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A Cross-linguistic Study of CWHs in Chinese and Japanese

中日疑問詞連接句之比較分析

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1. Introduction

This study is a cross-linguistic study focusing on structures and formation of Coordinated *Wh*-questions (CWHs) in Chinese and Japanese.

Wh-questions with coordinated *wh*-words have been observed in *wh*-movement languages such as English and Russian (Zhang (2007), Hida and Repp (2008), Citko and Gracanin-Yukse (2013)).

(1) [What_i and when_j] does John (normally) eat ____i ____j? (Zhang 2007(2a))

(2) Kto i kogo widel? (Hida and Repp 2008(1))
 who and whom saw

Chinese and Japanese are known as *wh*-in-situ languages (3) (4).

(3) a. (告訴我) 誰買了什麼? (pair-list reading)

b. *(告訴我) 誰, 什麼, __買了__?

(4) *(告訴我) 誰以及/還有什麼, __ 買了__?

Wh-phrases (*wh*-words with a morphological case marker) in Japanese basically stay in situ, as well as Chinese, but all nouns in that language can be scrambled to other positions in a sentence. (5).¹

(5) a. Dare-ga nani-o tabe-ta no?
 who-NOM what-ACC eat-PAST Q
 'For which person *x*, for which thing *y*, *x* ate *y*.'

b. Nani-o, dare-ga tabe-ta no?
 what-ACC who-NOM eat-PAST Q

'For which thing *y*, for which person *x*, *x* ate *y*.'

It is noticed that *wh*-phrases cannot be conjoined by *to* 'and', a conjunction *c*-selects nominal conjuncts (6).

(6) a. *Nani-o to dare-ga tabe-ta no? (to *c*-selects two nouns)
 what-ACC and who-NOM eat-PAST Q

'For which thing *y* and for which person *x*, *x* ate *y*.'

¹ Basic word-order in Japanese is [S O V].

- b. Nani-o , *soshite* dare-ga tabe-ta no? (soshite is a sentential coordinator)
 what-ACC and who-NOM eat-PAST Q

‘For which thing *y*, and for which person *x*, *x* ate *y*.’

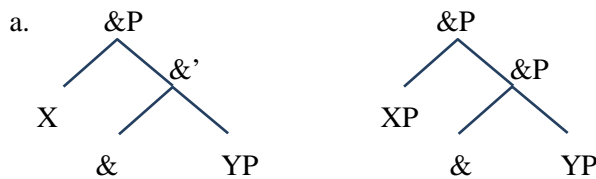
The data in (4) and (6a) seem to tell us that coordinated *wh*-words are not allowed in Chinese and Japanese. There exists coordinated *wh*-questions in both languages, see (7) (8).

- (7) a. 誰以及從哪裡, 聽說了這些謠言? (Zhang 2007 (4a))
 b. 誰以及為什麼, 王教授昨天表揚了? (Zhang 2007 (4a))

- (8) dono hon *to* dono zasshi-o, sorezore Taro-ga __ kari, hanako-ga __ katta no?
 which book and which magazine-ACC respectively Taro-NOM borrow hanako-NOM buy-PAST Q
 ‘For which book *x* and for which magazine *y*, Taro borrowed *x*, and Hanako bought *y*, respectively.’

In the following sections, I will discuss the structures of CWHs in Chinese and Japanese, and then suggests that CWHs in Chinese is mono-clausal, and that in Japanese is bi-clausal. Also see).

(9) Structures of coordinated complex in Chinese



2. Mono-clausal or Bi-clausal

The asymmetry between (4) and (7) in Chinese is also found in English, in which a *wh*-coordination including two *wh*-arguments is not acceptable.²

- (10) a. What and where did you sing?
 b. *What and to whom did John give? (Citko & Gracanin-Yukse 2013:10-11)

² *Sing* is considered to be an optionally transitive verb, and *buy* is an obligatorily transitive verb. The optionally transitive verbs allows NP gap in the sentence, while the obligatorily one does not. This difference reflects on the grammaticality of *wh*-coordination. Compare the following sentence (i) to (10a). The structures of these two sentences can be shown in (ii), in which *sing* behaves like an intransitive verb in the later conjunct where NP gap is allowed. *Buy* obligatorily requires a NP and NP gap is not allowed, therefore we can say that sentence is ungrammatical due to the lack of argument.

