Proceedings of the 22nd North American Conference on Chinese Linguistics (NACCL-22) & the 18th International Conference on Chinese Linguistics (IACL-18). 2010. Vol 2. Clemens, L.E. & C.-M. L. Liu, eds. Harvard University, Cambridge, MA. 209-219.

Wh-in-situ, Phase, and Argument-adjunct Asymmetry

Pei-Ling Hsu
Kyushu University

This paper focuses on *wh*-in-situ phenomena under phase-based approach and discusses the asymmetry between *wh*-arguments and *wh*-adjuncts in Mandarin Chinese. *Wh*-adjuncts, contrary to *wh*-arguments, are considered to be operators and must undergo movement so that the *wh*-island effects in this case can be explained. This paper attributes the subjacency effect to the locality requirement of *wh*-adjuncts and suggests that the asymmetry results from different licensing processes on *wh*-words, movement in the narrow syntax, or binding after narrow syntax.

1. *Wh*-in-situ and Subjacency Effect

It is well known that *wh*-words in Chinese and Japanese stay in situ, whereas *wh*-words in English must move to the initial position. The data are shown in (1).

(1) a. ***What*** did John think [that Bill bought *e*]? (*wh* movement)
b. Zhangsan renwei [Lisi mai-le ***sheme***]? (*wh* in-situ)
Zhangsan think Lisi buy-Asp what
c. Taro-ga [Hanako-ga ***nani***-o katta] to omotteiru-no? (*wh* in-situ)
Taro-Nom Hanako-Nom what-Acc bought Comp think Q
'What does Taro think Hanako bought?'

In addition, overt movement of *wh*-words in English triggers island effects, as (2a) shows. In contrast to English, *wh*-words in Chinese are in-situ and are not sensitive to island effects, as shown in (2b). However, *wh*-island effects are observed in Japanese, even though Japanese is a *wh*-in-situ language, as (2c) shows.

(2) <*Wh*-island sensitivity>
a. *[***What*** did you ask [***who*** bought ___]]? (Richard, 2001 (2))
b. ni xiangzhidao [***shei*** mai-le ***sheme***]? (Huang 1982 (39))
you wonder who buy-Asp what
i. For which person x, you wonder what x bought . (*shei* >*sheme*)
ii. For which thing x, you wonder who bought x. (*sheme*>*shei*)

c. ??John-wa [Mary-ga ***nani***-o katta ***kadooka***] Tom-ni tazuneta no?
John-Top Mary-Nom what-Acc bought whether Tom-Dat asked Q
'What did John ask Tom whether Mary bought? '(Watanabe, 2001(16))

Watanabe (2001, 2003) suggests that *wh*-words in Japanese actually undergo invisible overt operator movement; in this case, the *wh*-island effects can be captured by a universal condition, which is subjacency. Due to this, it is possible to consider that in-situ *wh*-words in Chinese do not undergo movement and thus no island effect is triggered (2b).

If the lack of island effects in Chinese is due to the lack of movement of in-situ *wh*-words, the existence of island effects of *wh*-adjuncts becomes an exception for Chinese. The data are given in (3). The *wh*-argument *sheme* 'what' can be interpreted in the matrix clause (3a), while the *wh*-adjunct *weisheme* 'why' cannot be interpreted outside of the *wh*-island (3b).

(3) *Wh*-adjunct *weisheme* is sensitive to *wh*-island
ni xiangzhidao [***shei weisheme*** taoyan Lisi]?
you wonder who why dislike Lisi
i (answer) I wonder why Xiaomei dislikes Lisi. (*shei*>*weisheme*)
ii. (answer) ???I wonder who dislikes Lisi because Lisi is not honest.
(**weisheme* >*shei*)

Huang (1982) accounts for this asymmetry by assuming ECP. Tsai (1999), on the other hand, reduces this kind asymmetry to a noun-adverb asymmetry. He suggests that the nominal *wh*-word *sheme* 'what' is unselectively bound by a Q particle and therefore no movement is involved. But the *wh*-adjunct *weisheme* must undergo movement and therefore it must be subject to subjacency.

