

**SYNTAX AND SEMANTICS OF QUANTIFICATION IN CHINESE**

**by**

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## ABSTRACT

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Following the spirit of Hornstein (1995), this thesis explores the possibility of eliminating entire LF A'-movement. The standard LF-movement analysis of wh-in-situ is shown to be neither conceptually desirable nor empirically adequate. Wh-in-situ are bound in situ by the abstract Q-operator via unselective quantification. A wh-adverb like *weishenme* (why) is subject to Q-licensing because it denotes a set of proposition and, therefore, cannot be unselectively bound. Its island effects result from the fact that this licensing must be clause-bounded. Rhetorical wh-questions (RWQ) in a wh-in-situ language are subject to unselective quantification of the same sort, but with their whs being bound by the abstract negation operator. This binding can be blocked by an intervening scope-bearing element, however. To overcome this, a wh must raise overtly, a clear indication that there is no QR as a process in Universal Grammar.

In addition, this thesis investigates the correlation of overt movement with quantification. For the first time it observes that whs in Chinese can move in the overt syntax and, unlike wh-movement in English, this movement displays an array of antireconstruction effects. It argues that this is an instance of topicalization where the moved wh checks the topic feature in SpecTopP. Furthermore, Chinese forms a partitive phrase by raising an NP to SpecTopP and stranding its associated quantifier determiner (Q-det). This partial movement obeys Diesing's (1992) Mapping Principle in that the weak Q-det must be stranded inside, and the strong one outside, the VP-shell. Finally, *dou*-quantification is reanalyzed in Minimalist terms. On this analysis, *dou* is treated as the head of Distributional Phrase (DistP)--a functional projection that sits between VP and AgrsP. DistP hosts the strong Q-feature and must be checked off before Spell-Out, an operation that can be done by either Move or Merge, as long as participating checker and checkee agree in their Q-feature strength (Barwise and Cooper, 1981). This analysis derives an array of facts associated with *dou*-quantification such as leftward-quantification, incompatibility of *dou* with a weak element, locality conditions and blocking effects. By assuming that *dou* can quantify over a set of proposition (Cheng and Huang 1994), this analysis provides a unifying account for *dou*-quantification of whs into an island, and for the focus use of *dou* (by invoking Rooth's P-set as the domain of universal quantification).

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## **Chapter 1**

### **Introduction**

Chomsky (1995) outlines a wholesale revision of the principles of Universal Grammar with a view to developing a most economical theory of language. This so-called Minimalist program (MP) departs radically from its immediate precursor--GB. In GB four distinct grammatical levels are identified--DS (D-structure), SS (S-structure), PF (Phonetic Form) and LF (Logical Form)--with DS related to SS by applications of transformations (Move ), and at SS the derivation branches into PF and LF. In this recent striving for parsimony the levels that survive Occam's Razor are PF and LF, which are indispensable on the ground that they are conceptually necessary. DS and SS, however, are regarded as extraneous and therefore can be eliminated from grammar.

With DS and SS gone, lexical items (LI) are selected from the Lexicon one after another and assembled by two major operations--Merge and Move--in accordance with X'-theoretic rules. Merge makes a copy of a lexical item from the Lexicon and integrates it into a tree; Move makes a copy of a phrase from one place in a tree and inserts it into another (Collins, 1997). The two operations are equally costly, and at any point of a derivation, either operation can be chosen without evoking an economy violation.

For Chomsky (1995) Move is driven by feature checking, which is performed in the spec-head configuration of a functional category. To ensure that a derivation proceeds in a cyclic fashion, a strong feature must be checked upon being introduced. This feature checking can be done not only by Move but also by Merge. Since the two operations are equally costly, either one can be taken to continue a derivation, its choice being subject to Convergence Conditions.<sup>1</sup>

Upon reaching the point of Spell Out, a derivation splits into PF and LF—the two levels where PF interfaces with the articulatory-perceptual system (A-P) and LF interfaces with the conceptual-intentional system (C-I). Any postulated movement at LF must also be driven by feature checking. Therefore, as argued by Hornstein (1995), QR should be eliminated since it does not check any feature in an obvious sense. A further action can be taken to eliminate LF wh-movement, and for that matter, perhaps all LF A'-movement. As a result of this, what emerges is a well-behaved LF.

With these Minimalist ideas as working hypotheses, this dissertation explores various problems in the analysis of quantification in Chinese. The

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<sup>1</sup> This assumption departs from Chomsky's (1995) where Move is believed to be more costly than Merge and therefore less preferred. For reasons of space, I allow myself to avoid discussing the facts that are alleged to support Chomsky's position. I will take this assumption as a null hypothesis and pursue it as far as I can.

dissertation is organized into six chapters. Chapter 1 presents a brief introduction to the theoretical framework I adopt and outlines the following five chapters.

Chapter 2 provides a Minimalist analysis of *wh-in-situ*. Huang (1982) proposes that *wh-in-situ* undergo LF-movement. This analysis has recently been challenged by Reinhart (1994) and Tsai (1994), among others, who basically revive Baker's (1970) Q-morpheme hypothesis and recast it in Minimalist terms. On this new analysis, *wh-in-situ* are variables, bound by the abstract Q-operator via unselective quantification. In this chapter I further argue against the LF-movement analysis by pointing out that it is not only conceptually undesirable, but also empirically inadequate. For example, *wh-in-situ* license neither parasite gaps (PG) nor across the board constructions (ATB), which is unexpected if *wh-in-situ* undergo LF-movement. In GB we are allowed to say that PG and ATB are only licensed at SS. But with SS gone and LF as the only level at which various principles apply, these types of level-specific rules can no longer be stated.

To explain why a *wh-adverb* exhibits island effects, Tsai (1994) argues that a *wh-adverb* is not able to enter into unselective quantification and therefore must LF-move to form an operator-variable relation. This residual LF-movement is shown to be unnecessary: a *wh-adverb* appears to exhibit island effects not

because it must LF-move, but because it must be licensed by Q in the immediate CP in which it occurs and interpreted therein. Thus, its island effects are an epiphenomenon of the fact that a wh-adverb cannot be licensed in its containing island clause, since the abstract Q is prohibited from being inserted at any point of a derivation except at the root (Chomsky, 1995).

Chapter 3 studies the syntactic and semantic properties of rhetorical wh-questions (RWQ) both in English and Chinese. As noted by Sadock (1971, 1974) and Han (1997), RWQ and wh-questions (WQ) in English differ from each other with respect to locality and NPI licensing, though they appear to share very much the same syntax. In the spirit of MP, I argue that while movement in WQ is to check the wh-feature in CP, the same movement in RWQ is to check the neg-feature in PolP where Culicover (1991) argues that a negative phrase is situated in the case of Negative Inversion. This enables us to explain why RWQ and Negative Inversion share such properties as clause boundedness and negative polarity licensing.

RWQ in Chinese are parallel with their WQ counterparts in not exhibiting island effects. It is argued that the same unselective binding strategy can be applied to RWQ, but with their wh-in-situ being bound by the negation operator (N-operator).

This parallel, however, breaks down when a wh-NP is c-commanded by a scope bearing item like a quantifier, or a negator, etc.. In such a position the wh-NP, if not overtly moved over its blocker, cannot be interpreted as a negative quantifier. This is attributed to the fact that leaving the restriction in situ (entailed by unselective quantification) causes the LF thereby generated to be uninterpretable. Wh-quantification is not subject to such an interpretive problem because a choice function can be invoked to assign wide scope to wh-in-situ (Reinhart, 1994). The fact that the wh-NP in such a position must overtly move over its commanding blocker to regain the RWQ reading is taken to indicate that there is no QR as a process in Universal Grammar (Hornstein, 1995); for if there were, the wh-NP should be able to postpone its movement until LF, contrary to fact.

Chapter 4 investigates the phenomenon that has not received any attention in the literature on Chinese linguistics. Contrary to what is falsely assumed, Chinese wh-NPs in fact may undergo overt movement. Some interesting properties that are associated with this movement are: (a) it eliminates the distributive reading with respect to a universal quantifier that is otherwise available for wh-in-situ; (b) it does not exhibit a superiority effect that is characteristic of wh-movement; (c) it obviates WCO effects; (d) it licenses both PG and ATB that are not possible if wh-NPs stay in situ. In a word, this

movement tends to display an antireconstruction effect. By demonstrating that topicalization shows precisely this array of properties, I argue that this movement is an instance of topicalization: a moved wh-NP checks the topic-feature in SpecTopP.