- (i) *What and where did you buy?
 (ii) a. What_i did you sing ___i and where did you sing (___{NP gap})? (NP gap is allowed)
 b. What_i did you buy ___i and where did you buy *(___{NP gap})? (NP gap is not allowed)

Citko and Gracanin-Yukse (2013) develops three diagnostics to identify the types of structures of *wh*-coordination among languages.³ English is considered to have a bi-clausal structure. Russian language is considered to have a mono-clausal structure. The keys to distinguish mono-clausal structure from bi-clausal structure are that whether two arguments can be coordinated or not, and whether there appears superiority effect or not.⁴

- (11) a. When and what can I eat?
 b. What and when can I eat? (Whitman 2002:87)
- (12) a. [_{CP} When ~~can I eat~~] and [_{CP} what can I eat]? (Backward ellipsis analysis)
 b. [_{CP} When _{TP}] and [_{CP} what can [_{TP} I eat]]? (Multidominant structure)

In the next section, I will show Chinese data and discuss the structure in detail.

3. Chinese CWHs is mono-clausal

3.1 Facts

Several facts about Chinese *wh*-coordinated questions can be formulated as follows. See (13) (14).⁵

(13) Nominal *wh*

- a. *[_{NP} 項 *wh*] & [_{NP} 項 *wh*] [... *e...e...*] (15)
 c. [_{PP} *wh*] & [_{NP} 項 *wh*] [... *e...e...*] (16a)
 b. [_{NP} 項 *wh*] & [_{PP} *wh*] [... *e...e...*] (16b)
 d. [_{PP} *wh*] & [_{PP} *wh*] [... *e...e...*] (17)

(14) Adverbial *why*

- a. [[_{NP} 項 *wh*]] & [_{AdvP} *weishenme*] [... *e...e...*] (18a)
 b. *[_{AdvP} *weishenme*] & [_{NP} 項 *wh*] [... *e...e...*] (18b)

³ Three diagnostics are used to argue the structure of *wh*-coordinated questions (Citko and Gracanin-Yukse (2013)).

- (i) a. Superiority effects between CWHs (Coordinate WH Questions) and MWHs (Multiple WH Questions)
 b. The grammaticality of mixed CWHs with obligatorily transitive verbs
 c. The possibility of conjoining two arguments

⁴ Either Backward ellipsis analysis or Multidominant analysis is assumed to explain bi-clausal structure as well as its derivation. Here I am not going to discuss which analysis is better than the other, but focus on the type of structure, whether it is mono-clausal or bi-clausal.

⁵ *wh*-words tend to be interpreted as D-linked rather than non-D-linked.

- (i) a. (告訴我,) 哪個女星以及/還有在哪家店, __最近常常__用現金買名牌包?
 b. ??(告訴我,) 誰以及/還有在哪裡, __最近常常__用現金買名牌包?

c. [[_{PP} P *wh*]& [_{AdvP} *weishenme*]] [... *e...e...*] (19a)

d. ?[[_{AdvP} *weishenme*] & [_{PP} P *wh*]] [... *e...e...*] (19b)

(15) *wh*-argument & *wh*-argument

- a. (告訴我,)*哪個女星以及/還有哪個名牌包, __最近常常網購__?
- b. (告訴我,)*哪個名牌包以及/還有哪個女星, __最近常常網購__?
- c. (告訴我,)*哪個女星還有哪個名牌包, 最近董事長常常送__ __?⁶

(16) *wh*-argument & *wh*-adjunct (single pair-list reading, no superiority effect)

- a. ((告訴我,) 在哪家店以及/還有哪個女星, __最近常常__用現金買名牌包?
- b. ((告訴我,) 哪個女星以及/還有在哪家店, __最近常常__用現金買名牌包?

(17) ((告訴我,) 什麼時候以及/還有在哪裡, 小花__ __丟了她的錢包?