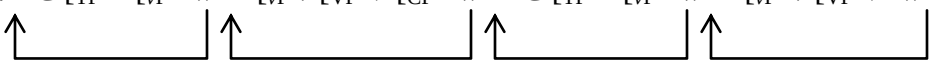
This paper will reconsider this argument-adjunct asymmetry of Chinese *wh*-words under a phase-based approach. In what follows, I will review two approaches accounting for *wh*-in-situ phenomena first, both movement analysis and non-movement analysis, and then point out the theoretical problems under phase theory.

2. Overt Movement and Phase Theory (Chomsky 2004)

Overt movement in English is generally assumed to undergo Successive cyclic movement, as (4) shows.

(4) Overt *wh*-movement (Successive cyclic movement)

$[_{CP}$ ***wh*** C $[_{TP}$ T $[_{vP}$ <*wh*> $[_{vP}$ *v* $[_{VP}$ V $[_{CP}$ <*wh*> C $[_{TP}$ T $[_{vP}$ <*wh*> $[_{vP}$ *v* $[_{VP}$ V<*wh*>]]]]]]]]]]



Under phase theory[1], the *wh*-elements must move to the edge of each phase head before spell-out, assuming *v* and C are phase heads. And as the phases are spelled out, the spell-out domain is not visible. According to the Phase Impenetrability Condition (PIC), as shown in (5), no operation is allowed to access the domain.

(5) Phase Impenetrability Condition (PIC)
The domain of H (Phase head) is not accessible to operations, only the edge of HP is (PH=[α[Hβ]])

Based on these assumptions, the derivation of overt *wh*-movement in English can be illustrated as in (6). (Shade means invisible)

(6) Overt *wh*-movement under a phase-based approach
[*u*wh] (invisible from matrix C)
[$_{CP}$ ***wh*** C [$_{TP}$ T [$_{vP}$ <wh> [$_{vP}$ *v* [$_{VP}$ V [$_{CP}$ <*wh*> C [$_{TP}$ T [$_{vP}$ <*wh*> [$_{vP}$ *v* [$_{VP}$ V<*wh*>]]]]]]]]]
(SO1) PH2 *wh* [PH1 [$_{VP}$ V <*wh*>]]
(SO2) PH3 *wh* PH2 [$_{TP}$ [$_{vP}$ <*wh*> [PH1 ✓]]]
(SO3) PH4 *wh* PH3 [$_{VP}$ [$_{CP}$ <*wh*> PH2 [✓]]]
(SO4) ***wh*** PH4 <wh>

Chomsky (2004) suggests that the copy in original position loses its phonological features during spell-out. Assuming these, let us think about the derivation of covert movement in the next section.

3. Non-overt Movement and Phase Theory

3.1 Covert Movement under a Phase-based Approach

Huang (1982) accounts for *wh*-in-situ phenomena by assuming that there is covert movement at LF. Chomsky considers covert movement to be the same as overt movement except that the phonological features in covert movement stay with the first, lowest copy of *wh*-words. This can be illustrated in (7). In the narrow syntax, in-situ *wh* also must under go successive cyclic movement, in order to avoid violating PIC.

[1] Under the phase-theory of Chomsky (2004), derivation proceeds by phase and the TRANSFER (TRANSFER hands D-NS over to PHON and SEM) must be convergent. CP and *v*P are phases and TRANSFER applies when the next phase head is merged (i).
(i) PH=[α[Hβ]]

βmust be spelled out but not the edge of PH, which is an escape hatch.