Semantically, a wh-topic question is constrained in that the value assigned to wh-variable *x* must be taken from the set that has been established in the previous discourse, i.e., to answer such a question one is provided with a particular set from which to choose members. On the assumption that a wh-NP is made up of two portions: [wh] and [pro], wh-topicalization can be distinguished from wh-movement in an interesting way. In the former it is the [pro] portion that needs to move for feature checking, since the [pro] denotes the discourse-constrained set. In the latter, by contrast, it is the [wh] portion that needs to move for feature checking and the [pro] is dragged along for PF-convergence (Chomsky, 1995). This is argued to be responsible for the fact that wh-movement tends to reconstruct, whereas wh-topicalization does not.

Chapter 5 is concerned with *dou*-quantification. Two important properties that have been commonly associated with *dou* are: (a) an NP that *dou* quantifies must be to the left of *dou* (Leftward Quantification); (b) an NP that *dou* quantifies must be plural. The Plurality Requirement, however, is shown to be neither necessary nor sufficient. Rather, it is the strength of an NP that

matters, i.e., an NP that *dou* quantifies must be strong in the sense of Barwise and Cooper (1981). Based on this I propose that *dou* is the head of a Distributional Phrase (DistP)--a functional projection that sits between VP and AgrsP. DistP hosts the strong Q-feature and must be checked off before Spell Out. Thus, the Leftward Quantification is derived in a principled way. Since a checker and a checkee must agree not only in their feature but also in their feature strength, the fact that *dou* cannot quantify a weak NP falls out without stipulation.<sup>2</sup>

Raising to SpecDistP for feature checking is an instance of A-movement, and an NP that has checked the feature of *dou* can undergo further movement. In addition, the feature of *dou* can be checked not only by Move but also by Merge as long as a checker and checkee agree in their feature strength, and either operation can be taken to continue a derivation as they are equally costly. On these assumptions all the observed facts regarding locality and blocking effects of *dou*-quantification are derived, as desired.

This analysis has a broader empirical coverage: it can be readily extended to account for the case where *dou* can be associated with an adverb like *yizhi*

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<sup>2</sup> This strong/weak distinction is reminiscent of the feature strength used in Wh-movement. They share one striking similarity, i.e., it is the strong feature that triggers overt movement. But they differ in the following aspect: DistP, if present, is always strong, and a weak NP can neither move covertly to its Spec for feature checking, nor can it be unselectively bound by *dou*. CP, however, can be optionally weak, and if so, a wh-phrase is bound by a Q-operator via unselective quantification.

(always) or *changchang* (often) that has universal or quasi-universal quantification over events (strong), but not with an adverb like *youshi* (sometimes) or *ouer* (occasionally) that has existential quantification over events (weak) (Davidson, 1967), and also to account for the case where *dou* appears to quantify a wh-NP into an island by assuming that *dou* in fact quantifies over the set of propositions in such a case (Cheng and Huang, 1994), and to bring focus *dou* in line by invoking Rooth's P-set as the domain of universal quantification.

Chapter 6 demonstrates that Chinese forms a partitive phrase by raising the NP to SpecTopP for feature checking and stranding its associated quantifier determiner (Q-det). This operation obeys Diesing's (1992) Mapping Principle in that a weak Q-det must be stranded inside and a strong one outside the VP-shell. It further demonstrates that a truncated numeral NP (with its NP being null) is a covert partitive phrase and likewise it is formed by raising the empty NP for feature checking and stranding its associated numeral Q-det. The Q-det in such a case can be stranded either inside or outside the VP-shell. If inside, it must be linked to its antecedent by the condition of inclusion (weak); if outside, it must be linked to its antecedent by the condition of identity (strong) (Enc, 1991).

Here again at work is Diesing's Mapping Principle.

## Chapter 2

### Wh-In-Situ and Unselective Quantification

#### 2.1. Introduction

There are basically two approaches to the assignment of wide scope to wh-in-situ. The one that was first proposed by Huang (1982) and has then been widely endorsed is that wh-in-situ undergo LF-movement to some clause-initial position where their scope is determined (henceforth the movement analysis). The other, originating with Baker (1970), is that a wh-question has an abstract Q-morpheme that directly binds wh-in-situ (henceforth the non-movement analysis). The difference between the two analyses is illustrated for a multiple wh-question like *Which critic reviewed which book* as follows.

- (1) a. With LF-movement: [which book<sub>i</sub> which critic<sub>j</sub> [e<sub>j</sub> reviewed e<sub>i</sub>]]
- b. Without LF-movement: Q <<sub>i,j</sub>> which critic<sub>j</sub> [e<sub>j</sub> reviewed which book<sub>i</sub>]]

Recently, the movement analysis has been seriously questioned, while the non-movement analysis has been revived by researchers working in the framework of MP. (Reinhart 1994, Tsai 1994) This revival of the old idea is expected given that the guiding principle of MP is economy. (1b), without invoking LF-movement, is arguably more economical than (1a) in terms of how many derivational steps are taken and therefore should be preferred over the latter.<sup>3</sup> In what follows we will evaluate both analyses with the conclusion that the non-movement analysis is not only, perhaps, conceptually more desirable, but also empirically more adequate than the movement analysis.

## 2.2. Movement Analysis (Huang, 1982)

Huang (1982) proposes that wh-in-situ undergo LF-movement to form an operator-variable relation. On this view, a Chinese wh-question like (2a) will have its LF-form as illustrated in (2b)

- (2) a. SS: Zhangsan xihuan shei  
           Zhangsan like who
- b. LF: shei<sub>i</sub> Zhangsan xihuan e<sub>i</sub>  
           who Zhangsan like

---

<sup>3</sup> As pointed out by Norbert Hornstein (pc) it is not clear why indexing is less costly than LF-movement. If we think of LF-movement as involving both movement and indexing, then it is not unreasonable to say that (1b) is more economical than (1a).

As such, Chinese and English *wh*-questions, though differing in overt syntax, do not differ in their LF, as shown by the corresponding English sentence of (2).

- (3) a. SS: Who<sub>i</sub> does John like e<sub>i</sub>?  
b. LF: Who<sub>i</sub> John like e<sub>i</sub>

Based on this, Huang argues that *wh*-movement is a universal process, and languages merely differ in terms of where this process applies, SS for English, LF for Chinese.

Within the GB framework where the ECP principle plays a central role this analysis has many advantages. First, it reduces the standard superiority effects, as illustrated in (4), to the ECP violation.

- (4) a. Who dislike what?  
b. \*What does who dislike?

According to Huang, *who* in (4b) LF-adjoins to *what* in SpecCP, as in (5b). From that position *who* does not c-command its trace and, therefore, does not antecedent-govern it, since the index of this Spec remains that of *what* given the Comp-indexing convention. As a subject, the trace of *who* is not head-governed, hence (5b) violates the ECP. In (5a) though the trace of *what* is not antecedent-governed, either; it is, however, head-governed, hence no violation of the ECP.

- (5) a. [what<sub>j</sub> [who<sub>i</sub>]] [e<sub>i</sub> dislike e<sub>j</sub>]  
b. \*[who<sub>j</sub> [what<sub>i</sub>]] [e<sub>j</sub> dislike e<sub>i</sub>]

Second, this analysis captures the wh-adjunct case in a similar fashion:

(6b) is the LF-form of (6a) where the wh-adjunct has moved to Comp at LF. From that position it is not able to antecedent-govern its trace given the Comp-indexing convention. An adjunct trace can never be head-governed. Thus, (6) is another instance of an ECP violation.

- (6) a. SS: \*Who arrived why  
b. LF: \*[why<sub>j</sub> [who<sub>i</sub>] [e<sub>i</sub> arrived e<sub>j</sub>]]

Third, by assuming that LF-movement, unlike syntactic movement, does not obey subadjacency, but does obey the ECP, Huang argues that a wh-argument can be LF-extracted out of an island because its trace is head-governed; this cannot happen with a wh-adjunct because its trace is not head-governed. Along these lines, Huang explains the standard argument/adjunct asymmetry in terms of LF-extraction, as illustrated in (7), (8) and (9).<sup>4</sup>

- (7) a. Subject Island  
[taolun shenme] zui youyisi  
discuss what most interesting  
What is x such that it is the most interesting to discuss x.
- b. Complex NP Island  
Zhangsan xiangxin [Lisi sha shei de shuofa]?  
Zhangsan believe Lisi kill who DE rumor  
Who is x such that Zhangsan believes the rumor that Lisi killed x.

