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Hierarchical Structures of Constituent Questions in Japanese*

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1. Introduction

Japanese is a *wh*-in-situ language, where interrogative phrases (i.e., *wh*-phrases) remain in place without undergoing *wh*-movement. It is well-observed that Japanese questions possess properties different from those observed in English questions. In English constituent questions (i.e., *wh*-questions), an interrogative phrase is placed in the clause-initial position, but Japanese constituent questions have no such requirement, as exemplified in (1).

- (1) a. **What** did you buy?
b. John-wa **nani-o** kat-ta no?
John-TOP what-ACC buy-PAST Q
(lit.) ‘John bought what?’

In Japanese, interrogative phrases are not required to appear in the clause-initial position, as in (1b), although they can be moved to the clause front by scrambling. While Japanese does not implement overt *wh*-movement, it is often claimed that interrogative phrases undergo *wh*-movement to their scope position at the LF level (Huang 1982). In the literature on Japanese, some issues are raised regarding constituent questions.

- (2) a. The anti-superiority effect (Watanabe 1992; Saito 1987)
b. The sorting key hypothesis (Kuno 1982; Kuno and Takami 1993)
c. The merger site of *naze* ‘why’ (Ko 2005)

In this paper, I will discuss the issues given in (2) (to varying degrees). After providing an illustration of general properties of constituent questions in Japanese, I will advance some novel observations on how *naze* ‘why’ and *soo* ‘how’ behave in multiple constituent questions. Then, I will argue that the anti-superiority effect can be treated by the sorting key hypothesis, which has first been proposed by Kuno (1982). It is also shown that the

adjunct interrogative phrase *naze* ‘why’, which undergoes LF *wh*-movement, displays a superiority effect. Further, I argue that *naze* is externally merged in a structural position lower than the position where *itu* is externally merged.

2. The anti-superiority effect induced by *naze*

In generative grammar, it is widely recognized that languages are divided into two types according to whether *wh*-movement takes place in overt syntax. English is a *wh*-movement language, where constituent questions are formed by moving an interrogative phrase to the front of the clause.

- (3) a. **What** did you buy?
b. *You bought **what**?

While (3a) can be a normal information-seeking question, (3b) does not have an information-seeking interpretation although it can have an “echo” interpretation. In contrast, Japanese is a *wh*-in-situ language, which does not implement *wh*-movement. In Japanese, information-seeking constituent questions can be formed without fronting an interrogative phrase.

- (4) a. John-wa **nani-o** kat-ta no?
 John-TOP what-ACC buy-PAST Q
 ‘What did John buy?’
b. **Nani-o** John-wa kat-ta no?
 what-ACC John-TOP buy-PAST Q
 ‘What did John buy?’

The multiple constituent question in (4a), in which *dare* ‘who’ remains in situ, can be an information-seeking question in the same way as the English constituent question in (3a), which has the interrogative phrase in the clause-initial position. In Japanese, it is possible to move an interrogative phrase to the front of the clause, as in (4b), but this fronting is due to scrambling, but not *wh*-movement.

In English, multiple constituent questions ask for a pairing of values to the interrogative phrases, i.e. they are used to solicit pair-list answers (although it is possible to provide a single-pair answer, as a special case). English multiple constituent questions

display superiority effects; a semantic deviance is caused when an interrogative phrase is moved across another higher interrogative phrase, as shown in (5).

- (5) a. **Who** bought **what**?
 b. ***What** did **who** buy?

(5a) is acceptable since there is no interrogative phrase that crosses another interrogative phrase. (5b) is excluded as ungrammatical on the ground that *what*, which initially appears in object position, is moved to the front of the clause across the interrogative phrase *who* in subject position.¹

Japanese can form multiple constituent questions, but no superiority effect is observed for ordinary constituent questions, as shown in (4). But *naze* induces the so-called “anti-superiority” effect, as discussed by Watanabe (1992). The examples in (6) illustrate this point.

- (6) a. *Ano hito-wa **naze** **nani-o** kat-ta no?
 that man-TOP why what-ACC buy-PAST Q
 ‘Why did that man buy what?’
 b. Ano hito-wa **nani-o** **naze** kat-ta no?
 that man-TOP what-ACC why buy-PAST Q
 ‘Why did that man buy what?’

The generalization on *naze*-questions is that *naze* cannot be the leftmost interrogative phrase in multiple constituent questions. In Watanabe (1992), the deviance of (6a) is attributed to a violation of the structural constraint on movement, i.e. the ECP.² Watanabe assumes that in a multiple constituent question like (6), the lower interrogative phrase *naze* first moves to Spec-CP, and then the upper interrogative phrase moves to Spec-CP. On this assumption, Watanabe claims that if *naze* does not move first, its trace fails to be antecedent-governed, the result of which is that (6a) is unacceptable in violation of the ECP.

