, though. I leave the examination of his arguments against this analysis for future work.

²⁵ In the representations in (99), I use traces rather than copies when *Bill* and *Susan* have undergone leftward movement just for ease of presentation, since we need to assume under the RNR analysis that unpronounced copies are indistinguishable for applying ATB movement.

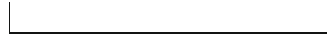
(99) a. [TP [VP [VP John-NOM [V' Bill₁ [V' *t*₁-about talk]]] and [VP Mary-NOM



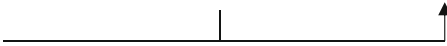
[V' Susan₂ [V' *t*₂-about talk]]] T]



b. [TP [VP [VP [VP John-NOM [V' Bill₁ [V' <*t*₁-about talk>]]] and [VP Mary-NOM



[V' Susan₂ [V' <*t*₂-about talk>]]] [V' *t*-about talk]] T]



This derivation would not be permissible, since Japanese does not allow for P (ostposition)-stranding by overt movement. However, Takano (2002) points out that in (98), *John-ga Bill sosite Mary-ga Susan-nituite* ‘John-NOM Bill and Mary-NOM Susan-about’ as a whole behaves as if it makes a constituent, as verified by the clefting test:

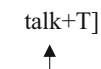
(100) [hanasita no]-wa John-ga Bill sosite Mary-ga Susan-nituite da.
 talked NL-TOP John-NOM Bill and Mary-NOM Susan-about COP
 ‘Lit. It was John [V *e*] Bill and Mary [V *e*] about Susan that *e* talked *e*.’
 (Takano 2002: 281)

As Takano claims, this fact strongly suggests that (98) shares its underlying structure with the following example and that its output form is derived by simply deleting the P *-nituite* ‘about’ that is attached to *Bill* in the first conjunct:

(101) John-ga Bill-nituite sosite Mary-ga Susan-nituite hanasita.
 John-NOM Bill-about and Mary-NOM Susan-about talked
 ‘Lit. John [V *e*] about Bill and Mary talked about Susan.’

Under the RNR analysis, the output form of (101) is derived by applying ATB head raising to *hanasi* ‘talk’ in each conjunct, as shown below:

(102) [TP [VP [VP John-NOM Bill-about <talk>] and [VP Mary-NOM Susan-about <talk>]]



(100) is then derived from this structure by clefting the conjoined VPs and then deleting the P *-nituite* that is attached to *Bill*. To the extent that this analysis is tenable, an example like (98) will not pose a problem to the RNR analysis.²⁶

Next, recall that we have seen that Japanese coordinated *wh*-questions show clause-mate effects. Under the present analysis of backward gapping, it is predicted that the two contrasted phrases in each conjunct should show such effects. Let us consider the following schematic structure:

- (103) [TP [VP [VP NP_{Sub} NP [CP ... <NP> ...] V] and [VP NP_{Sub} NP [CP ... <NP> ...] V]] T]
-

In this structure, the second NP in each conjunct is moved out of a finite clause. From this structure, an instance of backward gapping could be constructed by applying rightward ATB movement to the matrix V' in each conjunct that consists of CP and V. Recall, however, that under the assumption that the movement of NP in (103) is an instance of scrambling, it is ruled illegitimate since it is an instance of long-distance scrambling, hence necessarily carrying a [Focus] feature and this feature cannot be licensed in the position the NP has landed on. This is how the clause-mate effects should arise between the two contrasted phrases in each conjunct in backward gapping. This prediction is in fact borne out by the following example, which is cited from Abe and Hoshi (1997: 132) with a slight modification.²⁷

- (104) ?*Harry-ga Mary-ni sosite John-ga Susan-ni [CP sono sensei-ga *t* au
 Harry-NOM Mary-DAT and John-NOM Susan-DAT that teacher-NOM meet
 t]
 omotteiru.
 COMP think
 'Lit. *Harry* [_v *e*] *Mary* and *John* thinks that that teacher will meet *Susan*.'

Under the RNR analysis, this sentence could be derived by moving *Mary-ni* in the first conjunct and *Susan-ni* in the second out of the embedded CP, exactly as shown in (103), and then applying rightward ATB movement to the matrix V' in each conjunct that consists of the embedded CP and the V *omotteiru* 'think'. The ungrammaticality of this sentence is now attributed to the illegitimate application of long-distance scrambling to *Mary-ni* and *Susan-ni*.^{28,29}

²⁶ The validity of this analysis resides in whether an operation like simply deleting a P head is independently motivated. See An (2016, 2019) for independent evidence for such an operation, which he calls extra deletion.

