WH-QUESTIONS IN CHINESE AND JAPANESE I: ANTI-CROSSING AND ANTI-SUPERIORITY*

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1. Introduction

Chinese and Japanese are often classified in the same language-type (Chomsky 1986 among others) since both of them are *wh-in-situ* languages. Then, it might appear that this aspect of these two languages can be analyzed in the same way. In this paper, however, we will argue that *wh*-arguments in Chinese and Japanese have different properties and must be analyzed in the different way. Specifically, we will explore whether Chinese shows the anti-crossing and the anti-superiority effects, which are found in Japanese (see Saito 2004 and references cited therein). We will show that there is the crucial difference between the behavior of Chinese and Japanese *wh*-arguments with respect to the anti-crossing and anti-superiority effects. Assuming that these effects are induced by *wh*-movement, we will argue that our findings support for Tsai's (1994, 1999, 2006) unselective binding approach, which claims that *wh*-arguments in Chinese do not have to move.

First, we briefly review the similarities and differences of *wh*-phrases in Japanese and Chinese. Let us start with Japanese. It is well known that there is an asymmetry between *wh*-arguments and *wh*-adjuncts in Japanese, as shown in (1).

(1) a. Kimi-wa[[nani-o katta] hito]-o sagasiteru no?
you-TOP what-ACC bought person-ACC looking-for Q

'What is the thing x such that you are looking for [the person [who bought x]]?'

b. *Kimi-wa [[sono hon-o naze katta] hito]-o sagasiteru no?
you-TOP that book-ACC why bought person-ACC looking-for Q

'What is the reason x such that you are looking for [the person [who bought the book for x]]?'

(Based on Saito, 2004)

(1a) contains the *wh*-argument, *nani* 'what' and (1b) contains the *wh*-adjunct, *naze* 'why.' Both of them are embedded in the Complex NP, but only (2b) is ungrammatical. Descriptively speaking, *wh*-arguments can violate the Complex NP Constraint, while *wh*-adjuncts can not.

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This argument-adjunct asymmetry with respect to the Complex NP Constraint can be found in Chinese. Look at examples in (2).

(2) a. Akiu kan -bu -qi [[zuo shenme] de ren]]?
Akiu look -not-up do what PNM person

'What is the thing/job x such that Akiu despises [people [who do x]]?'

b. *Akiu xihuan [Luxun weishenme xie e_i] de shu_i?
Akiu like Luxun why write PNM book

'What is the reason x such that Akiu likes [books [that Luxun wrote for x]]?'
(Tsai, 1999)

(2a) contains the *wh*-argument, *shenme* 'what' while (2b) contains the *wh*-adjunct, *weishenme* 'why,' and only (2b) is ungrammatical. This is parallel to Japanese.

Huang (1982) explains these data by claiming that in *wh-in-situ* languages like Chinese and Japanese, *wh*-phrases move in LF, where Subjacency does not hold. According to his claim, the *wh*-adjuncts in (1b) and (2b) undergo LF movement to the matrix CP. The sentences are ruled out because the traces of *wh*-adjuncts are not properly governed and violate the ECP. The *wh*-arguments in (1a) and (2a) is also moved to the matrix CP in LF. However, since the traces of *wh*-arguments can be lexically governed, their movement only violate Subjacency, which holds in overt syntax but not in LF.

Huang's explanation crucially relies on the ECP, which is abandoned in the minimalist frame work. Instead of the ECP, Tsai (1994) employs the unselective binding to explain the relevant asymmetry. According to his hypothesis, *wh*-arguments are indefinites so that they can feature a variable which can be unselectively bound by a Q-operator freely merged into Spec, CP. In this way, an *in situ wh*-arguments and a Q-operator can form an operator-variable construction. On the other hand, *wh*-adjuncts are genuine operators so that they do not feature the variable. As a result, they have to move to Spec, CP to be licensed, forming the operator-variable relation. In other words, in Chinese only *wh*-adjuncts undergo movement.

In Japanese, however, there is evidence for movement of *wh*-arguments. That is, Japanese observes the *wh*-island effect with *wh*-arguments. The relevant example is shown in (3).