Watanabe (1993) assumes that interrogative phrases in a *wh*-in-situ language move in LF. As I will discuss below, there is good reason to believe that ordinary interrogative phrases take scope without *wh*-movement. If so, (6a) is not ruled out in violation of the ECP. Rather, I argue that the deviance of (6a) comes from the fact that *naze* does not serve as a sorting key (in the sense of Kuno (1982)). I will turn to this discussion in the next section.

3. The sorting key hypothesis

Kuno (1982) advances the sorting key hypothesis to account for how the speaker expects the values of interrogative phrases to be organized in an answer to a multiple constituent question (see also Kuno and Takami 1993). In this section, I argue that this hypothesis is viable to explain the facts regarding the anti-superiority effect. I argue that the adjunct *naze* ‘why’ cannot stand as an initial interrogative phrase in a multiple constituent question since it is not capable of serving as a sorting key.

To begin, Kuno (1982) notes that in a multiple constituent question, the initial interrogative phrase functions as a sorting key and a non-initial interrogative phrase as a dependent variable. It is claimed that the answer to a multiple constituent question is organized in such a way that the pair-list of the answer is ordered according to the list of values assigned to the initial interrogative phrase. To lend concreteness, observe that the multiple constituent questions in (7) solicit answers in different ways depending on how the interrogative phrases are ordered.

- (7) a. **What** did you buy **where**?
 b. **Where** did you buy **what**?

According to Kuno, the initial interrogative phrase in (7a) asks for the identity of the items purchased. Thus, (8a), where the information is ordered according to the purchased items, is expected for an answer to (7a). On the other hand, (8b) would be an expected answer for (7b) since the answer is expected to be provided according to the list of places visited by the hearer.

- (8) a. I bought perfume in London, jewelry in Rome, and watches in Paris.
 b. In London, I bought perfume, in Rome, I bought jewelry, in Paris, I bought watches.

It should be emphasized here that, despite the Kuno and Takami’s (1994) claim, checking how answers to multiple constituent questions are arranged is not an optimal way of evaluating the sorting key hypothesis in Japanese. This is due to the fact that there are other factors that can affect how answers are organized. For instance, the speakers I consulted judge that A1 or A2 could be a possible answer to the multiple constituent question in (9), where the initial interrogative phrase is *doko* ‘where’.

- (9) Q: Kare-wa **doko-de nani-o** kat-ta no?
 he-TOP where what-ACC buy-PAST Q
 ‘Where did he buy what?’
- A1: London-de koosui-o, Rooma-de hooseki-o, sosite Pari-de
 London-in perfume-ACC Rome-in jewelry-ACC and Paris-in
 tokei-o kat-ta.
 watch-ACC buy-PAST
 ‘(He bought) perfume in London, jewelry in Rome, and watches in Paris.’
- A2: (?)Koosui-o London-de, hooseki-o Rooma-de, sosite tokei-o
 perfume-ACC London-in jewelry-ACC Rome-in and watch-ACC
 Pari-de kat-ta.
 Paris-in buy-PAST
 ‘(He bought) perfume in London, jewelry in Rome, and watches in Paris.’

A1 is an answer in which the values of the interrogative phrases are organized according to the places, and A2 is an answer which has a list of the values for the interrogative phrases ordered by the purchased items. As (9) shows, there is no significant difference in acceptability between A1 and A2. Presumably, this comes from the fact that the order of the values for the interrogative phrases can be changed by scrambling without a significant semantic effect.

Despite this fact, the sorting key hypothesis is viable, and there is good reason to believe that the initial interrogative phrase of a multiple constituent question should count as a sorting key. I suggest that the sorting key hypothesis can be assessed more efficiently by checking the context in which multiple constituent questions can be uttered. Consider (10).

(10) Context: The questioner knows that Mary bought souvenirs in London, Rome and Paris, but does not know what she bought for souvenirs.

- a. Mary-wa **doko-de nani-o** kat-ta no?
 Mary-TOP where-at what-ACC buy-PAST Q
 ‘Where did Mary buy what?’
- b. *Mary-wa **nani-o doko-de** kat-ta no?
 Mary-TOP what-ACC where-at buy-PAST Q
 ‘What did Mary buy where?’

In the context given in (10), the questioner knows which place Mary visited, but does not know what souvenir she purchased. In this context, it is not appropriate to utter the multiple constituent question in (10b), which has *nani* ‘what’ and *doko* ‘where’ in that order. In contrast, the constituent question that has *doko* ‘where’ as the first interrogative phrase is felicitous.

The opposite is true in (11). In (11), an appropriate multiple constituent question is the one in which *nani* ‘what’ appears as the initial interrogative phrase, but not the one in which *doko* ‘where’ appears as the first interrogative phrase.