---

<sup>4</sup> Strictly speaking, the A-not-A form is not an adjunct, but it shares very much the same syntactic properties with a wh-adjunct like *weishenme* (why). So, as we will see in later discussion, they should be treated on a par.

c. Adjunct Island

Zhangsan [yinwei shei mei lai] er bu gaoxing

Zhangsan because who not come then not happy

Who is x such that Zhangsan is not happy because x did not show up.

(8) a. Subject Island

\*[women weishenme taolun zhe jian shi] zui youyisi?

we why discuss this CL matter most interesting

What is the reason x such that it is most interesting for us to discuss this matter for x

b. Complex NP island

\*Zhangsan xiangxin [Lisi weishenme cizhi de shuofa]?

Zhangsan believe Lisi why resign DE rumor

What is the reason x such that Zhangsan believes the rumor that Lisi resigned for x.

c. Adjunct Island

\*Zhangsan [yinwei Lisi weishenme mei lai] er bu gaoxing.

Zhangsan because Lisi why not come then not happy

What is the reason x such that Zhangsan is not happy because Lisi did not show up for x.

(9) a. Subject Island

\*[taolun bu taolun zhe jian shi] zui youyisi?

discuss not discuss this CL matter most interesting

Lit. Is it interesting to discuss that matter or not to discuss this matter?

b. Complex NP Island

\*Zhangsan xiangxin [Lisi sha-mei-sha ren de shuofa]?

Zhangsan believe Lisi kill-not-kill person DE rumor

Lit. Does Zhangsan believe the rumor that Lisi killed a person or the rumor that Lisi did not kill a person?

c. Adjunct Island

\*Zhangsan [yinwei Lisi lai-mei-lai] er gaoxing

Zhangsan because Lisi come-not-come then happy

Lit. Is Zhangsan happy because Lisi came or because Lisi did not come?

What (7, 8, 9) shows is that a strong island does not prevent a wh-argument contained therein (7a, b, c) from having matrix question scope, but that it does prevent the wh-adjunct *weishenme* (8a, b, c) and the A-not-A form (9a, b, c) from having such scope.<sup>5</sup> Huang assumes that in all three cases a wh-element must move out of its island at LF. What makes (7), but not (8) and (9), acceptable is that in the former the argument trace left by the movement is head-governed and in the latter the adjunct trace left by the same movement is not. That is, the ECP is violated in the latter but not in the former, hence their contrast.

### 2.3. Arguments against the Movement Analysis

Let us first evaluate the movement analysis within the GB framework. Then we look at how MP handles wh-in-situ.

Despite its apparent success, even within the GB framework the movement analysis is not empirically adequate. As pointed out by Reinhart (1994), among others, this analysis leaves the following superiority fact unexplained.

(10) a. Whom<sub>i</sub> did John persuade e<sub>i</sub> to visit whom

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<sup>5</sup> Tsai (1994) distinguishes two uses of *weishenme*: one is reason, the other purpose. Purpose *weishenme*, in effect, is able to be extracted out of an island. So all the sentences in (8) will be acceptable if *weishenme* is construed as purpose. Though identical in form, reason *weishenme* and purpose *weishenme* may differ phonologically in that *wei* in reason *weishenme* is stressed while *shenme* in purpose *weishenme* is stressed. I do not want to delve into this complication in this dissertation. *Weishenme* referred hereafter should be construed as reason only.

b. \*Whom<sub>i</sub> did John persuade whom to visit e<sub>i</sub>

In (10a) the wh-NP that has overtly moved originates higher in the tree than the one that stays in situ, and the resulting sentence is acceptable. In (10b) the wh-NP that has overtly moved originates lower in the tree than the one that stays in situ, and a superiority effect is witnessed. This contrast, however, cannot be reduced to the ECP, for the wh-traces in both sentences are head-governed.

Also, the statement that LF-movement, unlike syntactic movement, does not obey subjacency is questionable. As pointed out by Reinhart (1991, 1994) this statement is not just conceptually problematic, but simply empirically wrong. Assuming that in the case of “exception” ellipsis (EE), as illustrated in (11), the underlined (correlate) phrase must move at LF and adjoin to the *except* phrase,<sup>6</sup> Reinhart argues that if LF-movement did not obey subjacency, we would expect the sentences in (11b), where *every composer* must move out of the relative clause, to be as good as (11a), but this is not the case. In fact, (11b) is as bad as the case of standard subjacency violation.<sup>7</sup>

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<sup>6</sup> The rationale for this assumption is that the *except* remnant must be associated with another NP to be licit. For a sentence like (a) one cannot interpret it as in (b) because (b) makes no sense. Thus, at LF *no one* and the *except* phrase must form a constituent.

- (a) No one kissed his mother except for Felix.  
(b) No one kissed his mother except Felix kissed his mother.

<sup>7</sup> This type of evidence, as pointed out by Hornstein (1995) citing Brody (1993), is not decisive. For a fuller discussion to this effect see Hornstein (1995).

(11) a. Lucie admitted that she stole everything, when we pressed her, except for the little red book.

b. \*The people who love every composer arrived, except Mozart.

More decisive evidence against the movement analysis comes from Chinese where we find that wh-in-situ does not support a conjunctive wh-question construal, nor does it license a parasite gap. For example, (12) where both wh-NPs stay in situ can only be interpreted as two separate wh-questions (ii), not as a conjunctive wh-question (i).<sup>8</sup>

(12) Zhangsan xihuan shenme, Lisi bu xihuan shenme?

Zhangsan like what Lisi not like what

(i) \*What does Zhangsan like but Lisi does not like?

(ii) What does Zhangsan like and what does Lisi not like?

Under the movement analysis this fact remains a mystery. If we suppose that an English conjunctive wh-question like (13a) is derived by moving *what* out of the two conjuncts via the so-called across-the-board (ATB) movement as illustrated in (13b), then it is unclear why the wh-NPs in (12) cannot undergo an ATB-movement at LF to form a conjunctive wh-question.

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<sup>8</sup> (12) is not a conjunctive wh-question because it cannot be answered by simply saying “This book.”

- (13) a. What does John like but Mary does not like?  
 b. What<sub>i</sub> does John like e<sub>i</sub> but Mary does not like e<sub>i</sub>

Even more damaging to the movement analysis is the fact that for a wh-question like (12) the wh-NPs can be extracted via ATB-movement in overt syntax to license the desired conjunctive wh-question reading.<sup>9</sup>

- (14) shenme<sub>i</sub> Zhangsan xihuan e<sub>i</sub>, Lisi bu xihuan e<sub>i</sub>  
 what Zhangsan like Lisi not like  
 (i) What does Zhangsan like but Lisi does not like?  
 (ii) \*What does Zhangsan like, what does Lisi not like?

In contrast to (12), (14) can only be interpreted as a conjunctive wh-question.

What has been shown here is that a conjunctive wh-question in Chinese can only be derived by overtly moving the wh-NPs via ATB-movement. This obligatoriness indicates that wh-in-situ do not raise at LF.

The second piece of evidence concerns the Parasite Gap Construction in Chinese. Again, wh-in-situ do not license a parasite gap. Consider the following example.

- (15) a. \*?Zhangsan zai meiyou kanjian shei<sub>i</sub> zhiqian jiu aishang-le e<sub>i</sub>?  
 Zhangsan at not see who before then love ASP  
 Who did Zhangsan fall in love with without seeing?

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<sup>9</sup> One interesting problem brought to my attention by Norbert Hornstein is: Why can't the two *whs* in (12) be bound by Q with the same index? Namely, why must ATBs be formed by Move? This is perhaps due to the fact that two *whs* can never be coindexed. (This is somehow related to the fact that a *wh* can never be used anaphorically.) If this is correct, we might say that there is in fact no ATB. What happens in ATB is that it starts with one *wh* and this *wh* moves all the way up to the front of a sentence just like in PG. This provides some evidence for Munn (1993)'s analysis in which he treats ATB on a par with PG.

- b. Zhangsan zai meiyou kanjian shei<sub>i</sub> zhiqian jiu aishang-le ta<sub>i</sub>?  
 Zhangsan at not see who before then love ASP her/him  
 Who did Zhangsan fall in love with without seeing?

What happens here is that (15a), where the wh-NP is coindexed with the parasitic gap indicated by *e*, is very bad, but when this gap is replaced by a pronoun, as in (15b), the resulting sentence becomes perfectly acceptable. This contrast poses a similar kind of problem for the movement analysis; for if the wh-NP in (15a) raised at LF, it should be able to license a parasitic gap, just like its English counterpart. But this is not the case.