(3) a. ?* John-wa [[Mary-ga nani-o katta] ka-dooka] Tom-ni tazuneta no?
-TOP -NOM what-ACC bought whether -DAT asked Q

'What did John ask Tom whether Mary bought?'

b. Ni xiangzhidao [Lisi xi-bu-xihuan shei]?
you wonder Lisi like-not-like who

'(Lit.) Who do you wonder whether Lisi likes ___ or not?'
#'(Lit.) Is it the case or not that you wonder Lisi likes who?'

In (3a), the *wh*-island effect is observed. Thus, *wh*-arguments undergo movement in Japanese. On the other hand, Chinese wh-arguments do show the *wh*-island effect, as in (3b). This is because Chinese *wh*-arguments do not move but can be bound by the Q-operator in the matrix clause. In this respect, Japanese and Chinese *wh*-phrases differ.

Putting these facts together, *wh*-adjuncts both in Chinese and Japanese undergo movement as illustrated in (4).

(4) $[_{CP}\ why_i\ [_{TP} \ldots t_i \ldots]]$

On the other hand, *wh*-arguments are different between two languages. Chinese *wh*-arguments are subject to unselective binding as shown in (5a) and Japanese *wh*-arguments involve movement as in (5b).

(5) a. $[_{CP}\ Op_i\ [_{TP} \ldots what_i\text{=indef.(x)} \ldots]]$ (Chinese)

b. $[_{CP}\ what_i\ [_{TP} \ldots t_i \ldots]]$ (Japanese)

Yet, recall that the *wh*-argument *nani* 'what' in (1a) does not induce the island effect. Then, why can the *wh*-argument in (1a) move across the Complex NP island? Nishigauchi (1986, 1990) proposes that large-scale pied-piping is available in Japanese. That is, the entire complex NP is moved to Spec, CP in (1a). Thus, the violation of Complex NP constraint does not occur in (1a), and the sentence is grammatical. Following Nishigauchi's pied-piping hypothesis, *wh*-arguments in Chinese and Japanese are schematized in (6a) and (6b) respectively[1].

(6) a. $[_{CP}\ Op_i\ C^0\ [_{TP} \ldots [_{DP1} \ldots [_{DP2}\ what_i\text{=indef.(x)}] \ldots] \ldots]]$ (Chinese)

[1] Watanabe (1992) assumes that in Japanese Q-operator originates from the Spec, DP, which can be the head of the Complex NP itself, and moves to the Spec, CP as illustrated in (i).

(i) $[_{CP}Op_i [\ldots [_{DP1}\ t_i [\ldots [_{DP2}\ \text{indef.(x)}] \ldots]] \ldots]]$

In this structure, the *wh*-phrase within the Complex NP is bound by the Q-operator merged in Spec, DP2, and the Q-operator itself in turn moves to Spec, CP. This analysis is consistent to our argument because it also assumes that there is movement in sentences which contain *wh*-arguments.

b. $[_{CP}\ [_{DP1}\ \ldots[_{DP2}\ \text{what}]\ \ldots]_i\ C^0\ [_{TP}\ \ldots\ t_i\ \ldots]\ \ldots]$ (Japanese)

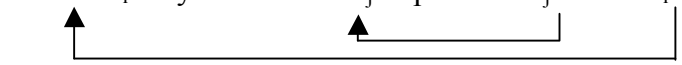
In (6a), the *wh*-arguments are bound by the Q-operator remaining within the Complex NP, whereas in (6b) it pied-pipes the entire Complex NP.

Given these differences of *wh*-arguments between Chinese and Japanese, we naturally expect that they do not always behave in the same way, contrary to its superficial similarity, i.e., being *in-situ*. In this paper, examining a sentence which contains multiple *wh*-phrases we show that *wh*-arguments in Chinese and Japanese behave differently. Section 2 deals with the so called the crossing and anti-crossing effects, where multiple *wh*-arguments appear in a single sentence. In Section 3, we discuss the superiority and anti-superiority effects, in particular the case where *wh*-arguments and *wh*-adjuncts interact. We argue that the attested Chinese data can be explained elegantly by the analysis of Tsai (2006). Section 4 is the conclusion.

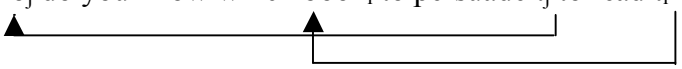
2. Crossing and Anti-Crossing

This section discusses whether Chinese observes the crossing and anti-crossing effects. Let us start with the crossing phenomenon in English. In English, crossing dependences yield an ungrammatical sentence, as the contrast in (7) indicates.