(11) Context: The questioner knows that Mary bought perfume, jewelry and watches abroad, but does not know the places she visited.

- a. *Mary-wa **doko-de** **nani-o** kat-ta no?
 Mary-TOP where-at what-ACC buy-PAST Q
 ‘Where did Mary buy what?’
- b. Mary-wa **nani-o** **doko-de** kat-ta no?
 Mary-TOP what-ACC where-at buy-PAST Q
 ‘What did Mary buy where?’

In the context where the questioner knows what souvenir Mary bought, but does not know where she went, it is not felicitous to utter the question in (11a). By contrast, (11a), where the interrogative phrase *nani* precedes the interrogative phrase *doko*, can be uttered without any problem.

The difference between (10) and (11) comes from the presence or absence of a list of possible values for the interrogative phrases in the context. The context in (10) shows that the list of items Mary bought, but not the places she visited, is available. Conversely, no list of items Mary purchased is available, but the places she visited are known in (11). In both cases, the initial interrogative phrase represents the information that can be used for organizing possible pair-list answers (and it is not possible to imagine what list can be made available by the non-initial interrogative phrase). It should be apparent then that a well-formed multiple constituent question is formed when the initial interrogative phrase can be used as a sorting key to set up a possible pair list.

In Japanese, ordinary interrogative phrases can be scrambled without displaying a superiority effect. The interrogative phrase that appears first in the surface linear order serves as the sorting key. (12) is a case where *dare* ‘who’ serves as a sorting key.

(12) Context: Mary, Jane and Judy bought different souvenirs when they traveled abroad. The questioner knows which place they visited, but does not know what they bought for souvenirs.

- a. **Dare-ga nani-o** kat-ta no?
 who-NOM what-ACC buy-PAST Q
 ‘Who bought what?’
- b. ***Nani-o dare-ga** kat-ta no?
 what-ACC who-NOM buy-PAST Q
 ‘What did who buy?’

The context provides a list of the individuals who traveled, which allows us to set up a list of the values for *dare*, and thus, (12a), but not (12b), is acceptable. In (13), by contrast, a list of souvenirs is available, so a pair-list answer can be arranged by the items purchased. This means that *nani* ‘what’ can be used as a sorting key in (13).

(13) Context: The questioner knows Mary’s friends bought perfume, jewelry and watches when they traveled abroad, but does not know how many friends traveled.

- a. ***Dare-ga nani-o** kat-ta no?
 who-NOM what-ACC buy-PAST Q
 ‘Who bought what?’
- b. **Nani-o dare-ga** kat-ta no?
 what-ACC who-NOM buy-PAST Q
 ‘What did who buy?’

In (13), the initial interrogative phrase cannot be *dare* ‘who’, since no list of Mary’s friends is available in the context.

The examples in (12) and (13) illustrate that the initial interrogative phrases count as sorting keys, and that multiple constituent questions are interpreted on the basis of the surface order of the interrogative phrases, i.e. the base (or pre-scrambling) word order does not play a role.

4. What kind of interrogative phrase qualifies a sorting key?

Ordinary interrogative phrases can be the initial ones in multiple constituent questions. Given that *naze* ‘why’ cannot appear as the first interrogative phrase, it can be hypothesized that *naze* cannot be a sorting key. In fact, there is evidence that *naze* cannot

be associated with a list of reasons available in the context, suggesting that the anti-superiority effect is caused by a semantic/pragmatic constraint rather than a syntactic constraint. While Watanabe (1992) only discusses the case of *naze*-questions, the anti-superiority effect is found not only with *naze* ‘why’ but also with *doo* ‘how’.

To make this point, consider the examples in (14), which illustrates that ordinary interrogative phrases can be linked to a list of items available in the context, and hence can qualify as sorting keys.

- (14) a. Taro-to Hanako-to Ziro-no uti, **dare-ga** Tokyo-ni it-ta no?
 Taro-and Hanako-and Ziro-GEN among who-NOM Tokyo-to go-PAST Q
 ‘Who went to Tokyo, Taro, Hanako, or Ziro?’
 b. Nitiyoo, doyoo, getuyoo-no uti, anata-wa **itu** iki-ta-i no?
 Sunday, Saturday, Monday-GEN among you-TOP when go-want-PRES Q
 ‘Which day would you like to go, Sunday, Saturday, or Monday?’

In both (14a) and (14b), the preceding clause provides a list of possible values for the interrogative phrase, and the constituent question is understood as an alternative question. In (14a), the second clause is a constituent question containing the interrogative phrase *dare* ‘who’, and a list of possible values for *dare* ‘who’ is available in the preceding clause. In this grammatical context, the constituent question can be understood as an alternative question asking for the value of the interrogative phrase *dare* to be chosen from the list. The same is true for the interrogative phrase *itu* ‘when’ in (14b).