²⁷ Actually, in Abe and Hoshi (1997), we argue that backward gapping does not show clause-mate effects by presenting an example similar to (104) in which the embedded subject is replaced by *pro* and claiming that the example is acceptable. However, this illustrates what Grano and Lasnik (2018) call the bound pronoun effect, hence not disconfirming the present claim that backward gapping does show clause-mate effects. See fn. 6 for relevant discussion.

²⁸ Given that the unacceptability of (104) is attributed to the fact that *Mary-ni* and *Susan-ni* undergo an illegitimate application of long-distance scrambling, a reviewer reasons that if they undergo further movement across the matrix subjects in order to license their [Focus] features properly, then the resulting

Finally, recall how I analyzed Kasai's (2016) example (61), reproduced below, in terms of the RNR analysis in Section 3.2:

- (105) Taroo-wa dare-no sosite nani-o nusunda no?
 Taro-TOP who-GEN and what-ACC stole Q
 'Lit. Whose and what did Taro steal?'

I assumed that *dare-no* 'who-GEN' and *nani-o* 'what-ACC' undergo scrambling out of each conjunct before the relevant rightward ATB movement is applied, as shown below:

- (106) Taroo-wa [VP [VP dare₁-no [VP [NP <dare₁-no>-pro_{Indf.}] nusun]] sosite
 Taro-TOP who-GEN steal and
 [VP [NP pro₁ nani-o] [VP [NP <pro₁ nani-o>] nusun]]-da no
 what-ACC steal-PAST Q
-

In this derivation, I maintained that the apparent LBC violation induced by scrambling *dare-no* out of the dominating NP is remedied by "wiping out its trace"

Footnote 28 continued

sentence should be acceptable. This expectation is not fulfilled, however, as we note with the following example in Abe and Hoshi (1997):

- (i) *Mary-nituite John-ga sosite Susan-nituite Bill-ga [_{CP} sono sensei-ga *t* hanasita
 Mary-about John-NOM and Susan-about Bill-NOM that teacher-NOM talked
 to] omotteiru
 COMP think

'Lit. *About Mary John* [_v *e*] and *about Susan Bill* thinks that that teacher talked *t*.'

(Abe and Hoshi 1997: 123)

Abe and Hoshi attribute the unacceptability of this example to a violation of a crossing constraint, which prohibits one contrastively focused phrase from moving across the other.

²⁹ There is a notorious exception to the clause-mate effects of backward gapping: when the NP movement in (103) is string-vacuous, it can even violate island conditions, as shown in the following example, which we cite from Mukai (2003) with a slight modification in Abe and Nakao (2012):

- (i) John-wa kuma-ni sosite Mary-wa raion-ni oswareta hito-o tasuketa.
 John-TOP bear-by and Mary-TOP lion-by was.attacked person-ACC saved
 'Lit. *John* [_v *e*] *by a bear* and *Mary* saved a person who was attacked *by a lion*.'



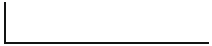

(Abe and Nakao 2012: 3)

In order to derive the output form of this example under the RNR analysis, *kuma-ni* 'by bear' in the first conjunct and *raion-ni* 'by lion' in the second must undergo scrambling out of the relative clause island, though the scrambling in question is string-vacuous. See Abe and Nakao (2012) for how the acceptability of such an example as (i) is explained, though their analysis is not compatible with the RNR analysis advocated in the text.

by way of applying ATB rightward movement to conjoined VPs. Now given that backward gapping is analyzed on a par with coordinated *wh*-questions in terms of RNR, it is expected that there should be cases of backward gapping that tolerate LBC violations. This expectation is in fact fulfilled by the following example:

- (107) John-ga Mary-no sosite Bill-ga Susan-no kodomo-o hometa.
 John-NOM Mary-GEN and Bill-NOM Susan-GEN child-ACC praised
 ‘Lit. John [_V *e*] Mary’s (child) and Bill praised Susan’s child.’