(7) a. ?? Which book$_i$ do you know who$_j$ to persuade t_j to read t_i



b. *Who$_j$ do you know which book$_i$ to persuade t_j to read t_i



On the other hand, Japanese shows the opposite pattern to (7), which is called the anti-crossing effect. In the rest of this section, we first discuss Japanese the anti-crossing effect and then shows that this effect is not found in Chinese.

2.1. Anti-Crossing in Japanese

As mentioned above, Japanese has the anti-crossing effect. First, look at the crucial example taken from Saito (2004).

(8) Taro-wa $[_{CP}$ dare-ga nani-o katta ka] siritagatteru no?
-TOP who-NOM what-ACC boughtQ want.to.know Q

'Q Taro wants to know [Q who bought what]'

Saito (2004) points out that (8) has only three interpretations out of four possible ones listed in (9a) through (9d).

(9) a. Does Taro want to know [for which x, y] x bought y

b. ?? [For which x, y] Taro wants to know whether x bought y

c. ?? [For which x] Taro wants to know [for which y] x bought y

d. * [For which y] Taro wants to know [for which x] x bought y

If both of the *wh*-phrases can take embedded scope, the matrix clause is construed as a yes/no-question, as in (9a). When both of them take matrix scope, (8) has the interpretation in (9b). (9c) is the case where *dare* 'who' takes matrix scope while *nani* 'what' takes embedded scope, and this interpretation is possible. On the other hand, (9d), where *nani* 'what' takes matrix scope and *dare* 'who' takes embedded scope, is impossible.

However, when the surface order of *dare* 'who' and *nani* 'what' is switched from (8) to (10), the pattern of possible interpretations slightly changes.

(10) Taro-wa [$_{CP}$ nani$_i$ -o dare-ga t_i katta ka] siritagatteru no?
-TOP what -ACC who-NOM boughtQ want.to.know Q

'Q Taro wants to know [Q who bought what]'

The interpretive possibilities for (10) are listed in (11).

(11) a. Does Taro want to know [for which x, y] x bought y

b. ?? [For which x, y] Taro wants to know whether x bought y

c. *[For which x] Taro wants to know [for which y] x bought y

d. ?? [For which y] Taro wants to know [for which x] x bought y

In this case, while the interpretation in (11d) is possible, that in (11c) is impossible. Saito (2004) summarizes the situation as in (12).

(12) a. *[$_{CP}$ Wh_2 [$_{TP}$ ... [$_{CP}$ Wh_1 [$_{TP}$ ... t_1 ... t_2 ...] Q] ...] Q] (= 9d, 11c)

b. ok [$_{CP}$ Wh_1 [$_{TP}$ ... [$_{CP}$ Wh_2 [$_{TP}$ ... t_1 ... t_2 ...] Q] ...] Q] (= 9c, 11d)

Recall that this is totally opposite to the English pattern shown in (7). Hence this phenomenon is called "anti-crossing".[2]

Why does Japanese have the anti-crossing effect while English has the crossing effect? Richards'(2001) analysis which adopts "Attract Closest" (Chomsky 1995, Bošković 1997,

[2] This is also called the "nesting effect" (Saito, 2004).

Kitahara 1997, among others) and tucking-in seems to be quite attractive. He assumes that Japanese allows multiple Specs as landing sites for *wh*-movement whereas English does not. Then, both Wh_1 and Wh_2 can move to embedded Spec, CP as their intermediate landing sites. Look at the structure in (13).

(13) a. $[_{CP}\ [_{TP}\ \ldots\ [_{CP}\ Wh_1\ Wh_2\ [_{TP}\ \ldots\ t_1\ \ldots\ t_2\ \ldots]\ \mathbf{Q}]\ \ldots]\ Q]$

b. $[_{CP}\ [_{TP}\ \ldots\ [_{CP}\ Wh_1\ Wh_2\ [_{TP}\ \ldots\ t_1\ \ldots\ t_2\ \ldots]\ Q]\ \ldots]\ \mathbf{Q}]$

c. $[_{CP}\ [_{TP}\ \ldots\ [_{CP}\ Wh_1\ Wh_2\ [_{TP}\ \ldots\ t_1\ \ldots\ t_2\ \ldots]\ Q]\ \ldots]\ \mathbf{Q}]$

d. $*[_{CP}\ [_{TP}\ \ldots\ [_{CP}\ Wh_1\ Wh_2\ [_{TP}\ \ldots\ t_1\ \ldots\ t_2\ \ldots]\ Q]\ \ldots]\ \mathbf{Q}]$ (x)