While ordinary interrogative phrases can generally be associated with a list of possible values that are contextually available, the reason adjunct *naze* ‘why’ and the manner adjunct *doo* ‘how’ are exceptions to this rule.

- (15) a. *Korera mit-tu-no riyuu-no uti, **naze** sore-ga i-i no?
 these three-CL-GEN reason-GEN among why that-NOM good-PRES Q
 ‘Why is that good out of these three reasons?’
 b. *Sokutatu, kakitome-no uti, kare-wa sono tegami-o **doo**
 express, register-GEN among he-TOP that letter-ACC how
 toriatukat-ta no?
 treat-PAST Q
 ‘How did he treat that letter, by express or registered mail?’

(15a) shows that *naze* cannot be used as an alternative question asking the hearer to choose a value for the interrogative phrase from a number of possible reasons for the preference. (15b) is a case where *doo* is used. As with *naze*, *doo* cannot be used as an alternative question to choose a value from the list provided.

The above-noted exceptional behavior of the interrogative phrases *naze* and *doo* leads to the expectation that they will not qualify as sorting keys and cannot be used as initial interrogative phrases in multiple constituent questions soliciting pair-list answers. This expectation is indeed borne out.

- (16) a. *Kare-wa **naze** **nani-o** kat-ta no?
 he-TOP why what-ACC buy-PAST Q
 ‘Why did he buy what?’
 b. *Kare-wa **doo** **nani-o** atukat-ta no desu ka?
 he-TOP how what-ACC treat-PAST COMP COP Q
 ‘How did he treat what?’

On the other hand, these interrogative phrases are allowed to occur in multiple constituent questions if they are not the initial interrogative phrases, as shown in (17).³

- (17) a. Kare-wa **nani-o** **naze** kat-ta no?
 he-TOP what-ACC why buy-PAST Q
 ‘Why did he buy what?’
 b. Kare-wa **nani-o** **doo** atukat-ta no?
 he-TOP what-ACC how treat-PAST Q
 ‘How did he treat what?’

Furthermore, since neither *naze* nor *doo* can be used as a sorting key, it is not possible to form a multiple constituent question with these phrases.

- (18) a. *Kare-wa **doo** **naze** sore-o atukat-ta no?
 he-TOP how why that-ACC treat-PAST Q
 ‘How did he treat that why?’
 b. *Kare-wa **naze** **doo** sore-o atukat-ta no?
 he-TOP how why that-ACC treat-PAST Q
 ‘Why did he treat that how?’

Both *naze* and *doo* are excluded from appearing as the initial interrogative phrase, so a well-formed multiple constituent question cannot be derived with these two interrogative phrases.

In short, well-formed constituent questions can be formed when they consist only of ordinary interrogative phrases, as in (19a), or when *naze* ‘why’ and *doo* ‘how’ appear as non-initial interrogative phrases serving as dependent variables, as in (19b). Legitimate multiple constituent questions cannot be formed when *naze* and *doo* are initial interrogative phrases, since they cannot serve as sorting keys, as in (19c).

- | | | | | |
|---------|--------------------|-----|--------------------|----------------------------------|
| (19) a. | [Ordinary WH | ... | Ordinary WH] | (multiple constituent question) |
| | Sorting key | | Dependent variable | |
| b. | [Ordinary WH | ... | <i>Naze/Doo</i>] | (multiple constituent question) |
| | Sorting key | | Dependent variable | |
| c. | *[<i>Naze/Doo</i> | ... | Ordinary WH] | (*multiple constituent question) |
| | Sorting key | | Dependent variable | |

Whether or not multiple constituent questions are interpreted appropriately is determined by the properties of the interrogative phrases. In particular, well-formed multiple constituent questions can be formed only when the initial interrogative phrase functions as a sorting key.

5. Structural position of *naze*

Ko (2005) advances the claim that a reason adjunct is merged externally with Spec-CP (in Korean and Japanese).⁴ The implication of Ko’s analysis is that a reason adjunct like *naze* appears in a higher position than other interrogative phrases, including subject interrogative phrases. In this section, I show that *naze* is not externally merged with Spec-CP, but rather it is merged externally in a lower position than the temporal adjunct *itu* ‘when’ in Japanese (Kishimoto 2017).

There are several pieces of evidence that a reason adjunct cannot be merged directly with CP. A first piece of evidence comes from the fact that CP is a domain where an interrogative phrase cannot be placed by base-generation. In Japanese, some phrases and clauses are positioned above TP, as noted by Takubo (1987) (see also Minami 1974, 1993). For instance, a concessive clause appears in the CP layer, and cannot be turned into a constituent question that includes an interrogative phrase in it.