(7) Covert movement
NS : $[_{CP}$ ***wh*** $C_{[u\text{wh}]}$ $[_{TP}$ T $[_{vP}$ <*wh*> $[_{vP}$ *v* $[_{VP}$ V <*wh*>]]]]]
PHON : $[_{CP}$ ~~***wh***~~C $_{[u\text{wh}]}$ $[_{TP}$ T $[_{vP}$ ~~<*wh*>~~ $[_{vP}$ *v* $[_{VP}$ V ***wh***]]]]]

Nevertheless, problems arise for this analysis when we consider *wh*-in-situ in Chinese, in which there is no subjacency effect, as we have already seen in (2b). If movement only occurs in narrow syntax, and then there should be no syntactic difference between overt movement and so-called 'covert' movement, because they only differ in their phonological realizations. Moreover, there is a conflict between the assumptions about covert movement and the PIC. Chomsky suggests that the internal merge can apply either **before** or **after** TRANSFER (Spell-Out) and overt movement requires the ordering of Move TRANSFER, while covert movement requires the ordering TRANSFER Move. But if we assume the PIC, no operation should be allowed after TRANSFER. This means that the movement after TRANSFER should not be allowed either. This is summarized in (8).

(8) Conflicts in the assumptions about covert movement suggested by Chomsky 2004.
a. There is no LF, but there is covert movement[2] (Chomsky 2004:111)
b. Internal Merge can apply either **before** or **after** TRANSFER (Spell-Out). The former case yields overt movement, the latter case covert movement, with the displaced element spelled out in-situ. (Chomsky 2004:111)
i. Overt movement requires the ordering of operations: Move TRANSFER.
ii. Covert movement requires the ordering: TRANSFER Move.

As a result, if we assume the PIC, there should not be allowed any operation after TRANSFER (Spell-Out). Therefore, under a Phase-based approach, any movement including covert movement must occur in narrow syntax.

If that is true, subjacency effects should be predicted to appear under both overt movement and 'covert' movement. However, if we assume *wh*-words in Chinese to undergo covert movement, the lack of island effects shown in (2b) will be problematic. Due to this, it is noticed that the other assumption is needed to explain this fact. Tsai's (1994) unselective binding approach is remarkable in solving this problem.

3.2. Unselective Binding under a Phase-based Approach

Tsai's (1994) unselective binding analysis assumes that there is no movement for *wh*-words (specifically *wh*-arguments) and the scope of each in-situ *wh*-word is determined

[2] L contains operations that transfer each unit to Φ and to ∑. In the best case, these apply at the same stage of the cycle. In this conception there is no LF: rather the computation maps LA to <PHON, SEM> piece by piece, cyclically. There are, therefore, no LF properties and no interpretation of LF, strictly speaking, though ∑ and Φ interpret units that are part of something like LF in a non-cyclic conception. (Chomsky 2004: 107)

by a Q binder. In this approach, in-situ *wh* is assumed to be an indefinite, not an operator. The assumptions for this unselective binding approach are summarized in (9).

(9) Unselective binding (Cheng 1991, Tsai 1994)
a. *wh*-words (arguments) are indefinites.
b. Q operator is base-generated in [Spec, CP].
c. Operator Q binds *wh*-indefinite, and *wh* is interpreted as interrogative.
d. c-command
SS/LF [$_{CP}$ Q_i [wh_i]]

(9d) shows that the in-situ *wh*-word is c-commanded by the Q particle. Does this kind of binding relation need to be confirmed in the narrow syntax? If so, the long-distance binding relation would violate the PIC, as we have seen before. The derivation can be illustrated in (10).

(10) *wh* in-situ is not visible to Q.

[$_{CP}$ (null) **Q**$_i$ C [$_{TP}$ T [$_{vP}$ *v* [$_{VP}$ V [$_{CP}$ C [$_{TP}$ T [$_{vP}$ *v* [$_{VP}$ V ***wh***$_i$]]]]]]]]
PH4 PH3 PH2 PH

According to (10), in-situ *wh* should not be visible to the Q particle. If we assume that the derivation is phase by phase under phase theory, then the in-situ *wh*-word must be spelled-out when the second phase head (PH2) is merged. Therefore, it is impossible for an in-situ *wh*-word to be bound by the Q particle. As a result, the *wh*-word is predicted to remain unbound, unable to obtain any interrogative force.