Again, like the conjunctive wh-question case, the wh-NP in (15a) can overtly move to sentence-initial position from which it is able to bind the parasitic gap, as illustrated in (16).

- (16) shei<sub>i</sub> Zhangsan zai meiyou kanjian t<sub>i</sub> zhiqian jiu aishang-le e<sub>i</sub>?  
 who Zhangsan at not see before then love ASP  
 Who did Zhangsan fall in love with without seeing?

(16) is a perfect Chinese sentence with the overtly moved wh-NP coindexed with both its trace and the parasitic gap. This once again indicates that wh-in-situ do not raise at LF; otherwise (15a) should be able to license the parasitic gap as (16) is.

#### 2.4. Wh-in-situ in MP

Let us now evaluate the movement analysis within MP. As noted earlier, MP departs radically from GB in that it eliminates both DS and SS as levels. With this paradigm shift, all the issues regarding wh-in-situ must be rethought. For example, it is crucial for the movement analysis to have both SS and LF so that rules and principles can be stated as relevant for a particular level. Subjacency, for example, was argued to apply at SS, but not at LF, and this was further used to argue for the existence of LF as a level. Now in MP, LF as a level is conceptually necessary, but SS as a level has been called into question. With SS being eliminated from the grammar and LF as the only level where various rules and principles apply, we can no longer say anything like subjacency applies at SS but not at LF.

One more case in point: from the GB point of view one can very well argue that wh-in-situ do not support a conjunctive wh-question construal because ATB movement must take place at SS. Similarly, one can argue that wh-in-situ do not license a parasitic gap because PG-licensing must be done at SS. Now, with SS gone, these level-specific statements cannot be made any more.

In addition, the success of the movement analysis hinges upon the ECP, a principle that does not have a clear status in MP. So even if the analysis captures the relevant facts reasonably well, it cannot be stated once the principle it relies on has been removed from the grammar. But, as a matter of fact, the movement analysis, as pointed out earlier, does not capture all the relevant facts. For

example, it does not provide any explanation for the superiority effect illustrated in (10), repeated here as (17) for convenience. In MP, however, this fact falls out in a very natural way from economy considerations. (17b) is bad simply because (17a) is an alternative derivation that outputs the same LF-object as (17b), but more economically. Moving the wh-NP higher in the tree to the initial position (17a) travels a shorter distance than moving the wh-NP lower in the tree (17b). Given the economy requirement of taking the shortest move, the derivation of (17a) blocks that of (17b). (See Kitahara 1997, among many others, for discussion.)

- (17) a. Whom did John persuade e to visit whom  
b. \*Whom did John persuade whom to visit e

Conceptually, the non-movement analysis is doubtless more appealing than the movement analysis. For one thing, it eliminates movement that is not at least apparently necessary for convergence. Empirically, we still need to consider whether leaving wh-in-situ in situ gives us a desired LF for semantic interpretation, and also how the non-movement analysis handles the wh-adjunct case without appealing to ECP. I will discuss these two issues in the following two sections.

## **2.5. How wh-in-situ are Interpreted?**

In MP wh-in-situ stay in situ at LF and are bound via the mechanism of unselective quantification, that is, the Q-operator unselectively binds all the wh-variables that have not moved in the overt syntax. Let us first look at how the LF obtained by not moving wh-in-situ differs from the one obtained by moving wh-in-situ. Let us assume the standard semantics of questions proposed by Karttunen (1977). On this view, wh-NPs are existential and the question denotes the set of propositions which are true answers to it. For example, (18b) is the semantic interpretation of question (18a).

- (18) a. Who does John like?  
 b.  $\{P \mid (\exists x) (\text{person}(x) \ \& \ P = \wedge(\text{John likes } x) \ \& \ \text{true}(P))\}$

(18b) is the set of true propositions P, such that there is a person x about which P asserts that John likes x.

Applying Karttunen's analysis to the multiple wh-question in (19a), we have (19b) as the LF-form without LF-movement of the wh-in-situ, and (19c) as the LF-form with LF-movement of the wh-in-situ.

- (19) a. Which critic reviewed which book?  
 b. With LF-movement:  $\{P \mid (\exists x) (\exists y) (\text{critic}(x) \ \& \ \text{book}(y) \ \& \ P = \wedge(x \text{ reviewed } y) \ \& \ \text{true}(P))\}$   
 c. With no LF-movement:  $\{P \mid (\langle x, y \rangle) (\text{critic}(x) \ \& \ P = \wedge(x \text{ reviewed } y \ \& \ \text{book}(y) \ \& \ \text{true}(P))\}$

(19b) says that this is the set of true propositions P such that there is a critic x and a book y, about which P asserts that x reviewed y. (19c) differs from (19b) in that the book restriction stays downstairs and it says that that this is the set of true propositions P such that there is x and y, x is a critic, about which P asserts that x reviewed y and y is a book.<sup>10</sup>

But, as argued by Reinhart (1994), leaving the restriction in situ is very dangerous. She gives the following example to demonstrate that leaving the restriction in situ will give the wrong semantic interpretation.

(20) Who will be offended if we invite which philosopher?

(21) WRONG:

a. For which  $\langle x,y \rangle$ , if we invite y and y is a philosopher, then x will be offended.

b.  $\{P \mid (\langle x,y \rangle) \ \& \ P = \wedge ((\text{we invite } y \text{ and } y \text{ is a philosopher}) \rightarrow (x \text{ will be offended}))\}$

c. Lucie will be offended if we invite Donald Duck

(22) RIGHT:

a. For which  $\langle x,y \rangle$ , y is a philosopher, and if we invite y, x will be offended.

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<sup>10</sup> As pointed out by Hornstein (pc.) (19b) differs from (19c) in that the former quantifies over individuals, the latter over ordered pairs

b.  $\{P | (\langle x, y \rangle ((y \text{ is a philosopher}) \& P \Rightarrow ((\text{we invite } y) (x \text{ will be offended}))))\}$

In (21) the restriction *y is a philosopher* is left in situ, inside the if-clause. Now, if (21) is the question expressed by (20), then one of the possible answers to it should be (21c). Since Donald Duck is not a philosopher, it must be true of him that if he was a philosopher and we invite him, Lucie will be offended. Since the restriction is in the antecedent clause of an implication, anything that is not a philosopher could make the implication true. We, of course, do not want (21c) to be in the set of possible answers to the question in (20).

In (22) the restriction is pulled out of the implication. By doing so we only allow the values of *y* to be those who are philosophers. This, correctly, disallows (21c) to be in the set of possible answers to the question expressed by (20).

So, on one hand, we want to leave wh-in-situ in situ, but, on the other hand, we want to have the right semantic interpretation (in which wh-in-situ must have wide scope). The question is whether it is possible to assign wide scope to wh-in-situ without pulling its restriction out (i.e., without moving it at LF)

Reinhart (1994) offers a solution. She suggests that we can allow existential quantification over choice functions, i.e., functions applying to a set and yielding an individual member of the set. For example, in (23) such a function applies to the set of books

- (23) a. Every lady read some book  
 b.  $(\lambda f)(\lambda z)(\text{lady}(z) \rightarrow z \text{ read } f(\text{book}))$

(23b) says that a function exists, such that for every  $z$ , if  $z$  is a lady, then  $z$  reads the book selected by this function, which is equivalent to saying that there is a book such that every lady reads it.

Importantly, a function variable of this sort can be bound by an existential operator arbitrarily far away, i.e.,  $f$  is not placed at the head of a clause by MOVE. With this in mind, let us go back to the problem case under discussion.

With the use of a choice function (20) can be represented as follows.

- (24) a. For which  $\langle x, f \rangle$ , if we invite  $f(\text{philosopher})$ ,  $x$  will be offended.  
 b.  $\{P \mid (\exists \langle x, f \rangle) (P \wedge ((\text{we invite } f(\text{philosopher})) \rightarrow (x \text{ will be offended})))\}$

(24b) says that this is the set of the true propositions  $P$  such that there is a person  $x$  and a choice function  $f$  about which  $P$  asserts that if we invite the philosopher that the choice function  $f$  selects, then  $x$  will be offended. Now, although the restriction is still in the if-clause, the values permitted in the answer can only be from the set of philosophers, a desired result.

So, by applying a choice function to wh-in-situ, we can leave wh-in-situ in situ at LF but have the same semantic effect as moving them to their scope position.

## 2.6. Wh-Adverbs

The next problem for the non-movement analysis is how to capture the apparent ECP effects in the case of wh-adjuncts. There are two related questions: First, why is a multiple question involving a wh-adverb like *why* unacceptable? Second, why does *weishenme* or the A-not-A form appear to display island effects. I will make a brief comment on the first question and then devote substantial efforts to the second one.