Under the present analysis, this example is derived in the following way:

- (108) a. [TP [VP [VP John-NOM [V' Mary-GEN₁ [V' [NP *t*₁ child-ACC] praise]]]

 and [VP Bill-NOM [V' Susan-GEN₂ [V' [NP *t*₂ child-ACC] praise]]] T]

- b. [TP [VP [VP [VP John-NOM [V' Mary-GEN₁ [V' <[NP *t*₁ child-ACC] praise>]]] and

 [VP Bill-NOM [V' Susan-GEN₂ [V' <[NP *t*₂ child-ACC] praise>]]] [V' [NP *t* child-

 ACC] praise]] T]

In (108a), *Mary-GEN* in the first conjunct and *Susan-GEN* in the second are moved out of V', inducing LBC violations, and in (108b), the lower V' of each conjunct undergoes rightward ATB movement, which correctly gives rise to the output form of (107). The acceptability of this example then indicates that the LBC violations in question can be remedied by wiping out the traces of *Mary-GEN* and *Susan-GEN*.

From the above discussion, it is reasonable to conclude that backward gapping is best analyzed by the RNR strategy. This accords well with the above argument that the backward ellipsis strategy is unavailable to coordination in Japanese.

6 Conclusion

In this paper, I argued for the RNR analysis of coordinated *wh*-questions in Japanese, according to which verbs or their larger projections are moved rightward across-the-board in the coordinated structures, with the conjoined *wh*-phrases staying in their original VP domains. I demonstrated that this analysis can properly

capture the following properties of this construction: (i) the conjoined *wh*-phrases retain the in-situ property of *wh*-phrases in this language; (ii) they behave as if they make a constituent; and (iii) they are sensitive to the clause-mate condition. The most crucial theoretical implication of my arguments for the RNR analysis is that the backward ellipsis analysis is inaccessible to coordination in this language. This is further confirmed by the behaviors of what I call backward gapping, which is also amenable to the RNR analysis. Examining whether this implication holds even cross-linguistically, I reached only the tentative conclusion that it might not accord with what has been found out by the bi-clausal analysis of coordinated *wh*-questions in other languages.

Acknowledgements I would like to thank Takashi Munakata, Myung-Kwan Park and Asako Uchibori for their comments and suggestions on earlier versions of this paper. I am also deeply grateful to three anonymous reviewers and the editors of *JEAL* for their meticulous comments and clarifications, which brought great improvements to the final version of this paper. All remaining errors are solely my own.

References

- Abe, Jun. 2015. *The in-situ approach to sluicing*. Amsterdam: John Benjamins.
- Abe, Jun. 2019. "Licensing ellipsis in a non-agreement language." Unpublished Ms.
- Abe, Jun. 2022. *Wh-in situ licensing in questions and sluicing*. Amsterdam: John Benjamins.
- Abe, Jun, and Hiroto Hoshi. 1997. Gapping and P-stranding. *Journal of East Asian Linguistics* 6: 101–136.
- Abe, Jun, and Chizuru Nakao. 2012. "String-vacuity under Japanese right node raising." In *Proceedings of the Fifth Formal Approaches to Japanese Linguistics*, MIT Working Papers in Linguistics 64, ed. Matthew A. Tucker, Anie Thompson, Oliver Northrup and Ryan Bennett, 1–14. Cambridge, MA: MITWPL.
- An, Duk-Ho. 2016. Extra deletion in fragment answers and its implications. *Journal of East Asian Linguistics* 25: 313–350.
- An, Duk-Ho. 2019. On certain adjacency effects in ellipsis contexts. *Linguistic Inquiry* 50: 337–355.
- Chung, Sandra, William A. Ladusaw, and James McCloskey. 1995. Sluicing and logical form. *Natural Language Semantics* 3: 239–282.
- Citko, Barbara, and Martina Gračanin-Yuksek. 2013. Towards a new typology of coordinated *wh*-questions. *Journal of Linguistics* 49: 1–32.
- Fiengo, Robert, and Robert May. 1994. *Indices and identity*. Cambridge, MA: MIT Press.
- Giannakidou, Anastasia, and Jason Merchant. 1998. Reverse sluicing in English and Greek. *The Linguistic Review* 15: 233–256.
- Gračanin-Yuksek, Martina. 2007. "About sharing." Doctoral dissertation, MIT.
- Grano, Thomas, and Howard Lasnik. 2018. How to neutralize a finite clause boundary: Phase theory and the grammar of bound pronouns. *Linguistic Inquiry* 49: 465–499.
- Haida, Andreas, and Sophie Repp. 2011. "Mono-clausal question word coordinations across languages." *Proceedings of the 39th Annual Meeting of the North East Linguistic Society*, edited by Suzi Lima, Kevin Mullin, and Brian Smith, 373–386. Amherst, MA: GLSA.
- Hiraiwa, Ken, and Shinichi Ishihara. 2002. "Missing links: Cleft, sluicing, and "no *da*" construction in Japanese." In *Proceedings of the 2nd HUMIT Student Conference in Language Research*, MIT Working Papers in Linguistics 43, edited by Tania Ionin, Heejeong Ko and Andrew Nevins, 35–54. Cambridge, MA: MITWPL.
- Hoji, Hajime. 1985. "Logical form constraints and configurational structures in Japanese." Doctoral dissertation, University of Washington.
- Hoji, Hajime. 1998. Null object and sloppy identity in Japanese. *Linguistic Inquiry* 29: 127–152.
- Ishii, Toru. 2014. "On coordinated multiple *wh*-questions." In *Proceedings of Formal Approaches to Japanese Linguistics* 7, edited by Shigeto Kawahara and Mika Igarashi, 89–100. Cambridge, MA: MITWPL.