This kind of problem with regard to this PIC is not limited to the unselective binding approach, but to all kinds of *binding* relations. Therefore, one way to keep a binding relation from violating the PIC is to think that unselective binding must happen somewhere other than narrow syntax.

4. Asymmetries between *Wh*-Arguments and *Wh*-Adjuncts

4.1. Locality and Operator-hood

The previous sections reviewed two main approaches (covert movement and unselective binding) on *wh*-in-situ phenomenon under a phase-based approach. It is clear that both of those approaches have some theoretical problems. This section will provide a group of data to show that the argument-adjunct asymmetry is not limited to the categories of *wh*-words, but is related to the locality requirement for *wh*-movement.

Firstly, let us repeat the data that show the asymmetries between *wh*-arguments and *wh*-adjuncts in (11). *Shei* 'who' in (11a) can have wider and narrower scope over *sheme* 'what', and vice versa. But in (11b), *shei* can only have wider scope over *weisheme*

'why', while *weisheme* cannot take wider scope over the subject *shei*.

(11) a. ni xiangzhidao [***shei*** mai-le ***sheme***]?
you wonder who buy-Asp what
i. (answer) I wonder what Zhangsan bought. (*shei*>*sheme*)
ii. (answer) I wonder who bought that book. (*sheme*>*shei*)
b. ni xiangzhidao [***shei weisheme*** taoyan Lisi]?
i (answer) I wonder why Xiaomei dislikes Lisi. (*shei*>*weisheme*)
ii. (answer) ???I wonder who dislikes Lisi because Lisi is not honest.
(???*weisheme* >*shei*)

Here, I attribute that the existence of *wh*-island effect is to the locality requirement of the *wh*-adjunct *weisheme*, as claimed in (12).

(12) a. *Wh*-adjunct *weisheme* must be interpreted locally, while *wh*-arguments do not.
b. *Wh*-island effect is the result of the locality requirement.

Not only the *wh*-adjuncts must be subject to locality, but must *wh*-words which are marked by non-D-linked marker *daodi* 'what-on-earth'. The data are shown in (13).

(13) *Daodi* … *wh* must be subject to locality (compare to (11b))
ni xiangzhidao [***shei*** **daodi** taoyan ***sheme***]?
you wonder who what-on-earth hates what
a. (answer) I wonder what is exactly the thing that Xiaomei dislikes.
(*shei*>*daodi…sheme*)
b. (answer) *I wonder who dislikes snakes. (**daodi…sheme*>*shei*)

As shown in (13b), subjacency effects are observed when *wh*-words marked by *daodi* are interpreted outside of the island. This fact indicates that *wh*-arguments marked by *daodi* must be subject to locality.

In addition to their requirement of locality, *wh*-adjucts and *wh*-arguments marked by *daodi* also trigger intervention effects. The data are shown in (14).

(14) a. ???ni xiangzhidao [Xiaomei ***weisheme*** xihuan ***sheme***]?
you wonder Xiaomei why like what
i. (answer)*I wonder what Xiaomiei likes **because it is good**.(**weisheme*>*sheme*)
ii. (answer)*I wonder why Xiaomiei likes **this book**. (**sheme*>*weisheme*)
b. *ni xiangzhidao [***weisheme shei*** xihuan Xiaomei]?
i. (answer)*I wonder who likes Xiaomei **because she is good**. (**weisheme*>*shei*)
ii. (answer)*I wonder why **Lisi** likes Xiaomei. (**shei*>*weisheme*)

c. #ni xiangzhidao [**daodi** ***shei*** xihuan ***sheme***]?
you wonder what-on-earth who like what
i. (answer)*I wonder **what** Xiaomei likes. (**shei>daodi..sheme*)
ii. (answer)*I wonder who likes **this book**. (**daodi..sheme >shei*)

The unacceptable interpretation shown in (i) of (14) indicates the fact that the *wh*-adjunct *weisheme* and *wh*-words marked by *daodi* are subject to locality (subjacency effects exhibit). However, these unacceptable interpretations are not due to subjacency effects, but due to intervention effects. This is because the intervention effects can be obviated when *wh*-words are displaced overtly from their original positions, as shown in (15).