### 2.6.1. Multiple Wh-Questions

Recall that under the movement analysis, the unacceptability of (6), repeated here for convenience, is explained by the ECP, that is, the trace left by the LF-movement of *why* is neither antecedent nor head-governed.

(6) \*Who arrived why?

Now wh-in-situ remain in situ at LF, i.e., (6) does not involve any movement, and it can no longer be explained by the ECP. If wh-in-situ are bound by the Q-operator via unselective quantification, we should expect (6) to be as good as (25).

But this is not the case.

(25) Who bought what?

The question really boils down to what is the difference between *wh*-adverbs and *wh*-NPs. We can think of a *wh*-NP as made up of two morphemes: *wh*+pronominal and as such *who* can be analyzed as *wh*+someone, *what* as *wh*+something.<sup>11</sup> A *wh*-adverb like *why*, on the other hand, cannot be analyzed like this. One piece of evidence to this effect is that *who* or *what* can be morphologically combined with *ever* (*whoever*, *whatever*), whereas *why* cannot (\**whyever*). This morphological gap is not accidental. Rather, it has a deep semantic reason. Consider the following examples

- (26) a. John likes whatever Bill likes  
a' For every x, x is a thing such that if Bill likes x, John likes x.  
b. John hates whoever takes this job.  
b' For every x, x is a person such that if x takes this job, John hates x.

If we take *whatever* or *whoever* as having universal quantification over individuals, i.e., (26a) can be interpreted as (26a') and (26b) as (26b'), then the reason *whyever* is impossible becomes clear: *why*, unlike *who* or *what*, does not denote a set of individuals. In other words, it does not have a pronominal part in its morphology that can function as a variable.<sup>12, 13</sup>

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<sup>11</sup> This idea was mentioned in Chomsky (1964).

<sup>12</sup> Arguably, the universal quantificational force is supplied by *ever* in (26).

<sup>13</sup> It is plausible to say that *why* denotes a function that ranges over higher-order entities (Reinhart 1994), or for that matter, over a set of propositions. For example, (a) can be interpreted as denoting a set of propositions illustrated in (b)

Such a distinction can be further demonstrated by the contrast in (27).

- (27) a. What book did everyone like?  
b. Why did everyone like this book?

While (27a) is ambiguous and it can be answered with one proposition (Everyone like Syntactic Structure) or with a set of propositions (John likes Syntactic Structure, Mary likes Lectures on Government and Binding and Bill likes Minimalist Program), (27b) is not ambiguous: it can be answered with one proposition like (28a), but not with a set of propositions like (28b).

- (28) a. Everyone likes this book because it is thought-provoking.  
b. John likes this book because it is thought-provoking; Mary likes this book because it is entertaining; Bill likes this book because it is graphic.

For the answer in (28b) to be possible, we would have to pair each member in the universal domain with a proposition, since *why* does not denote a set of individuals. For reasons not clear to me, such a pairing can only be done from an individual to an individual.

Back to the problem at hand. What is required in the interpretation of a multiple wh-question is to establish a pairing relation between the domain denoted by the first wh and the range denoted by the second one. For example,

- 
- (a) Why does John like this book?  
(b) (i) because this book is thought-provoking.  
(ii) because this book is entertaining.

the answer to (25) would be such a pair as (29), that is, we pair every member in the set of people with the things each purchased.

(29) John bought a TV set, Bill bought a VCR, Mary bought a CD player.

What makes the multiple wh-question in (6) unacceptable is that such a pairing relation cannot be established. Again, this is because *why* does not denote a set of individuals. For (6) to be answerable, we would have to pair each member in the domain denoted by *who* with a proposition (a higher-order entity) denoted by *why*, because exhaustive pairing is dictated by a multiple wh-question. Since pairing can only be done from an individual to an individual, it renders (6) unacceptable.<sup>14</sup>

### 2.6.2. Island Effects of Wh-in-situ in Chinese

As shown in (8) and (9) *weishenme* and the A-not-A form are subject to island conditions. The question is, if wh-in-situ are bound in situ by the Q-operator via unselective quantification, why can't *weishenme* and the A-not-A form be so bound. One solution that has been proposed in the literature is that *weishenme* and the A-not-A form must LF-move, and the island effects are thereby reduced to subjacency violations (Tsai 1994, Shi 1994). In this section I argue that wh-

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(iii) because this book is graphic.

<sup>14</sup> Thanks go to Juan Uriagereka (pc.) for not allowing sloppiness and his comments prompt me to elaborate on this line of argument.

adverbs do not move at all, rather they must be Q-licensed in the minimal clause in which they appear and interpreted therein. On this analysis, the island effects are nothing but an epiphenomenon of the fact that *weishenme* and the A-not-A form in such cases are not locally Q-licensed.<sup>15</sup> If we can capture all the facts without appealing to LF-movement, I will take it as a good result because everything being equal, the non-movement analysis is always preferable to the movement one.

#### **2.6.2.1. LF-Movement?**

Shi (1994) argues that the A-not-A form must raise at LF, thereby attributing its island effects to subjacency violations. He, however, does not say why the A-not-A form must LF-move. Tsai (1994) makes a similar argument for *weishenme*, and provides a motivation for this movement, i.e., *weishenme* is unable to be unselectively bound and therefore must raise to form an operator-variable relation.

There are two parts to Tsai's argument: (a) *weishenme* (or the A-not-A form for that matter) is not able to be unselectively bound; (b) they must move. Note that theoretically (b) does not follow from (a). There is no question about (a): a wh-adverb does not denote a set of individuals, hence it cannot be

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<sup>15</sup> Aoun and Li (1993) has the similar proposal.

unselectively bound.<sup>16</sup> Further evidence of this effect comes from Chinese where unlike wh-NPs, *weishenme* and the A-not-A form cannot be employed to form the so-called donkey sentences.<sup>17</sup>

- (29) a. *shei xian lai, shei xian chi*  
 who first come who first eat  
 For every x, x is a person, if x comes first, x eats first.
- b. *ni chi shenme wo chi shenme*  
 you eat what I eat what  
 For every x, x is a thing, if you eat x, I eat x.
- c. *ni qu nali, wo qu nali*  
 you go where, I go where  
 For every x, x is a place, if you go to x, I go to x
- d. *ni shenmeshihuo qu, wo ye shenmeshihuo qu*  
 you when go I when go  
 For every x, x is a time, if you go at x, I go at x.
- e. *\*ni weishenme qu, wo ye weishenme qu*  
 you why go, I why go  
 For every x, x is a reason, if you go for x, I go for x.
- f. *\*Zhangsan qu-bu-qu, Lisi ye qu-bu-qu*  
 Zhangsan go-not-go Lisi also go-not-go  
 If Zhangsan goes, Lisi goes; If Zhangsan does not go, Lisi does not go either.

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<sup>16</sup> I assume that unselective binding only applies to individual-level variables.

<sup>17</sup> A wh-adverb like *zeme* (how) can be used to form a donkey sentence. This seems to suggest that some line should be drawn between *how* and *why*.

- (a) *ni zeme zuo, wo ye zeme zuo*  
 you how do, I also how do  
 For every x, x is a manner, if you do it in x, I do it in x.

According to Cheng and Huang (1994), the donkey sentence of this sort can be handled by unselective quantification. A covert necessity (universal) operator is inserted at the beginning of the sentence to bind two *wh*-NPs, giving rise to the force of wide-scope universal quantification, as illustrated in (30) for sentence (29a).

- (30)     x (x xian lai, x xian chi)  
          first come first eat  
          For every x, x is a person if x comes, x eats first.

Importantly, *weishenme* and the A-not-A form are not available for such quantification: (29e) and (29f) cannot mean what is indicated by their English translations. This is simply because neither of them denotes a set of individuals, hence they are not individual-level variables. As a result of this, they cannot be quantified over by the universal operator.

I want to take issue with the second part of Tsai's claim to which we turn in the next subsection.

#### **2.6.2.2. Arguments against the Residual LF-Movement**

For Tsai (1994), and Shi (1994) for that matter, (8) and (9) are nothing but subjacency violations: at LF *weishenme* and the A-not-A form must raise up to sentence initial position, and to do so they would have to move out of an island.

Since movement, whether overt or covert, is subject to island conditions, hence their ungrammaticality.

The problem with this analysis is that if *weishenme* and the A-not-A form must raise at LF, then we would expect (31a, b) to have both matrix and embedded question readings just like (31c). But, this is not true.