- (20) a. Tomodati-wa hanasa-nakat-ta keredo, Takao-wa kaigi-de hanasi-ta.
 friend-TOP speak-NEG-PAST though Takao-TOP meeting-at speak-PAST
 ‘Although his friend did not speak, Takao spoke at the meeting.’
 b. ***Dare-ga** hanasa-nakat-ta keredo, Takao-wa kaigi-de hanasi-ta no?
 who-NOM speak-NEG-PAST though Takao-TOP meeting-at speak-PAST Q
 (lit.) ‘Although who did not speak, Takao spoke at the meeting?’

Evaluative phrases, such as *odoroi-ta koto-ni* ‘to one’s surprise’, constitute modal-like elements appearing in the CP domain. A constituent question cannot be formed with the evaluative *odoroi-ta koto-ni* containing an interrogative phrase, either.

- (21) a. [Tanaka-san-no odoroi-ta koto-ni] ano hito-wa tomodati-ni at-ta.
 Tanaka-Mr.-GEN surprise-PAST fact-DAT that man-TOP friend-DAT meet-PAST
 ‘To Mr. Tanaka’s surprise, that man met his friend.’
 b. ***[Dare-no odoroi-ta koto-ni]** ano hito-wa tomodati-ni at-ta no?
 who-GEN surprise-PAST fact-DAT that man-TOP friend-DAT meet-PAST Q
 (lit.) ‘To whose surprise, that man met his friend?’

The underlined expressions given in (20) and (21) belong to the class of expressions appearing in the CP-domain, where a topic appears (Kishimoto 2009). There are a number of grammatical contexts in which a topic is not allowed. One such context is provided by restrictive relative clauses.

- (22) *Ken-ga [sono hon-wa yon-da] hito-ni at-ta.
 Ken-NOM that book-TOP read-PAST person-DAT meet-PAST
 ‘Ken met the person who read that book.’

Just as a topic is excluded from a restricted relative clause, so the underlined expressions in (20) and (21) are prevented from occurring in a restrictive relative clause, as shown in (23).

- (23) a. *[Tomodati-ga hanasa-nakat-ta keredo, Takao-ga hanasi-ta] kaigi-ni
 friend-NOM speak-NEG-PAST though Takao-TOP speak-PAST meeting
 de-ta.
 attend-PAST
 ‘I attended the meeting at which although his friend did not speak, Takao spoke.’

- b. *Watasi-wa [ano hito-ga Tanaka-san-no odorita koto-ni at-ta]
 I-TOP that man-NOM Tanaka-Mr.-GEN surprise-PAST fact-DAT meet-PAST
 hito-o mi-ta.
 man-ACC see-ACC
 ‘I saw a man who to Mr. Tanaka’s surprise, that man met.’

The data suggest that constituent questions be formed only when interrogative phrases are located below TP, which I claim constitutes the interrogative domain, as in (24).

- (24) [CP *WH [TP WH]]
└──────────┘
Interrogative domain

If the interrogative phrase *naze* is directly merged with CP, as claimed by Ko (2005), it is expected that a *naze*-question can never be formed, contrary to fact. The fact that it is possible to formulate a *naze*-question without problem suggests that *naze* is merged at a position lower than CP and is raised to CP to function as an operator to form an operator-variable structure at LF.

A second piece of evidence comes from the interaction of *naze* with other interrogative phrases. As noted earlier, *naze* and *doo* pattern together, in that they do not serve as sorting keys. Nevertheless, these interrogative phrases behave differently with regard to movement diagnostics. As discussed by a number of researchers, such as Fukui (1988) and Nishigauchi (1990), when *naze* is embedded in a syntactic island, it gives rise to an island violation (see also Tsai 1994).

- (25) *Ken-wa [[kono sakka-ga **naze** kai-ta] hon-o] yon-da no?
 Ken-TOP this writer-NOM why write-PAST book-ACC read-PAST Q
 (lit.) ‘Ken read the book that this writer wrote why?’

This effect is not observed for ordinary interrogative phrases that can serve as sorting keys in multiple constituent questions.

- (26) Ken-wa [[**dare**-ga kai-ta] hon-o] yon-da no?
 Ken-TOP who-NOM write-PAST book-ACC read-PAST Q
 (lit.) ‘Ken read the book that who wrote?’

The interrogative phrase *doo* patterns with ordinary interrogative phrases in that it can be embedded in a syntactic island, as shown in (27).

- (27) Kare-wa [[Ken-ga sore-o **doo** atukat-ta] koto-o] mondai-ni si-ta no?
 he-TOP Ken-NOM that-ACC how treat-PAST fact-ACC problem-COP do-PAST Q
 (lit.) ‘How is he considered problematic the fact that Ken treated it?’

Given that an island effect is caused by extracting an interrogative phrase from a syntactic island, it is reasonable to postulate that *naze* undergoes LF *wh*-movement, while other interrogative phrases do not.