As illustrated in (13a), the embedded C attracts the closer Wh_1 first and it occupies the higher Spec CP. Wh_2 is attracted next and tucked into the lower Spec, CP. Thus, Wh_1 is still closer than Wh_2 to the matrix C. If the matrix C is yes/no-question C, the *wh*-phrases stop there. If the matrix C is wh-question, there are three attraction possibilities, as in (13b) through (13d). (13b) is the case where both of them are attracted by the matrix Q and (13c) is the case in which only Wh_1 is attracted. Since the closest Wh_1 is attracted, they are not ruled out. In (13d), only Wh_2 is attracted and Wh_1 is left unmoved, so that the Attract Closest is violated. Therefore, the ill-formed structure in (12b) can be ruled out.

The crossing-effect in English is explained as follows. (14a) is the derivational step where the embedded Q is merged. Then, the closest *wh*-phrase *who* is attracted, as in (14b). The derivation proceeds and the matrix Q is merged in (14c). Then, it attracts the *wh*-phrase *which book*. What is crucial here is that since the higher *wh*-phrase who has already been attracted before the step in (14d), the lower one can be the closest.

(14) a. [**Q** [to persuade who to read which book]]]]

b. [who$_j$ [to persuade $t_j$to read which book]]]

c. [**Q** [you know [who$_j$ [to persuade $t_j$to read which book]]]

d. [Which book$_i$ [you know [who$_j$ to persuade $t_j$to read t_i]]]

Therefore, the derivation converges without violating Attract Closest.

Although Richards'(2001) account is tempting, one problem arises here: a *wh*-phrase looks like as if it takes scope both in the embedded and the matrix CP although it should take its scope in one position. In other words, what is needed for Richards'(2001) account is to

make it clear that movement into matrix CP and that into embedded CP must be triggered by different reasons.

Saito's (2004) analysis seems to be preferable in this respect. He assumes that C may have two features to be checked; the Q-feature and the P(eripheral)-feature. He further assumes that a *wh*-phrase which checks the Q-feature takes its scope there. Thus, a *wh*-phrase which checks the Q-feature in embedded CP takes scope there. On the other hand, if a *wh*-phrase checks the P-feature in the embedded CP and it checks the Q-feature in the matrix CP, the embedded CP is just an intermediate landing site for the *wh*-phrase, and it takes matrix scope.

Saito's (2004) idea, which is important to explain the crossing/anti-crossing effects, is roughly summarized as in (15).

(15) The more prominent feature is checked earlier in English but later in Japanese. That is, the Q-feature is checked first in English while it is checked last in Japanese.

Following this idea, in Japanese, the derivation of the sentences with two *wh*-phrases goes as illustrated in (16).

(16) *Japanese*

a. $[_{CP}\ C_{\{Q,\ P\}}\ [_{TP}\ \ldots\ Wh_1\ \ldots\ Wh_2\ \ldots]]$

b. $[_{CP}\ Wh_1\ C_{\{Q,\ \sout{P}\}}\ [_{TP}\ \ldots\ t_1\ \ldots\ Wh_2\ \ldots]]$

c. $[_{CP}\ Wh_1\ C_{\{\sout{Q},\ \sout{P}\}}\ [_{TP}\ \ldots\ t_1\ \ldots\ Wh_2\ \ldots]]$

d. $[_{CP}\ Wh_1\ Wh_2\ C_{\{\sout{Q},\ \sout{P}\}}\ [_{TP}\ \ldots\ t_1\ \ldots\ t_2\ \ldots]]$

e. $[_{CP}\ C_{\{Q\}}\ [_{TP}\ [_{CP}\ Wh_1\ Wh_2\ C_{\{\sout{Q},\ \sout{P}\}}\ [_{TP}\ \ldots\ t_1\ \ldots\ t_2\ \ldots]]]]$ (X)

In Japanese, Wh_1 is attracted first as in (16a) and it checks the P-feature as in (16b). Subsequently Wh_2 is attracted as in (16c) and checks the Q-feature as in (16d). Thus, it takes its scope in the embedded CP. Thus, only Wh_1 can move into the matrix Spec, CP as shown in (16e). Wh_2 cannot move to the matrix Spec, CP because its scope has already fixed. In this way, the anti-crossing effect is derived.