- (31) a. Zhangsan zhidao weishenme Lisi bu lai.  
Zhangsan know why Lisi not come  
(i) Zhangsan knows why Lisi did not come  
(ii) \* Why does Zhangsan know that Lisi did not come.
- b. Zhangsan zhidao Lisi lai bu lai  
Zhangsan know Lisi come-not-come  
(i) Zhangsan knows whether Lisi will come or not.  
(ii) \*Does Zhangsan know Lisi will come or not?
- c. Zhangsan zhidao Lisi mai-le shenme  
Zhangsan know Lisi buy-ASP what  
(i) Zhangsan knows what Lisi bought  
(ii) What does Zhangsan know Lisi bought.

The verb *zhidao* (know) selects either [+wh] or [-wh] Comp. As noted by Huang (1982), (31c) is ambiguous in that it can be interpreted either as a matrix question or as an embedded question. In contrast, (31a) and (31b) can only be interpreted as an embedded question. If Tsai (1994) and Shi (1994) are correct that *weishenme* and the A-not-A form must raise at LF, then there is no reason why they cannot raise in (31a, b) and be interpreted as a matrix question, for such raising should not violate subjacency.

Similarly, on the movement analysis, it is not clear why (32b, c) are ungrammatical.

- (32) a. Zhangsan xiangxin shei lai le  
Zhangsan believe who come Part  
Who does Zhangsan believe has come.
- b. \*Zhangsan xiangxin Lisi weishenme lai  
Zhangsan believe Lisi why come  
Intended: Why does Zhangsan believe Lisi came
- c. \*Zhangsan xiangxin Lisi lai bu lai  
Zhangsan believe Lisi come-not-come  
Intended: Does Zhangsan believe that Lisi come or not?

In (32) the verb *xiangxin* (believe) selects [-wh] Comp for its complement clause. As such, for the sentence to be grammatical the wh-element in the complement clause must be interpreted as having matrix scope. This is not a problem for (32a) where the wh-argument can stay in situ and be unselectively bound by the abstract Q-operator at matrix C. This strategy of unselective binding is not available for *weishenme* and the A-not-A form. The point at issue is that if *weishenme* and the A-not-A form must raise at LF, they should be able to raise in (32b, c) since no island intervenes, and the sentences should be grammatical with *weishenme* or the A-not-A form having matrix scope. But, again, this is not the case.

There is further evidence to demonstrate that the A-not-A form does not raise at all. Consider the following example.

- (33) \*?mei ge ren dou lai bu lai?  
every CL person all come-not-come  
Does everyone come or not?

In Wu (1997) I show that the A-not-A question is not compatible with a quantifying NP in subject position. I argue that this restriction stems from the following two reasons. First, an A-not-A question is a partition of possible states of affairs into two mutually exclusive but jointly exhaustive cells, but an A-not-A question having quantifying NP in its subject position may partition the possible states of affairs into more than two cells. Giving a model having two members in the set, say, John and Mary, the partition may generate three cells in terms of whether they belong to the predicate set, i.e., the set of people coming or not.

- (34) Positive Cell: {John comes, Mary comes}  
Negative Cell: {John does not come, Mary does not come}  
Mixed Cell: {Either John or Mary comes, but not both}

Second, the A-not-A form must be interpreted under the scope of a quantifying subject. This determines how we give the negative answer to question (33), as illustrated in (35b) where the quantifying subject must take scope over the negation.

- (35) a. mei ge ren dou lai  
           every CL person all come  
           everyone comes
- b. mei ge ren dou bu lai  
           every CL person all not come  
           (i) no one comes  
           (ii) \*Not everyone comes

The relation between the two possible answers in (35) is what logicians call “contrary,” i.e., both may be false. Thus, if the mixed cell holds true in the real world neither the affirmative answer in (35a) nor the negative one in (35b) can be given since both are false in this state of affairs.

Crucially, for such an analysis to work, the A-not-A form must be interpreted in situ, i.e., under the scope of a quantifying subject. If the A-not-A form could raise at LF, as argued by Shi (1994), it would be possible for the A-not-A form to scope over the quantifying subject. In fact, as shown in (Wu, 1997), the A-not-A form can be overtly realized before a quantifying subject and the question thus formed is perfectly acceptable, as illustrated in (36). This is because the negative answer to question (36) would be something like “Not everyone comes,” i.e., the negation takes scope over the quantifying subject.<sup>18</sup>

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<sup>18</sup> In Wu (1997, 1998) I argue that when the A-not-A form takes scope over a quantifying subject, the partition problem can be avoided. For example, the two possible answers to the question in (36) will be “Everyone comes” and “Not everyone comes.” Importantly, the latter answer is not logically incompatible with “No one comes.” It is perfect to say something like “Not everyone, in fact, no one comes.” As such, the two possible answers will be jointly exhaustive. For a fuller discussion, see Wu (1997, 1998).

- (36) shi-bu-shi mei ge ren dou lai?  
 be-not-be every CL person all come  
 Does everyone come or not?

Now the point at issue is that if the A-not-A form raises at LF, question (33) would end up having the same LF-form as (36) and it should be acceptable, contrary to fact.

### 2.6.2.3. An Alternative Explanation

We cannot simply attribute the island effects of *weishenme* and the A-not-A form to their LF-movement, because it is quite possible that *weishenme* and the A-not-A form, for reasons to be explicated later, must be interpreted in the minimal clause in which they appear and licensed by Q in the same clause. If this is true, then the island effects observed in (8) and (9) are only apparent and their ungrammaticality is simply due to the fact that there is no Q in the minimal clause in which *weishenme* or the A-not-A form appears, hence they are not licensed. A case bearing on this issue are the following examples.

- (37) a. women taolun [Lisi weishenme cizhi de wenti].  
 we discuss Lisi why resign DE question  
 We discussed the question why Lisi resigned
- b. women taolun [Lisi cizhi bu cizhi de wenti].  
 we discuss Lisi resign-not-resign DE question  
 We discussed the question of whether Lisi will resign or not.

In (37) *weishenme* and the A-not-A form are bound by a Complex NP island, but unlike (8b) and (9b), they are grammatical. What distinguishes (37) from (8b, 9b) is that in the former the nominal head *wenti* (question) of the complex NP selects [+wh] Comp, while in the latter the nominal head *shuofa* (claim) selects [-wh] Comp. That is to say, in the former, but not in the latter, *weishenme* and the A-not-A form are Q-licensed.

Given the fact, the following condition for this Q-licensing can be formulated.

(38) A Q-licensee must be bound by a Q-licenser in its immediate CP.<sup>19</sup>

This condition is satisfied in (37) where the Q in the embedded CP is a clausemate of *weishenme* or the A-not-A form. In a simplex sentence like (39) this condition is met as well because abstract Q can be inserted in CP at LF to bind *weishenme* or the A-not-A form.

- (39) a. Zhangsan *weishenme* bu qu xuexiao?  
Zhangsan why not go school  
Why does Zhangsan not go to school?
- b. Zhangsan qu bu qu xuexiao?  
Zhangsan go not go school  
Does Zhangsan go to school or not?

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<sup>19</sup> Licensing differs from binding in that licensing tends to be local. NPI-licensing, for example, is generally clause-bounded

Though, for (8) and (9), abstract Q can be inserted at the root, this LF-insertion, however, does not do any good, for it is too far away from *weishenme*, or the A-not-A form, to license it.

In short, *weishenme*, or the A-not-A form, does not denote a set of individuals and, therefore, it cannot be unselectively bound as other whs are.

Instead, it must be Q-licensed. This licensing observes a locality condition.<sup>20</sup>

#### 2.6.2.4. Counterexample?

To really challenge the proposed analysis is to show that *weishenme* or the A-not-A form can have cross-clausal scope when no island intervenes. The only case that appears to do so is the following.

- (40) Ni shuo/cai/renwei ta zuotian weishenme mei lai?  
You say/guess/ think he yesterday why not come  
Why do you say/guess/think he didn't come yesterday?

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<sup>20</sup> In terms of locality, Q-licensing is similar to NPI licensing in that they are both clause bounded. In (a) *anything* is licensed by negative Comp selected by *doubt*, whereas in (b) the negation in the main clause is too far away to license *anything*.

- a. John doubt that Bill has done anything.  
b. \*John does not know that Bill has done anything.

This type of verb (verbs of conjecture in Lin's (1992) terminology) seems to allow *weishenme* in its complement clause to have matrix scope.<sup>21</sup>

Lin (1992) contrasts verbs of conjecture with verbs of opinion in (41) (again Lin's terminology), showing that the latter type does not allow *weishenme* in its complement clauses to have matrix scope.