Weishenme ‘reason why’ must be preceded by a *wh*-argument, instead of the other way around (18).⁷

(18) a. *wh*-argument & *weishenme* ‘reason why’

(告訴我,) 哪個女星以及/還有為什麼, __ __總是喜歡演恐怖片?

b. *weishenme* ‘reason why’ & *wh*-argument

(告訴我,)*為什麼以及/還有哪個女星, __ __總是喜歡演恐怖片?

Notice that the orders between *wh*-adverbial *weishenme* and other conjunct such as *wh*-adjunct is free (19).

(19) a. ((告訴我,) 在哪個年級以及/還有為什麼, 張三__ __常常被同學欺負?

b. ((告訴我,) 為什麼以及/還有在哪個年級, 張三__ __常常被同學欺負?

⁶ *Wh*-coordination with two arguments seems to be allowed in the following sentence (i). There must be something about the verb *juanxia* ‘donate’, which obviously differs from other three-place predicate like *song* ‘give’. Here I assume that *juanxian* ‘donate’ is a two-place predicate and the goal *shei* ‘who’ is more like an adjunct with a zero head *gei* ‘to’.

(i) *Shei haiyou duoshao-qian ni dasuan yao juanxian?* (Zhang 2007 (4c))

who and who.much-money you plan want donate

‘Whom and how much money do you plan to donate?’

⁷ The other adverbial *wh zhenmeyang* ‘manner-how’ modifying VP cannot appear inside the *wh*-coordination, see (i). Following Wang & Wu (2006), Cheung (2008) that *zenmeyang* cannot have contrastive focus, and therefore *zenmeyang* does not appear in the initial position (normally focus position).

(i) *wh*-argument & *zhenmeyang* ‘manner-how’

a. (告訴我,)*哪個女星以及/還有怎麼樣, 在這幾年__ __裝扮她自己?

b. (告訴我,)*怎麼樣以及/還有哪個女星, 在這幾年__ __裝扮她自己?

The patterns which are not allowed in coordinated *wh*-questions. (20).

(20) a. * $[\text{NP}_{\text{項}} \textit{wh}] \& [\text{NP}_{\text{項}} \textit{wh}] [\dots e\dots e\dots]$ (13a)

b. * $[\text{AdvP} \textit{weishenme}] \& [\text{NP}_{\text{項}} \textit{wh}] [\dots e\dots e\dots]$ (14b)

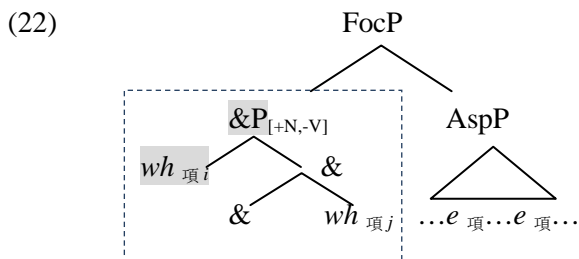
3.2 Analysis

If we assume the structure of coordinated *wh*-questions in Chinese to be bi-clausal (i.e. CP coordination), the structures must include two clauses and the first one is deleted in PF. See (21).