Saito's (2004) account can also capture the English crossing, repeated here in (17).

(17) $*[_{CP}\ Wh_1\ [_{TP}\ \ldots\ [_{CP}\ Wh_2\ [_{TP}\ \ldots\ t_1\ \ldots\ t_2\ \ldots]$

Given that English allows multiple Specs (contrary to Richards 2001) and an embedded CP

has two features, namely the Q-feature and the P-feature just like Japanese, both Wh_1 and Wh_2 can move into the embedded Spec, CP. The derivation goes as illustrated in (18).

(18) *English*

a. $[_{CP}\ C_{\{\mathbf{Q}, P\}}\ [_{TP} \ldots Wh_1 \ldots Wh_2 \ldots]]$

b. $[_{CP}\ Wh_1\ C_{\{\cancel{Q}, P\}}\ [_{TP} \ldots t_1 \ldots Wh_2 \ldots]]$

c. $[_{CP}\ Wh_1\ C_{\{\cancel{Q}, \mathbf{P}\}}\ [_{TP} \ldots t_1 \ldots Wh_2 \ldots]]$

d. $[_{CP}\ Wh_1\ Wh_2\ C_{\{\cancel{Q}, \cancel{P}\}}\ [_{TP} \ldots t_1 \ldots t_2 \ldots]]$

e. $[_{CP}\ C_{\{\mathbf{Q}\}}\ [_{TP}\ [_{CP}\ Wh_1\ Wh_2\ C_{\{\cancel{Q}, \cancel{P}\}}\ [_{TP} \ldots t_1 \ldots t_2 \ldots]]]]$ (X)

Unlike Japanese, the Q-feature is checked first by Wh_1 in English as can be seen in (18b). Then, as shown in (18c) and (18d), Wh_2 is attracted to check the P-feature. Since Wh_1 checks the Q-feature and takes its scope in the embedded CP, only Wh_2 can move into the matrix CP, as in (18e). Thus, the crossing effect follows.

In this way, English crossing and Japanese anti-crossing can be explained by the same system. The point here is that both the crossing and anti-crossing effects are induced by movement. If Chinese *wh*-arguments do not have move, as discussed above in Section 1, these effects should not be observed. In the next section, we will examine the Chinese data and show that this prediction is actually borne out.

2.2. Absence of the (Anti-) Crossing Effect in Chinese

Following Tsai's unselective binding approach, *wh*-arguments in Chinese do not undergo movement as shown in (6a), which is repeated here in (19).

(19) $[_{CP}\ Op_i\ [_{TP} \ldots [_{DP1} \ldots [_{DP2}\ what_i{=}indef.(x)]\ \ldots]\ \ldots]]$

Since both the crossing and anti-crossing effects are caused by the movement from embedded CP to matrix CP, we predict that Chinese does not exhibit these effects.

Now, let us consider the crucial example in (20) and its interpretations in (21).

(20) Zhangsan xiang-zhidao [shei mai-le shenme] ne?
Zhangsan want-know who buy-Prf. what

'Q Zhangsan wants to know [who bought what]'

(21) a. *Does Zhangsan want to know [for which x, y] x bought y

b. *[For which x, y] Zhangsan wants to know whether x bought y

c. [For which x] Zhangsan wants to know [for which y] x bought y

d. [For which y] Zhangsan wants to know [for which x] x bought y

For some reason which we do not pursue here, the first two interpretations in (21a) and (21b) are impossible unlike to its Japanese counter part in (8). What is important here is that both interpretations in (21c) and (21d) are possible. Theses configurations are schematized in (22).

(22) a. ^{ok} $[_{CP}$ Wh_1 $[_{TP}$ ... $[_{CP}$ Wh_2 $[_{TP}$ ... t_1 ... t_2 ...] Q] ...] Q] (= 21c)

b. ^{ok} $[_{CP}$ Wh_2 $[_{TP}$ ... $[_{CP}$ Wh_1 $[_{TP}$ ... t_1 ... t_2 ...] Q] ...] Q] (= 21d)

Therefore, neither the crossing effect nor the anti-crossing effect is observed in Chinese. This data clearly suggests that Tsai's unselective binding approach is on the right track.