- (41) \*Ni xiangxin/xiwang/jiading/danxin ta zuotian weishenme mei lai?  
you believe/hope/assume/worry/ he yesterday why not come  
Why do you believe/hope/assume/worry he didn't come?

Working under the GB framework, Lin assumes that both (40) and (41) involve LF-movement of *weishenme*. (40) is good because the trace left by moving *weishenme* is properly governed; (41) is bad because the trace left is not properly governed. To support this analysis Lin claims that a verb of conjecture selects a strong Comp while a verb of opinion selects a weak one on the basis of the following evidence.

- (42) a. Ni shuo/cai/renwei [ta hui lai ma]?  
you say/guess/think he can come Q  
Do you say/guess/think he will come?  
b. Ni xiangxin/xiwang/danxin [ta hui lai] ma?  
you believe/hope/worry he will come Q  
Do you believe/hope/worry he will come?

According to T.-C. Tang, though the question marker *ma* appears sentence-finally in both (42a, b), *ma* in (42a) seems to be attached to the embedded clause

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<sup>21</sup>Admittedly, the terminology here is not well chosen. I still use it for lack of a better name.

rather than to the matrix clause, for verbs of opinion, the situation is just reversed, with the question marker *ma* being construed with the matrix clause. Lin interprets this distinction as supporting his claim that the Comp selected by a verb of conjecture is strong (as it can host a question marker), and the Comp selected by a verb of opinion is weak (as it cannot host a question marker). Lin further argues that a strong Comp can head-govern the trace in its Spec position, whereas a weak one cannot.

There are lots of problems with this analysis. For one thing, it is not clear how the weak/strong distinction is defined for Comp. If this distinction is defined in terms of whether it can host the wh-feature, then verbs like *xiangzhidao* (wonder) and *wen* (ask) should select a strong Comp. This, then, predicts that in (43) LF-movement of *weishenme* should be allowed, since the trace left would be head-governed, and the sentences should have a matrix question reading. But, unfortunately, this prediction is completely wrong.

- (43) Zhangsan xiangzhidao/wen Lisi weishenme bu lai.  
Zhangsan want-to-know/ask Lisi why not come  
Zhangsan wonders/asks why Lisi did not come.

What seems to be the case is that a strong Comp (wh-selected), rather than allowing the wh-element in its complement clause to move up to a matrix clause for scopal interpretation, forces it to stay where it is and be interpreted therein.

The question, then, is why *weishenme* (the A-not-A form for that matter) in (40) can have matrix scope. I suggest that the matrix question reading in such a case is illusive. A verb of conjecture selects neither [+wh] nor [-wh] Comp, i.e., its complement clause is not really embedded in it. Rather, a verb of conjecture and its subject form some sort of parenthetical phrase.<sup>22</sup> There is some evidence to this effect. For example, such a verb and its subject can be easily placed at the end of a sentence (44a), a verb of opinion, however, resists such placement (44b).

- (44) a. ta weishenme lai?    ni shuo/cai/renwei  
           he why            come you say/guess/think  
           Why do you say/guess/think that he came?
- b. \*ta weishenme lai?    ni xiangxin/xiwang/danxin  
           he why            come you believe/hope/worry  
           Why do you believe/hope/worry that he came?

How a parenthetical phrase is merged into the derivation is not our concern here. But it is fair to say that a parenthetical phrase neither selects anything nor is it selected by anything. Thus, for (40) we might say that after the IP is built, the parenthetical phrase is merged by adjoining to it, as shown in (45a), and then the CP is built and Q is inserted at LF, as a last resort, to bind *weishenme*. This gives rise to its apparent matrix question reading.

- (45) a. [<sub>IP</sub> <ni shuo> [<sub>IP</sub> ta zuotian weishenme mei lai]]  
           you say            he yesterday why            not come

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<sup>22</sup> As noted by Norbert Hornstein, Chomsky (1977) has the same suggestion.

- b. [<sub>CP</sub> Q [<sub>IP</sub> <ni shuo> [<sub>IP</sub> ta zuotian weishenme mei lai]]  
           you say       he yesterday why       not come

It should be pointed out that *weishenme* in fact can be placed to the left of a verb of conjecture as well as in the “complement clause,” as shown in (46).

- (46) a. weishenme ni renwei Zhangsan xihuan yundong  
           why you think Zhangsan like exercise  
           Why do you think Zhangsan likes physical exercise
- b. ni renwei Zhangsan weishenme xihuan yundong  
           you think Zhangsan why like exercise  
           Why do you think Zhangsan likes physical exercise

There is a meaning difference between (46a) and (46b) and this difference can be brought to light by how the two questions are answered. (47) will be an appropriate answer to (46a), but not to (46b); whereas (48) will be an appropriate answer to (46b), but not to (46a). That is, (46a) is asking for the reason why the addressee has such thinking to the effect that Zhangsan likes physical exercise; (46b) is asking for the reason why, according to the addressee’s opinion, Zhangsan likes physical exercise.

- (47) yinwei wo kanjian ta meitian zaocheng yundong  
       because I see he every day morning exercise  
       because I see him doing physical exercise every morning.
- (48) yinwei ta xiang jianfei  
       because he want decrease fat  
       because he wants to lose weight.

Perhaps, when preceded by *weishenme*, the verb of conjecture is not parenthetical any more. Rather, it projects to its own VP and the sentence in (46a) has the following structure.

(49) [CP *weishenme* [IP *ni* [VP *renwei* [IP *ta* [VP *xihuan yundong*]]]]  
           why          you  think  he    like  exercise

Under Lin’s LF-movement analysis, however, there is no way to distinguish (46a) from (46b) since *weishenme* in (46b) would raise at LF and therefore end up in the same position as *weishenme* in (46a).<sup>23</sup>

If what we have said is correct, we can remove the only “exceptional” case that seems to call for an LF-movement analysis. This then strengthens the

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<sup>23</sup> The same analysis might be extended to the corresponding English sentences. Unlike *weishenme* in Chinese, *why* in English can only be realized at the beginning of the sentence.

(a) Why do you think he does not like the book?

(a) is ambiguous depending on whether *why* is associated with the embedded proposition or with *think*. In the same spirit, we might say that when *why* is associated with the embedded proposition, *do you think* is parenthetical, adjoined to IP; when associated with *think*, *do you think* has its own IP projection. It looks like whether a bridge verb like *you think* has its own IP projection or not depends on some pragmatic factors. It seems to me that in the following sentences *why* tends to be associated with *think* rather than with the embedded proposition.

- (b) Why does he think you do not like the book?
- (c) Why did you think he does not like the book?
- (d) Why do you think he will come?

Juan Uriagereka (pc.) suggests a way to test this hypothesis. According to him, variable-binding is possible in (e), but not in (f)

- (e) Why does everyone<sub>i</sub> think his<sub>i</sub> mother loves him?
- (f) \*Why<sub>i</sub> everyone<sub>i</sub> thinks his<sub>i</sub> mother loves him?

*Everyone think* may have its own IP projection in (e), but definitely not in (f). This might explain the plausibility of variable binding in (e), but not in (f), assuming that a parenthetical phrase is not built on top of the structure already built, but rather it is built separately and, as such, *everyone* in (f) does not c-command *his*. What concerns us is the fact that *why* in (e) tends to be associated with *everyone thinks*, but *why* in (f) can only be associated with *his mother*

conclusion reached earlier that a wh-adverb must be Q-licensed in the minimal clause in which it appears and be interpreted therein. A wh-adverb displays island effects not because it must LF-move but because it is not Q-licensed in its minimal clause.

## Chapter 3

### Rhetorical Wh-Questions

#### 3.1. Introduction

This chapter investigates the syntactic and semantic properties of rhetorical wh-questions (RWQ) in comparison with wh-questions (WQ). RWQ and WQ appear to share very much the same syntax, but as noted by Sadock (1971, 1974) and Han (1997), they differ from each other with respect to locality,

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*loves him*. This provides some support for the line pursued here. Since a detailed analysis to do justice to this topic will take us far afield, I will leave it for future research.

scope and negative polarity licensing. In the spirit of MP I argue that while wh-movement in WQ is to check the Q-feature in SpecCP, the same movement in RWQ is to check the neg-feature in SpecPolP (Culicover, 1991). These are two different syntactic operations and they are argued to underlie the observed differences between WQ and RWQ.