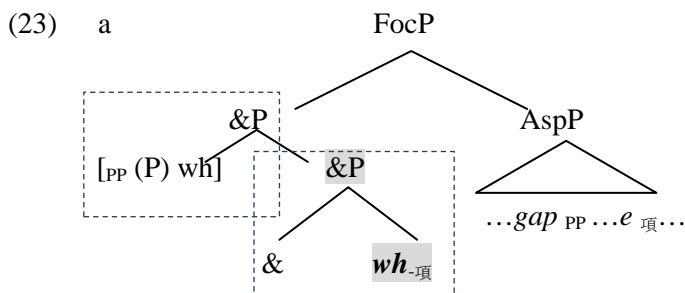
- (21) a. * $[\text{FocP} \textit{哪個女星} [\text{AspP} \textit{最近常常網購} \phi]] \textit{以及/還有} [\text{FocP} \textit{哪個名牌包} [\text{AspP} \phi \textit{最近常常網購} ______]]?$
- b. $[\text{FocP} \textit{在哪家店} [\text{AspP} \phi \textit{最近常常用現金買名牌包}]] \textit{以及/還有} [\text{FocP} \textit{哪個女星} [\text{AspP} ______ \textit{最近常常用現金買名牌包}]]?$
- c. $[\text{FocP} \textit{什麼時候} [\text{AspP} \textit{小花} \textit{丟了她的錢包}]] \textit{以及/還有} [\text{FocP} \textit{在哪裡} [\text{AspP} \textit{小花} \textit{丟了她的錢包}]]?$
- d. * $[\text{FocP} \textit{為什麼} [\text{AspP} \phi \textit{總是喜歡演恐怖片}]] \textit{以及/還有} [\text{FocP} \textit{哪個女星} [\text{AspP} ______ \textit{總是喜歡演恐怖片}]]?$
- e. $[\text{FocP} \textit{哪個女星} [\text{AspP} ______ \textit{總是喜歡演恐怖片}]] \textit{以及/還有} [\text{FocP} \textit{為什麼} [\text{AspP} \phi \textit{總是喜歡演恐怖片}]]?$

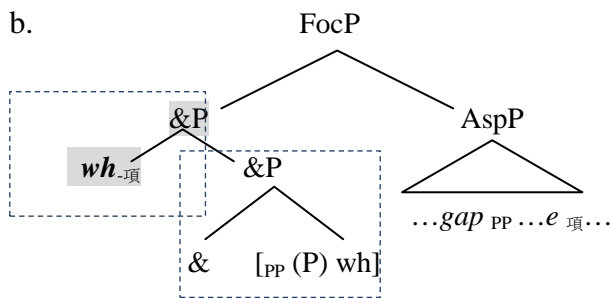
However, bi-clausal analysis and deletion fail to account for the different grammaticality shown in (21).

I suggest that CWHs in Chinese are mono-clausal. See the structure shown in (22).

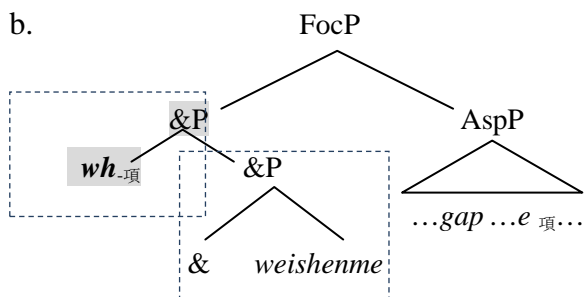
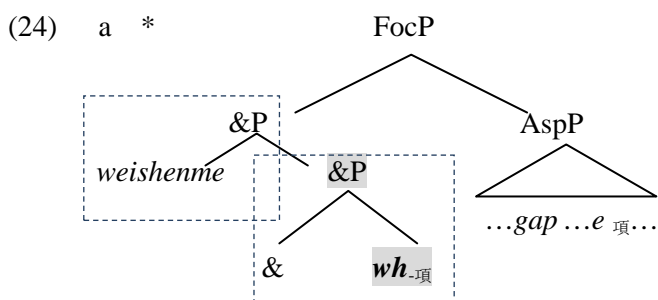


On the other hand, *wh*-adjuncts do not need to associate with thematic position. See (23), *wh*-adjunct adjoins to &P which includes one *wh*-argument.