3. Superiority and Anti-Superiority

Thus far, we discussed the crossing and anti-crossing effects and showed that *wh*-arguments in Chinese behave differently from Japanese *wh*-arguments. In this section, we will consider the superiority and anti-superiority effects. We will first discuss English superiority and Japanese anti-superiority showing that Saito's (2004) account for crossing/anti-crossing can be extended to these phenomena. Then, we will examine the Chinese data comparing them with the English and Japanese data, and argue that neither superiority nor anti-superiority is observed in Chinese, as predicted by Tsai's theory.

3.1. Superiority in English

In this subsection, we will quickly overview the superiority effect in English. First, look at the example of the "original" superiority effect in (23).

(23) a. Who_i t_i bought what?

b. *$What_i$ did who buy t_i?

When the higher *wh*-phrase, *who*, is moved to the Spec, CP, the sentence is grammatical as in (23a). As shown in (23b), however, the sentence is ungrammatical when the lower *wh*-phrase, *why* is moved. To explain them, the superiority condition is proposed by Chomsky (1973). According to Chomsky (1973), when two *wh*-phrases take scope in the same CP, the superior (structurally higher) *wh*-phrase must move to the Spec, CP.

On the other hand, Huang (1982) tries to account for the superiority effect by employing the ECP. Proposing the LF *Wh*-movement Hypothesis, he argues that all *wh*-phrases must

move in LF. Consider (23) again in accordance with his account. While the trace of *what* can be lexically governed in (23a), the trace of *who* cannot be lexically governed or antecedent-governed in (23b) since it has to adjoin *what*, which has already moved. Thus, it violates the ECP and the sentence is correctly ruled out. In this way, the superiority condition can be elegantly reduced to the ECP. Huang's (1982) proposal is supported from other superiority examples such as in (24) and (25).

(24) a. Tell me why$_i$ you bought what t_i.

b. *Tell me what$_i$ you bought t_i why.

(25) a. *Tell me who$_i$ t_i bought the book why.

b. *Tell me why$_i$ who bought the book t_i.

In (24a), just as in (23a), the traces of both *why* and *what* can satisfy the ECP. On the other hand, the trace of *why* in (24b) can be neither lexically governed nor antecedent-governed so that it violates the ECP. Hence the contrast between (24a) and (24b) follows. Examples in (25) can be also captured by the ECP. In this case, both of the traces of *why* in (25a) and *who* in (25b) cannot be properly governed. Hence, (25a) and (25b) are ruled out by the ECP.

Although Huang's (1982) ECP account is convincing, the examples by Hendrick and Rochemont (1982), which are shown in (26), call it into question.

(26) a Who$_i$ did you persuade t_i to buy what?

b. *What$_i$ did you persuade whom to buy t_i?

In (26b), although the trace of *whom* can be lexically governed by *persuade* so that the ECP can be satisfied, the sentence is ungrammatical. Thus, the contrast between (26a) and (26b) does not fall under the ECP account. What is crucial here is the structural height of the two *wh*-phrases. That is, only the higher one can move. Therefore, the examples in (26) are called "pure" superiority. Given this observation, the superiority condition seems to be needed independently of the ECP.

3.2. A Movement Analysis of Anti-superiority in Japanese

In the previous subsection, we discussed the English data. We will discuss the Japanese data in this subsection. Let us first consider the crucial examples in (27).

(27) a. Kimi-wa nani-o naze katta no?
you -TOP what-ACC why bought Q

'(Lit.) What did you buy why?'

b. * Kimi-wa naze nani-o katta no?
you-TOP why what-ACC bought Q

'Why did you buy what?'

In (27a), it is expected that *nani* 'what' moves first because it is superior and *naze* 'why' moves next. Thus, the trace of *naze* 'why' cannot be properly governed and violates the ECP, rendering the example ungrammatical. On the other hand, we predict that traces can be properly governed in (27b) since the superior *naze* 'why' can move first, so that the sentence is grammatical. The grammaticality of the sentences, however, is true opposite to our prediction. It seems that the opposite pattern of the superiority condition occurs in (27). Thus, this is called the "anti-superiority" effect (Saito 2004, Watanabe 1992 among others).