(15) a. ni xiangzhidao [[***sheme***] Xiaomei ***weisheme*** xihuna ***t***]?
you wonder Xiaomei why like what
i. (answer)*I wonder what Xiaomiei likes **because it is good**.(**weisheme>sheme*)
ii. (answer) I wonder why Xiaomiei likes **the book**. (*sheme>weisheme*)
b. ni xiangzhidao [[***shei***] ***weisheme t*** xihuan Xiaomei]?
i. (answer)*I wonder who likes Xiaomei **because she is good**. (**weisheme>shei*)
ii. (answer)*I wonder why **Lisi** likes Xiaomei. (*shei>weisheme*)
c. ni xiangzhidao [[***sheme***] **daodi *shei*** xihuan ***t***]?
i. (answer)*I wonder what **Xiaomei** likes. (**daodi..shei> sheme*)
ii. (answer)*I wonder who likes **this book**. (*sheme > daodi…shei*)

In (15), the displaced *wh*-words are allowed to be interpreted to have wide scope over matrix clause. As what we have seen in (11) and (13a), the general *wh*-words (*wh*-arguments) do not need to be subject to locality. The intervention effect is avoided because the intervener does not block the *wh*-words and its binder (assuming it is Q particle in matrix COMP) after the displacement of *wh*-words.

Based on these facts, I assume that *wh*-adjunct *weisheme* and *wh*-arguments marked by *daodi* in (14) are genuine operators, which block two related elements (such as an operator and a variable) and are subject to locality. A general *wh*-argument, on the other hand is not an operator and thus it must be co-related to the Q operator in matrix COMP. As a result, it does not need to subject to locality. An intervention effect appears when there is an operator between the *wh*-word (variable) and its binder (operator). This can be illustrated in (16).

(16) *Op1$_i$….OP2 ….var$_i$

a. *Q$_i$ … {*wh*-adjuct/*daodi*…*wh*} … *wh*-argument$_i$ (×)

b. Q$_i$ … *wh*-argument$_i$… {*wh*-adjuct/*daodi*…*wh*} (ok)

The *wh*-adjuncts and the *wh*-words marked by *daodi* should be considered to be operators that undergo covert phrasal movement and leave the copy in-situ. In Chinese, the lowest copy is pronounced after spell-out. Except for the different pronunciation rule, the movement is similar to that in English and must be subject to locality. I suggest that the subjacency effects in Chinese can be accounted for by the movement approach, and the lack of subjacency effects can be accounted for by the non-movement approach. This result supports Tsai's (1994) analysis, but the data here give further evidence showing that there are two types of *wh*-arguments: one is the general *wh*-argument which functions as a variable, the other (*wh*-arguments with non-D-linked marker *daodi*) functions as a genuine operator and must undergo movement. This can be illustrated in (17).

(17) a. [$_{CP}$ {*wh*-adjuct/*daodi*…*wh*}……. < {*wh*-adjuct/*daodi*…*wh*}>]
b. *[$_{CP}$ {*wh*-adjuct/*daodi*…*wh*} [$_{island}$…….< {*wh*-adjuct/*daodi*…*wh*}>]

I suggest that the locality can be derived in narrow syntax. The derivation will be discussed in the following section.