If *naze* is subject to *wh*-movement at LF, it is expected to show a superiority effect when it moves to a higher position across another interrogative phrase, as in English multiple constituent questions. In point of fact, multiple constituent questions result in unacceptability when interrogative phrases appear in a clause higher than the one containing *naze*, as shown in (28) (cf. Saito 1994).

- (28) ***Dare-ga** [Ken-ga **naze** koko-ni i-ru to] it-ta no?
 who-NOM Ken-NOM why here-at be-PRES that say-PAST Q
 ‘Who told that Ken is here and why?’

(28) cannot be interpreted as a multiple constituent question asking for a pair list of persons and reasons. It could be understood as a conjoined constituent question, which is semantically equivalent to questions like (29).

- (29) a. Where and when did you go?
 b. Where did you go and when?

The conjoined constituent questions that ask for the values of the *wh*-phrases independently are not usable as multiple constituent questions.

The interrogative phrase *doo* ‘how’ and *doko* ‘where’ can form multiple constituent questions with a long-distance relation. Both sentences in (30), unlike (29), are understood as normal multiple constituent questions with a pair-list interpretation.

- (30) a. **Dare-ga** [Ken-ga sono mondai-o **doo** kangae-ta to] it-ta no?
 who-NOM Ken-NOM that problem-ACC how consider-PAST that say-PAST Q
 ‘Who told that how Ken considered that problem?’

- b. **Dare-ga** [Ken-ga **doko-ni** i-ru to] it-ta no?
 who-NOM Ken-NOM where-at be-PRES that say-PAST Q
 ‘Who told that Ken is staying where?’

The interrogative phrase *dare* in (28) is located in a higher position than *naze*, the former c-commanding the latter. Given that *naze* induces LF *wh*-movement, the failure of (28) to obtain a multiple question interpretation can be attributed to the superiority effect incurred by *naze*’s undergoing movement across the higher interrogative phrase *dare*, as depicted in (31a).

- (31) a. *[CP **naze** [TP **dare** [CP [TP ~~naze~~]]]]

 b. [CP [TP **dare** [CP [TP **doo**]]]]

The superiority effect is not induced by other interrogative phrases owing to the absence of their LF movement.

Importantly, the semantic anomaly caused in violation of the superiority condition is found not only in multiple constituent questions with a long-distance relation, but also in multiple constituent questions with a local relation. For instance, the sentences in (32), where *naze* is combined with *itu* ‘when’, cannot be understood as an information-seeking multiple constituent question asking for a pair-list answer of reasons and occasions.

- (32) a. *Kare-wa **naze** **itu** hon-o kat-ta no?
 he-TOP why when book-ACC buy-PAST Q
 ‘Why did he buy the book when?’
 b. *Kare-wa **itu** **naze** hon-o kat-ta no?
 he-TOP when why book-ACC buy-PAST Q
 ‘When did he buy the book why?’
 c. Kare-ga **nani-o** **naze** kat-ta no?
 he-NOM what-ACC why buy-PAST Q
 ‘What did he buy why?’

An anti-superiority effect is incurred in (32a). This results from *naze* occurring before *itu* (in the linear order). As discussed earlier, this effect emerges since *naze* cannot serve as a sorting key. (32b) is a case where a pair-list answer is not possible although it is possible

to have a conjoined question interpretation. By contrast, (32c) is a legitimate information-seeking question.

The manner adjunct *doo* ‘how’ behaves as an ordinary interrogative phrase. If *doo* occurs as a non-initial interrogative phrase, it can form an ordinary multiple constituent question asking for a pair-list answer with the interrogative phrase *itu* ‘when’.

- (33) a. Kare-wa **itu** sono mondai-o **doo** kangae-ta no?
 he-TOP when that problem-ACC how consider-PAST Q
 (lit.) ‘When did he consider that problem how?’
 b. Kare-wa **itu nani-o** kat-ta no?
 he-TOP when what-ACC buy-PAST Q
 ‘What did he buy when?’

The asymmetry found in the behavior of *naze* and *doo* in (32b) and (33a) is the same as that found in the long-distance cases in (28) and (30a). Thus it is reasonable to state that the difference in acceptability between *naze* and *doo* in these examples arises according to whether LF *wh*-movement applies in the interrogative phrase.

Specifically, LF *wh*-movement applies to *naze*. Thus, a superiority effect emerges in (32b), since *naze* is moved across *itu* ‘when’ at LF, as depicted in (34a).

- (34) a. $*[_{CP}$ **naze** $[_{TP}$ **itu** $[_{TP}$ **naze** $]]]$

 b. $[_{CP}$ $[_{TP}$ **itu** $[_{TP}$ **nani/doo** $]]]$

(32b) is semantically anomalous as a pair-list question because the LF movement of *naze* violates the superiority condition. In contrast, *doo*, like other ordinary interrogative phrases, does not undergo LF *wh*-movement, and thus (33a) is acceptable without exhibiting any superiority effect.