- Jackendoff, Ray S. 1971. Gapping and related rules. *Linguistic Inquiry* 2: 21–35.
- Johnson, Kyle. 2009. Gapping is not (VP-) ellipsis. *Linguistic Inquiry* 40: 289–328.
- Kasai, Hironobu. 2016. Coordinated *wh*-questions in Japanese. *Lingua* 183: 126–148.
- Kazenin, Konstantin. 2002. “On coordination of *wh*-phrases in Russian.” Ms. Tübingen University and Moscow State University.
- Koizumi, Masatoshi. 2000. String vacuous overt verb raising. *Journal of East Asian Linguistics* 9: 227–285.
- Kuno, Susumu. 1978. Japanese: “A characteristic OV language.” In *Syntactic typology: Studies in the phenomenology of language*, ed. Winfred P. Lehmann, 57–138. Austin, TX: University of Texas Press.
- Langacker, Ronald. 1969. On pronominalization and the chain of command. In *Modern studies in English: Readings in transformational grammar*, ed. David A. Reibel and Sanford A. Schane, 160–186. Englewood Cliffs, NJ: Prentice Hall.
- Lipták, Anikó. 2003. Conjoined questions in Hungarian. In *Multiple wh-fronting*, ed. Cedric Boeckx and Kleantes Grohmann, 141–166. Amsterdam: John Benjamins.
- Lipták, Anikó. 2011. Strategies for *wh*-coordination. *Linguistic Variation* 11 (2): 149–188.
- Merchant, Jason. 2001. *The syntax of silence: Sluicing, islands, and the theory of ellipsis*. Oxford: Oxford University Press.
- Mukai, Emi. 2003. “On verbless conjunction in Japanese.” In *Proceedings of the thirty-third annual meeting of the North East Linguistic Society*, edited by Makoto Kadowaki and Shigeto Kawahara, 205–223. Charleston, SC: BookSurge.
- Park, Myung-Kwan. 2006. The syntax of conjoined *wh*-elements in English: A preliminary study. *Studies in Generative Grammar* 16: 555–565.
- Pesetsky, David. 1987. “*Wh*-in-situ: Movement and unselective binding.” In *The representation of (in) definiteness*, edited by Eric J. Reuland and Alice G.B. ter Meulen, 98–129. Cambridge, MA: MIT Press.
- Sabbagh, Joseph. 2007. Ordering and linearizing rightward movement. *Natural Language and Linguistic Theory* 25: 349–401.
- Saito, Mamoru. 1985. “Some asymmetries in Japanese and their theoretical implications.” Doctoral dissertation, MIT.
- Saito, Mamoru. 1987. Three notes on syntactic movement in Japanese. In *Issues in Japanese Linguistics*, ed. Takashi Imai and Mamoru Saito, 301–350. Dordrecht: Foris.
- Takano, Yuji. 2002. Surprising constituents. *Journal of East Asian Linguistics* 11: 243–301.
- Takano, Yuji. 2015. Surprising constituents as unlabeled syntactic objects. *Nanzan Linguistics* 10: 55–73.
- Wasow, Thomas. 1972. “Anaphoric relations in English.” Doctoral dissertation, MIT.

Publisher's Note Springer Nature remains neutral with regard to jurisdictional claims in published maps and institutional affiliations.

Springer Nature or its licensor (e.g. a society or other partner) holds exclusive rights to this article under a publishing agreement with the author(s) or other rightsholder(s); author self-archiving of the accepted manuscript version of this article is solely governed by the terms of such publishing agreement and applicable law.