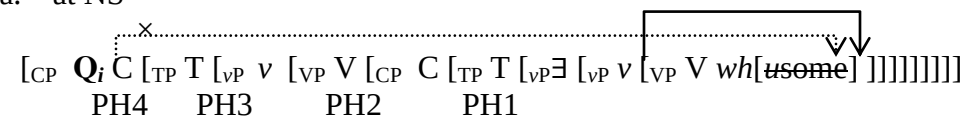
4.2. Assumptions and Derivations

The previous section showed that there are two types of *wh*-arguments, one functions as an operator and is like a *wh*-adjunct; the other functions as a variable and must be bound by Q. I suggest that the different behaviors of these two types of *wh*-words are determined by the licensing process of they are bound by Q particles at syntax.

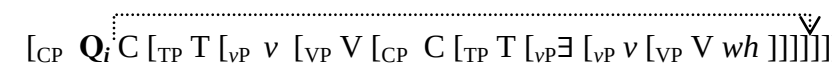
First of all, I assume that *wh*-words in Chinese have [*u*some] feature and the feature must be checked by an operator, such as Q or ∃, before spelled out. Following Diesing (1992), the ∃ operator is introduce by existential closure and merges in the edge of *v*P. *Daodi* is also a kind of operator which merges *v*P or AspP. *Wh*-words with [*u*some] checked by Q at NS will be operator-like. Under this assumption, the general *wh*-arguments must be licensed within *v*P by ∃-operator, and they will be spelled-out in an earlier derivation, before the merger of Q binder. This means that the licensing of the *wh*-interrogative force of *wh*-arguments does not happen in narrow syntax (or alternatively that unselective binding does not occur in narrow syntax). As a result, the *wh*-arguments before Spell-out only have a semantic feature [some], which cannot trigger movement. It follows that there is no movement in narrow syntax for *wh*-arguments. The derivations are illustrated in (18).

(18) Derivation of a general *wh*-argument

a. at NS



b. at SEM (LF)



The fact that intervention effect appeared with a general *wh*-argument provides evidence to support the existence of the interface after narrow syntax. The general *wh*-arguments must be co-related by Q operator, and this binding relation cannot be blocked by an intervener (other operators), as has shown in (16).

Contrary to general *wh*-arguments, *wh*-adjuncts and *wh*-words marked by *daodi* are genuine operators and have feature [*u*some]. They are not licensed inside *v*P, but in some higher functional projection. This assumption is supported by the fact that *wh*-adjuncts such as *weishenme/zenme* 'why' cannot appear inside the infinite clause. The data are shown in (19).

(19) a. ta *weisheme/zenme* xiang/dasuan [qu Taipei]?
he why/why want/intend go Taipei
'For x, x a reason, he want/intend to go to Taipei for x.'

b. *Ta xiang/dasuan *weisheme/zenme* [qu Taipei]?
he want/intend why/ why go Taipei

A *wh*-word marked by *daodi* is similar to a *wh*-adjunct in that *daodi* must appear in a higher projection to license *wh*-words, as shown in (20).

(20) a. ta daodi xiang qu nali?
he what-on-earth want go where
'Where-the-earth does he want to go?'

b. *ta xiang daodi qu nail?
he want what-on-earth go where

I suggest that *wh*-adjuncts and *daodi…wh* are licensed by a clause which is related to event structure rather than argument structure. The functional projection (FP) that *wh*-adjuncts merge might be something like Aspect or Tense. This is formulated in (21).

(21) a. [$_{CP}$ Q [*wh*-adjunct [$_{TP/AspP}$ [$_{vP}$ [$_{VP}$]]]]
b. [$_{CP}$ Q [*daodi* <*wh*> [$_{TP/AspP}$ [$_{vP}$ [$_{VP}$ <*wh*>]]]]

Wh-adjuncts and *daodi…wh* can be checked by Q before spell-out, unlike *wh*-arguments. At that point, *wh*-adjuncts and *daodi…wh* can be licensed by Q in narrow syntax. If this logic is correct, a Chinese *wh*-adjunct licensed in narrow syntax will behave like an operator like English, and the movement to scope position is predicted. If this is the case, the well-known fact of the island sensitivity in the case of *wh*-adjuncts can be captured. The derivations are shown in (22).