How can we analyze the anti-superiority effect in Japanese? Saito's (2004) account of crossing/anti-crossing discussed in Section 2.1 can also capture this effect. Remember that he assumes that C may have two features to be checked, namely the P-feature and the Q-feature. Here, he further assumes that the Q-feature may have two sub-features; Q-primary and Q-secondary. Suppose that *wh*-adjuncts like 'why' must check the primary feature of Q. Since the more prominent feature is checked earlier in English, Q-primary is checked by the first *wh*-phrase in Spec, CP and Q-secondary is checked by the second *wh*-phrase. On the other hand, the more prominent feature is checked later in Japanese. Therefore, the first *wh*-phrase in Spec, CP checks the Q-secondary and the second *wh*-phrase checks the Q-primary in Japanese.

Given this assumption, the derivation of (27a) goes as illustrated in (28).

(28) *Japanese*

a. $[_{CP}\ C_{\{Q\text{-}P,\ \mathbf{Q\text{-}S}\}}\ [_{TP}\ \ldots\ \text{what}\ \ldots\ \text{why}\ \ldots]]$

b. $[_{CP}\ \text{what}\ C_{\{Q\text{-}P,\ \sout{Q\text{-}S}\}}\ [_{TP}\ \ldots\ t_{\text{what}}\ \ldots\ \text{why}\ \ldots]]$

c. $[_{CP}\ \text{what}\ C_{\{\mathbf{Q\text{-}P},\ \sout{Q\text{-}S}\}}\ [_{TP}\ \ldots\ t_{\text{what}}\ \ldots\ \text{why}\ \ldots]]$

d. $[_{CP}\ \text{what why}\ C_{\{\sout{Q\text{-}P},\ \sout{Q\text{-}S}\}}\ [_{TP}\ \ldots\ t_{\text{what}}\ \ldots\ t_{\text{why}}\ \ldots]]$

The prior *wh*-phrase, *nani* 'what' must move to the Spec, CP first, and it checks the secondary feature of Q, as in (28a) and (28b). Then, *naze* 'why' moves to Spec, CP to check the primary feature of Q, as in (28c) and (28d). Hence, the derivation converges. However, in ill-formed (26b), since *naze* 'why' is superior to *nani* 'what' it moves first, so that it fails to check the primary feature of Q. Thus, the derivation cannot converge. This system automatically explains the English superiority; since the primary feature of Q is checked first in English, *why* must move first. In other words, the difference between English and Japanese is reduced to the order of feature-checking.

In this way, Saito's (2004) theory that the more prominent feature is checked earlier in English but later in Japanese accounts for not only crossing/anti-crossing but also superiority/anti-superiority together. Just as the (anti-)crossing effect, the crucial point here is that both superiority/anti-superiority effects are caused by movement. Then, we expect that these effects should not be observed in Chinese if Chinese *wh*-arguments do not move.

3.3. Incompatibility of Argument and Adjunct *Wh*-phrases in Chinese

In Section 3.1 and 3.2, we discussed the superiority/anti-superiority effects and showed that these effects are induced by *wh*-movement. The question here is that whether Chinese exhibits the superiority/anti-superiority effects. If these effects are observed in Chinese, it suggests that there is *wh*-movement in Chinese. Thus, it poses a serious problem to Tsai's analysis.

At this point, let us consider the example in (29).

(29) a. Ni weishenme mai na -ben -shu ne?
you why buy that -CL -book Q

'Why did you buy that book?'

b. *Ni weishenme mai shenme ne?
you why buy what Q

'Why did you buy what?'

c. *Shenme ni weishenme mai ne?
what you why buy Q

'(Lit.) What did you buy why?'

As can be seen in (29b) and (29c), both *weishenme* 'why'- *shenme* 'what' order and *shenme-weishenme* order are not acceptable in Chinese. What is important here is that regardless of their order, *wh*-arguments and *wh*-adjuncts cannot co-occur. If Chinese observes the superiority, (29b) should be good while (29c) should be out. If Chinese observes the anti-superiority, the opposite pattern should be attested. Yet, both of them are not found. In other words, Chinese does exhibit neither the superiority effect nor the anti-superiority effect. Given that Chinese *wh*-adjuncts must move (see section 1), the situation in (29) means that Chinese *wh*-arguments do not move.