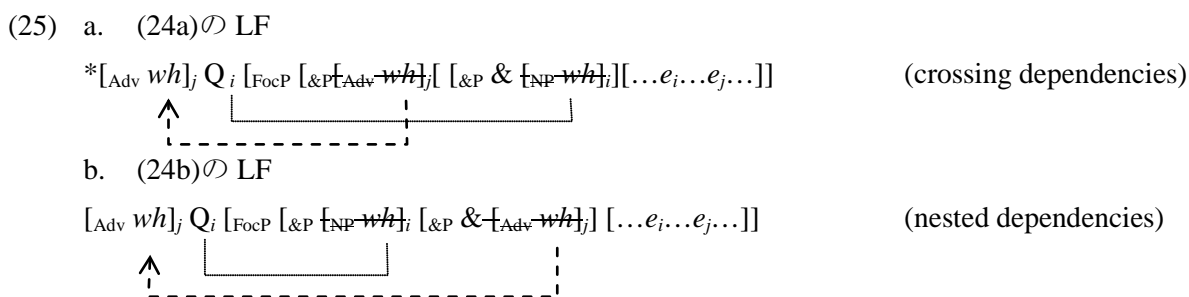




The structures of *why-and- wh-argument* coordination are similar to (23), but only (24b) is grammatical. I suggest that the ungrammaticality is due to semantic problem rather than syntactic problem.



The LF of (24a,b) can be illustrated as (25a, b) respectively. Following Pesetsky (1987), if two *wh*-trace dependencies overlap, one must contain the other (Nested Dependency Condition).⁸



⁸ i. a. ? *What book_j don't you know who_i to persuade e_i to read e_j?* (Pesetsky (1987:105 (22a))
 b. **Who_i don't you know what book_j to persuade e_i to read e_j?* (Pesetsky (1987:105 (22b))

This semantic analysis not only explains the acceptability of *why-and-wh-argument* coordination, but also supports the mono-clausal analysis of CWHs in Chinese.

- (26) *_[FocP] 爲什麼 _[AspP] 總是喜歡演恐怖片 以及/還有 Q _[FocP] 哪個女星 _[AspP] 總是喜歡演恐怖片]?

In sum, there are two types of coordinated structures: one includes an internal and an external conjunct; the other includes an external adjunct and an adjoined adjunct. In addition, *wh*-argument in *wh*-coordination must be licensed by its thematic position through linking.⁹

4. Japanese CWHs is bi-clausal

4.1 Facts

Japanese is a language where *wh*-words can be interpreted in-situ and also undergo multiple fronting (scrambling) to initial positions, see (27).

- (27) a. Nani-o, dare-ga tabe-ta no?
 what-ACC who-NOM eat-PAST Q
 ‘For which thing *y*, for which person *x*, *x* ate *y*.’
- b. *Nani-o to dare-ga tabe-ta no? (to c-selects two nouns)
 what-ACC and who-NOM eat-PAST Q
 ‘For which thing *y* and for which person *x*, *x* ate *y*.’
- c. Nani-o , *soshite* dare-ga tabe-ta no? (*soshite* is a sentential coordinator)
 what-ACC and who-NOM eat-PAST Q
 ‘For which thing *y*, and for which person *x*, *x* ate *y*.’
- (28) a. Dare-ga { *soshite* /*to } doko-kara, ___ ___ sono uwasa-wo kii-ta no?
 who-NOM and/and where-From that gossip-ACC hear-PAST Q
 ‘For which person *x*, from which place *y*, *x* heard that gossip from *y*.’
- b. Dare-o { *soshite* /*to } naze, sensei-ga ___ ___ home-ta no?
 who-ACC and/and why teacher-NOM praise-PAST Q
 ‘For which person *x*, for which reason *y*, the teacher praised *x* for *y*.’
- c. Dare-ni { *soshite* /*to } ikura, anata-ga kifu-shita no?
 who-DAT and/and how-much you-NOM donate-PAST Q
 ‘For which person *x*, how much *y*, you donated *y* to *x*.’

⁹ There is a semantic problem about coordination of two nouns, which is, two nouns cannot be interpreted separately. If these two nouns are interpreted same thematic role and case, the sentence become acceptable,

(i) 那個女星還有哪個名牌包都一起消失?

One may think that maybe *to* only c-selects N (word-level) as its arguments, instead of NP (phrasal level)..

- (29) *Nani *to* dare , __ tabe-ta no? (to c-selects two nouns)
 what and who eat-PAST Q

‘For which thing *y* and for which person *x*, *x* ate *y*.’

- (30) a *Itu *to* ikura, Jiro-ga Taro-ni age-ta no?
 when and how-much Jiro-NOM Taro-DAT give-PAST Q

‘When did the teacher blame Taro and why?’