(22) a. *wh*-arguments

NS [$_{CP}$ Q C [$_{FP}$ F [$_{vP}$ OP(∃)$_{[some]}$[$_{vP}$ *v* [$_{VP}$ V *wh*-argument$_{[~~usome~~]}$]]]
[SOME]
[*u*some] is checked within NS

SEM [$_{CP}$ Q C [$_{FP}$ F [$_{vP}$ *v*[$_{VP}$ V *wh*-argument]]]
wh-argument is bound by [wh] after NS

b. *wh*-adjunct *weisheme*

NS [$_{CP}$ Q C [$_{FP}$ *wh*-adjunct$_{[~~usome~~]}$ [$_{FP}$ F [$_{vP}$ OP(∃)$_{[some]}$ [$_{vP}$ *v* [$_{VP}$ V]]]]]]]
[*u*some] is checked and bound by [wh] within NS

c. *wh*-arguments(*wh*-object) marked by *daodi*

NS [$_{CP}$ Q C [$_{FP}$ *daodi* [$_{FP}$ F [$_{vP}$ <*wh*-argument$_{[~~usome~~]}$>[$_{vP}$ *v* [$_{VP}$ V *wh*-argument [*u*some]]]]
[*u*some] is checked and bound by [wh]within NS

5. Conclusions

In this paper, I reviewed several previous studies about *wh*-in-situ languages, and discussed how each approach could be reanalyzed in a phase-base approach under a minimalist framework. I went on to discuss the asymmetries between *wh*-arguments and *wh*-adjuncts in Chinese. Their different syntactic behaviors, such as the island sensitivity and intervention effects, show their properties as operators or indefinites. *Wh*-arguments are bound by Q binder in semantic component, which is after narrow syntax. *Wh*-adjuncts, on the other hand, are bound by Q binder in narrow syntax and become operators, which must undergo movement and thus must be subject to locality.

References

Chomsky, N. (2004) Beyond Explanatory Adequacy. In: Belletti, A. (Ed.), Structures and Beyond: *The Cartography of Syntactic Structures, Volume 3*. Oxford University Press, 104-191.

Chomsky, N. (2008) On Phases. In: Freidin, R., Otero, C, and Zubizarreta, M.L (Eds.): *Foundational Issues in Linguistic Theory*. Cambridge, MA: MIT Press, 133-166.

Cheng, Lisa L.-S. (1991) *On the Typology of Wh-questions*, PhD Dissertation MIT.

Felser, C. (2004) Wh-copying, Phases and Successive Cyclicity, *Lingua* 114(5), 543–574.

Huang, C.-T. James. (1982) Move WH in a Language without WH Movement. *The Linguistic Review* 1, 369-416.

Li, Y.-H. Audrey. (1992) Indefinite Wh in Mandarin Chinese, *Journal of East Asian Linguistics*1, 125-155

Tsai, W.-T. D. (1994) *On Economizing the Theory of A' Dependencies*, Ph.D. dissertation, MIT

Tsai, W.-T. Dylan (2008) Left Periphery and How-why Alternations. *Journal of East Asian Linguistics 17,* 83-115

Reinhart, Tanya (1998) Wh-in-situ in the Framework of the Minimalist Program. *Natural Language Semantics* 6, 29–56.

Richards, Norvin. (2001) *Movement in Language*: Interactions and Architectures, Oxford Univ. Press.

Watanabe, Akira. (2001) Wh-in-situ Languages. In M. Baltin & C. Collins (eds) *The Handbook of Contemporary Syntactic Theory*, 203-225. Blackwell.

Watanabe, Akira (2003) Wh and Operator Constructions in Japanese. *Lingua* 113, 519-558