The data thus far suggest that *itu*, but not other interrogative phrases, is located in a position that incurs a violation of the superiority condition. This fact suggests that the hierarchical positions of interrogative phrases are ranked as in (35).

- (35) itu < naze < dare, doko, nani

In both (32b) and (32c), *naze* appears to the right of the other interrogative phrase in the surface strings. Nevertheless, a difference in acceptability emerges between *itu* ‘when’

and *nani* ‘what’. Since the surface order of the interrogative phrases can be switched by scrambling, this fact suggests that LF movement of *naze* applies to the pre-scrambling structure.

In Japanese, *itu* appears in the highest position in the clause. By contrast, the English examples in (36) through (38) suggest that the interrogative phrase *who* is located in a higher position than any other interrogative phrase (see e.g. Bolinger 1972; Kuno and Robinson 1972; Faneslow 2004).

- (36) a. Who bought what?
b. *What did who buy?
- (37) a. Who went where?
b. *Where did who go?
- (38) a. Who arrived when?
b. *When did who arrive?

In Japanese, *itu* ‘when’ is positioned higher than *dare* ‘who’, whereas in English *who* is positioned higher than *when*. This fact raises the question as to why this is the case. I suggest that the discrepancy is attributed to a difference in the position of the tense between the two languages.

To be concrete, Kishimoto (2017) argues that the T-head undergoes head movement to Fin in declarative clauses, the tense taking scope over TP, while the T-head remains in place in English declarative clauses, as in (39).

- (39) a. Japanese: [ForceP [IntP [Fin [TP SUBJ V-v T-~~Fin~~] Int] Force]
 b. English: [ForceP [IntP [Fin [TP SUBJ V-v T] Fin] Int] Force]

On this premise, I propose that in Japanese, the interrogative phrase *itu* is adjoined to TP, which is the closest position to the T head appearing in the head position of FinP as a result of its head movement. In English, by contrast, the T-head resides in the head position of TP.⁵ Thus, *when* is adjoined to vP, which is the closest adjoined position to the tense.

The multiple constituent question in (32b) shows a superiority effect, suggesting that *naze* appears in a structural position lower than *itu*. The interrogative phrase *itu* occurs in the TP domain. This is confirmed by the fact that a *sika-nai* construction can be derived from a constituent question with *itu*, as well as other interrogative phrases, as in (40).

- (40) a. Kare-wa **itu-sika** hanase-**na-i** no?
 he-TOP when-only can.speak-NEG-PRES Q
 ‘Only when can he speak?’
 b. Kare-wa **doko-de-sika** hanase-**na-i** no?
 he-TOP where-at-only can.speak-NEG-PRES Q
 ‘Only where can he speak?’

Constituents to which *sika* is adjoined serve as NPIs. As discussed by Kishimoto (2017), the scope of a clausal negator *nai* extends over TP. The acceptability of the examples in (40) then shows that the interrogative phrases *itu-sika* and *doko-de-sika* are licensed as NPIs under the scope of negation. This in turn means that these *wh*-phrases are located below TP.

Note that constituents with *sika* appearing in the CP domain are not licensed under the scope of negation, so (41a) is not acceptable.

- (41) a. *[John-ga/no odoroi-ta koto-ni-**sika**] Mary-wa hanasa-**naka**-ta.
 John-NOM/GEN surprise-PAST that-DAT-only Mary-TOP speak-NEG-PAST
 ‘Only to John’s surprise, Mary spoke.’
 b. Mary-wa [John-ga/no it-ta koto-ni-**sika**] hannoo-si-nakat-ta.
 Mary-TOP John-NOM/GEN say-PAST that-DAT-only response-do-NEG-PAST
 ‘Mary responded to only what John said.’

The expression *koto-ni* accompanied by *sika* is legitimate under the scope of negation when it appears as a complement to the verb *hannoo-suru* ‘respond’ in (41b). Since this expression is compatible with *sika*, (41a) must be excluded on the ground that the *koto-ni* phrase is located outside the scope of negation.

Adverbial adjuncts are inherently incompatible with *sika*, so the expressions **naze-sika* and **doo-sika* are simply ungrammatical. Nevertheless, given that *itu-sika* is licensed by the clausal negator in (40a) and that *naze* induces a superiority effect in (32b), it can be stated that *naze* is located in a position structurally lower than *itu*. Note that if *naze* can be merged with Spec-CP, we would not expect (32b) to display a superiority effect. The unacceptability of (32b) provides evidence against Ko’s proposal that a reason adjunct can be externally merged with Spec-CP.

As a final point, note that in Watanabe’s analysis, *naze* is allowed to move from a position lower than *dare* to its scope position in (42a). This kind of movement is

illegitimate in English multiple constituent questions, since the movement of *why* violates the superiority condition, as seen in (42b).