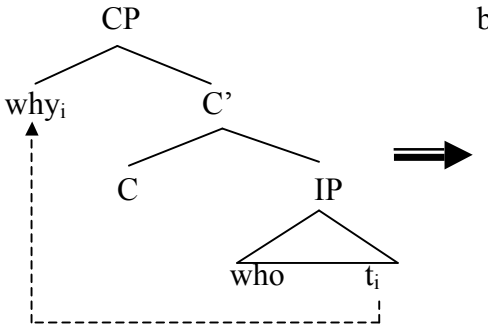
If *wh*-arguments do not move, however, the prediction is that both (29b) and (29c) are grammatical, and this contradicts to the fact. The next question is how we can account the attested pattern. Tsai's analysis also gives straightforward explanation for this fact that *wh*-arguments and *wh*-adjuncts cannot co-occur in Chinese. Look at the example in (30).

(30) * Nimen, shei weishenme hui likai?
you guys, who why will leave

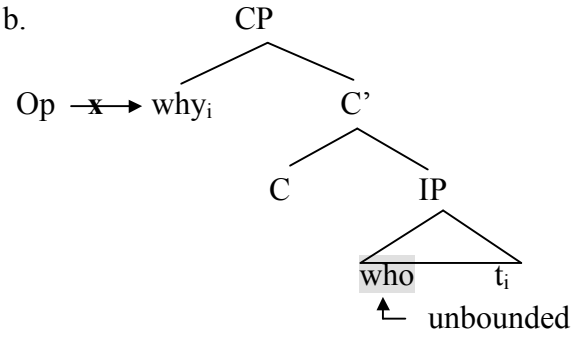
'*You guys, who will leave why?' (Tsai, 2006)

Recall that in the unselective binding approach, the unselective binder is merged to the Spec, CP. Here, if the adjunct *wh*-phrase, *weishenme* 'why' moves to the Spec, CP, the Q-operator cannot be inserted to that position. Thus, unselective binding is impossible for *shei* 'who' due to the lack of an unselective binder (Tsai, 2006). In this case, the structure of (30) is shown in (31).

(31) a.

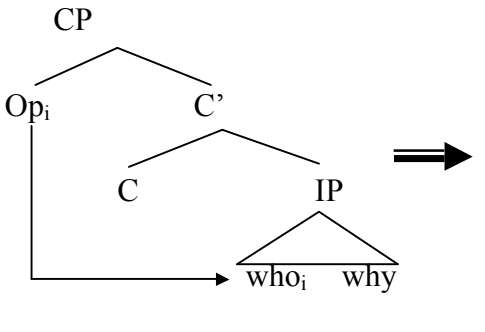


b.

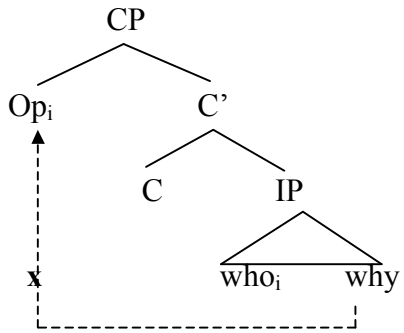


Even if the Q-operator is inserted to the Spec, CP first and it unselectively binds *shei* 'who', there is no room for *weishenme* 'why' to move, so that the sentence is ruled out by vacuous quantification. In this case, the structure of (30) is shown in (32).

(31) a.



b.



Therefore, sentences which contain both *wh*-arguments and *wh*-adjuncts are ruled out.

In this section, we showed that both the superiority/anti-superiority effects are found in Chinese, predicted by the unselective binding approach, and it can also explain the attested pattern.

4. Conclusion

In this paper, we investigated whether Chinese observes crossing/anti-crossing and superiority/anti-superiority. Assuming that Saito's (2004) movement analysis, which can uniformly account crossing and superiority in English and anti-crossing and anti-superiority

in Japanese, we predicted that if *wh*-arguments in Chinese does not move as Tsai (1994, 1999, 2006) none of these phenomena is found in Chinese, since crossing/anti-crossing and superiority/anti-superiority effects are induced by *wh*-movement. Then, we provided the relevant Chinese data which indicate that the prediction is correct. Therefore, these data supports for Tsai's unselective binding approach that *wh*-arguments do not undergo movement but unselectively bound by Q-operator in Spec, CP. These data indicates that even *wh-in-situ* in Chinese and Japanese should be distinguished. This is important because one of the motivations of the uniform treatment of Chinese and Japanese is this point; *wh-in-situ*.

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