- b. ?什麼時候還有多少錢，張三(送/寄)給了李四?

It is not the coordinator *to* ‘and’ unable to coordinate two *wh*-words or phrases, but the conjuncts coordinated by *to* must have the same type of thematic role and case, and also in a specific construction, see (31).

- (31) dono hon *to* dono zasshi-o, Taro-ga __ kari, Hanako-ga __ katta no?
 which book and which magazine-ACC Taro-NOM borrow hanako-NOM buy-PAST Q

‘For which book *x* and for which magazine *y*, Taro borrowed *x*, and Hanako bought *y*.’

The type of *wh*-coordination is called IDC (Interwoven Dependency Construction), and only this type of *wh*-coordination is allowed in Japanese. Also see (32).

- (32) a Taro-ga __ kari, Hanako-ga __ katta no-wa, (sorezore) kono hon *to* ano zasshi da.
 Taro-NOM borrow hanako-NOM buy-PAST NO-TOP (respectively) this book and that magazine Coplar
 ‘It is this book and that magazine that Taro borrowed and Hanako bought respectively.’

- b Taro-ga __ kari, Hanako-ga __ katta no-wa, (sorezore) dono-hon *to* dono-zasshi
 Taro-NOM borrow hanako-NOM buy-PAST NO-TOP (respectively) which-book and which-magazine Coplar
 na-no ka?
 Naminalization Q

‘For which book *x* and for which magazine *y*, it is *x* and *y* that Taro borrowed and Hanako bought respectively.’

The *wh*-coordination or NP-coordination shown in (31) and (32) are not only interpreted as a constituent (plural reading), but can also be interpreted separately in their thematic positions (distributive reading).

4.2 Analysis

Here, I suggest that CWHs in Japanese must be bi-clausal. The fact that conjuncts *to* coordinated are required with the same thematic role and case leads to a result that those conjuncts can never be base-generated or linked in the same clause, otherwise the coordinated *wh*-word can only have plural reading.

Wh-coordination in initial position behaves differently from that appears in cleft sentence (33).

- (33) a. *Dono daigakuse* (??-ni) *to dono kokose-ni*, (sorezore) *Taro-ga* __ *hon-o uri*,
 which univ.-student (-DAT) and which senior-high-student_{L-DAT} respectively *Taro-NOM book-ACC sell*
Hanako-ga __ *manga-o ut-ta no?*
Hanako-NOM comic book-ACC sel_{I-PAST} Q
 ‘For which university student *x* and for which senior high student *y*, Taro sold *x* books, Hanako
 sold *y* comic books’
- b. *Taro-ga* __ *hon-o uri*, *Hanako-ga* __ *manga-o ut-ta no-wa*, (sorezore) *dono*
Taro-NOM book-ACC sell Hanako-NOM comic book-ACC sel_{I-PAST} Nominalizer-TOP respectively which
daigakuse-ni to dono kokose-ni na-no ka?
 which univ.-student (-DAT) and which senior-high-student_{L-DAT} Naminalization Q
 ‘For which university student *x* and for which senior high student *y*, it is *x* and *y* that Taro sold *x*
 books, Hanako sold *y* comic books respectively.’

The structures of (33a, b) can be shown in (34a, b), respectively.

- (34) a. [*wh_i to wh_j]-ni, ...e_i... , ...e_j...*
 b. [...*t_i...* , ...*t_j...*]-wa], [*wh_i-ni to wh_j-ni*] Cop
- (35) *wh*-coordination coordinated by *to*
- The conjuncts coordinated by *to* must be nominal and bear same theta role and case. (Chinese *haiyou* is similar to this when coordinating two nouns only)
 - The structure must be bi-clausal so as to meet the requirement of *to*.
 - The interpretation of *wh*-coordinate complex for distributive reading is due to distributive operator *sorezore*. (Chinese is due to linking with empty category in theta position)

5. Conclusions

In this paper, I focused on the structures and the formation of CWHs in Chinese and Japanese, and then explained how CWHs form in each language under some language-specific conditions. I suggest that CWHs in Chinese is mono-clausal, and that in Japanese is bi-clausal.

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