- (42) a. **Dare-ga naze** hon-o kat-ta no?
 who-NOM why book-ACC buy-PAST Q
 (lit.) ‘Who bought books why?’
 b. *Why did who buy the book?

The adjunct interrogative phrase *naze* in (42a) appears in a structural position that does not induce a superiority effect in a multiple constituent question with *dare*. In fact, (42a) is acceptable since neither the anti-superiority condition nor the superiority condition is violated. When *dare* appears as the first interrogative phrase, it can serve as a sorting key, and thus (42a) does not show an anti-superiority effect. Furthermore, given that *wh*-movement applies to the pre-scrambling structure, and that the surface order of *dare-naze* in (42a) is derived by scrambling, the LF *wh*-movement of *naze* does not induce a superiority effect. Then it proves that the fact of (42a) does not lend support to Watanabe’s claim that the LF *wh*-movement of *naze* is legitimate when it is moved to a higher position across another interrogative phrase.

6. Conclusion

In this paper, I have discussed some issues surrounding multiple constituent questions in Japanese: the anti-superiority effect, the sorting key hypothesis, and the merger site of *naze*. Ordinary interrogative phrases can serve as sorting keys, so they can be the initial interrogative phrases in multiple constituent questions to ask for pair-list answers, but *naze* and *doo* cannot since they do not serve as sorting keys. The reason adjunct *naze* differs from *doo* and other interrogative phrases, in that only *naze* is subject to LF *wh*-movement. Accordingly, *naze* induces a superiority effect when it is moved over another interrogative phrase by LF *wh*-movement. The different properties of interrogative phrases are summarized in (43).

(43)		<i>itu</i> ‘when’	<i>dare</i> ‘who’	<i>doko</i> ‘where’	<i>doo</i> ‘how’	<i>naze</i> ‘why’
	Sorting Key	yes	yes	yes	no	no
	LF movement	no	no	no	no	yes

In multiple constituent questions, *naze* and *doo* appearing as the initial interrogative phrases give rise to an anti-superiority effect since they cannot function as sorting keys. For the merger site of *naze*, it has been shown that it cannot be externally merged with CP, and that *naze* is externally merged in a structural position lower than the position where *itu* is externally merged. Thus, a superiority effect is observed in a single-clause multiple constituent question when *naze* follows *itu*. This effect is also observed when *naze* is located in a clause lower than the clause including ordinary interrogative phrases. The superiority condition is violated in such constituent questions, since *naze* undergoes LF *wh*-movement across some interrogative phrase to reach its scope position. In contrast, other interrogative phrases, including *dare*, are not subject to *wh*-movement, so that they induce no superiority effect in multiple constituent questions.

Notes

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¹ In English, when *wh*-phrases are D-linked, the superiority effect is not observed even if one interrogative phrase is moved across another interrogative phrase by *wh*-movement. (Pesetsky 1987; Kotek 2018).

- (i) a. Which student read which book?
- b. Which book did which student read?

² Some special assumptions are necessary to account for the peculiar behavior of the reason adjunct *why*. Some researchers (e.g., Rizzi 1990) claim that its peculiar behavior comes from non-referentiality (see also Huang 1982).

³ In English, *why* is not allowed to appear as a non-initial interrogative phrase (see May 1985).

- (i) a. Why did you buy what?
- b. *What did you buy why?

Kuno and Takami (1982) attempt to account for this fact by a list requirement, and claim that (ib) is ruled out by *why*'s inability to be associated with a list. But this analysis raises the question why the same functional constraint does not apply to *naze*, which can appear as a non-initial interrogative phrase. A simple account for the difference can be given on the assumption that both *why* and *naze* are operators that need to be raised to Spec-CP although the exact details are

left open for further research. To be specific, the facts are accounted for as follows: In English, *why* must appear in clause-initial position since the language implements *wh*-movement in overt syntax. In Japanese, by contrast, *naze* undergoes *wh*-movement at LF, and thus, it is allowed to appear in clause-medial position on the surface.

- 4 Ko's (2005) analysis is primarily motivated by the absence of an intervention effect with *way* 'why' in Korean and *naze* 'why' in Japanese. But Ko herself notes that there is speaker variation about the relevant judgments. Ko's proposal draws on the judgment that a reason adjunct does not induce an intervention effect, but Tanaka (1997) reports that the reason adjunct *naze* induces an intervention effect.
- 5 Kishimoto (2017) adopts the view that CP is divided into a number of distinct projections such as ForceP, TopP and FinP in line with the cartographic approach (Rizzi 1997, 2004). English sometimes implements T-to-C movement, but this movement is not induced for the purpose of fixing the scope of tense. In such cases, the position of *when* is determined relative to the position of T in the structure before T-to-C movement applies.

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