In the second half of this chapter I take a close look at RWQ in Chinese. In parallel with WQ where whs stay in situ, whs in RWQ stay in situ as well, and also, as expected, they do not display any island effects. Along with the unselective quantification analysis of WQ (Reinhart, 1994 and Tsai, 1994) I argue that whs in RWQ are variables, but instead of being bound by a Q[uestion]-operator, they are bound by an N[egation]-operator. This parallel, however, breaks down in the case where a wh-NP is c-commanded by a universal quantifier or negator, or where it appears in an IF-island. In such a position a wh-NP can only be interpreted as an interrogative, not as a negative quantifier. I argue that this is so because in such cases leaving the restriction in situ (entailed by the unselective binding analysis) causes an interpretive problem for RWQ. Finally, it is shown that the RWQ reading reappears when the wh-NP in such a position moves overtly over its c-commanding blocker. This movement enables the restriction to be interpreted outside the scope of the blocker, thereby avoiding the interpretive problem. The necessity of moving overtly in order to

avoid the interpretive problem casts doubt upon the existence of QR, and argues for Hornstein's (1995) position that no QR is needed for scope purposes.

### 3.2. The Syntax and Semantics of RWQ in English

Sadock (1971, 224) observes that a RWQ (which he calls queclaratives) has the illocutionary force of an assertion of opposite polarity. Thus, as a RWQ, the positive one in (1a) is paraphrasable by the negative quantified sentence in (1b) and, conversely, the negative one in (2a) is paraphrasable by the positive quantified sentence in (2b). Crucially, (1a) can never be used to mean what (2b) means; nor can (2a) be used to mean what (1b) means.<sup>24</sup>

- (1) a. Who understands English?  
b. No one understands English.
- (2) a. Who doesn't understand English?  
b. Everyone understands English.

The same is true for the case where the wh-NPs involved are objects, as shown in (3, 4). Again, as a RWQ, (3a) is paraphrasable by (3b) and (4a) by (4b). Neither can (3a) be used to mean what (4b) means, nor can (4a) be used to mean what (3b) means.

- (3) a. What did John say at the seminar?

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<sup>24</sup> In order for (1) or (2) to have a RWQ reading, its wh must be stressed.

b. John said nothing at the seminar.

(4) a. What didn't John say at the seminar?

b. John said everything at the seminar

Sadock, however, does not address why a RWQ must flip its assertive value from positive to negative or vice versa. This question becomes interesting in light of the fact that a rhetorical yes/no question does not necessarily have such a property. As also observed by Sadock (1971, 223-24), a yes/no question like (5) can be used as a rhetorical question with the force of either the corresponding positive or negative assertion.<sup>25</sup>

(5) Is syntax easy?

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<sup>25</sup> Norbert Hornstein (pc.) correctly points out that a yes/no question like (a) cannot be construed both way:

(a) Does anyone understand English?

As a rhetorical question, (a) can mean (b), but not (c)

(b) No one understands English.

(c) Everyone understands English.

It appears that *any* patterns together with the rhetorical *wh*. Hornstein suggests that it could be the case that *any* and the rhetorical *wh* are both a bud of Y/N Q.

Stephen Crain (pc.) also provides an example to this effect: (d) can only be construed as having the force of the corresponding positive assertion in (e).

(d) Isn't syntax easy?

(e) Syntax is easy.

I take this to mean two things: First, even the rhetorical force of a yes/no question is not totally pragmatic. Second, Crain's example further supports the line pursued here, that is, at syntactical level a rhetorical question involves an overt neg-feature in PolP (at least for English). (d), but not (5), has this feature.

For example, after getting a student to propose an insightful explanation of a syntactic ambiguity, a teacher could utter (5) with the effect of the positive assertion: “Syntax is easy.” Or upon being shown an obvious flaw in his description of a simple sentence, the teacher might beg off by uttering (5) with the effect of the negative assertion: “Syntax isn’t easy.”

Given that the meaning of a rhetorical yes/not question is context-dependent, it seems legitimate to attribute its illocutionary force to pragmatics. But, as noted above, the meaning of a RWQ is not sensitive to an extralinguistic context: “Who understands English?” can never mean “Everyone understands English,” even though a given context dictates so. Thus, rather than throwing the problem of RWQ into the pragmatics doggie bag, we should bring it to the domain of syntax and semantics.

### 3.2.1. A Wh-NP as a Negative Quantifier

As a first approximation, RWQ seems to involve some sort of abstract negation.

This is clear from the above examples where *who* is translated into *no one* and *what* into *nothing*.<sup>26</sup> That a wh-NP in RWQ carries a negative force can be

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<sup>26</sup> While (1, 3) are pretty straightforward, (2, 4) warrant some explanation. (2) starts with (a) where *who* is translated into *no one*. Then, by logical equivalence, (a) is translated into (2b). The same applies to (4).

(a) No one doesn’t understand English.

further demonstrated by the fact that it is able to license a negative polarity item (NPI).

(6) a. What did anybody say at the seminar?

There is nothing that anybody said at the seminar.

b. Who lifted a finger to help?

No one lifted a finger to help Mary.

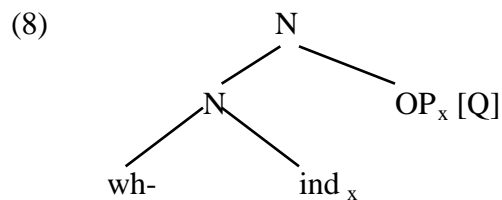
*Anybody* and *a finger* are both NPIs and must be licensed by a c-commanding negative word. They are licensed in (6a) and (6b), a fact that would be unexplainable if *what* and *who* did not carry a negative force. Note that neither sentence can be interpreted as a WQ. This is an expected result because, if they were, the NPIs would not be licensed.

The question now is what type of movement is involved in RWQ. Can it be another instance of standard wh-movement, i.e. driven by the wh-feature-checking in SpecCP? If it were, we would be left with the task of explaining why it loses its interrogative reading after checking the wh-feature. In what follows I argue that this movement is triggered by the neg-feature in PolP (Culicover, 1991). Before doing that, let us take a look at the morphology of English wh-words.

### 3.2.2. Morphology of English Wh-Words

There is a long tradition that analyzes a wh-word as composed of two morphemes: wh+pronominal. As early as in the 60s, Chomsky (1964), Katz and Postal (1964) and Klima (1964) analyzed *who* as [WH+someone] and *what* as [WH+something]. Following this tradition, Tsai (1994) proposes a very interesting morphological analysis of wh-words in English. By decomposing an English wh-word into two morphemes: wh and indefinite, as shown in (7), he argues that an English wh-word has the internal structure depicted in (8).

- (7) a. who-o,      b. wh-at      c. wh-en      d. wh-ere



Note that OP[Q] is an abstract Q-operator and it binds its coindexed *ind* (indefinite) to form an operator-variable relation. This entails that an English wh-NP is not an open variable available for unselective quantification. Thus, it must move overtly for wh-feature checking.<sup>27</sup>

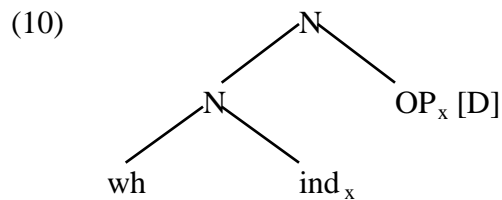
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<sup>27</sup> This brings up a question of why checking is required if a wh is already bound (Norbert Hornstein, pc.) One possible answer is that there are two levels of binding: morphological and syntactic. In (8) an operator-variable is formed at the morphological level. A wh-word still needs to raise for feature-checking to form a syntactic operator-variable relation.

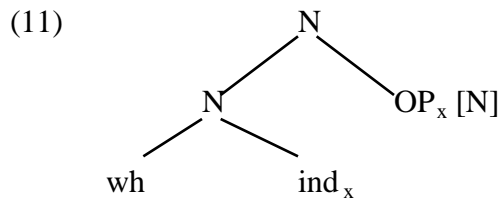
Relevant to our discussion is the fact that an English wh-word is not always interpreted as an interrogative. For example, in free relative constructions like (9) *what* is considered to be definite by C. L. Baker (1989).

(9) I'll eat what you cook.

Tsai suggests that this difference between the interrogative and the definite use of a wh-word is attributable to different operators involved in its internal structure. For a definite wh-word it is OP[D] (Definiteness Operator), instead of OP[Q], that occupies the operator position, binding its coindexed indefinite, as illustrated in (10).



This discussion indicates that an English wh-word does not have a unitary interpretation and its quantificational variability is due to different operators involved in its morphological composition. On this view, it seems very natural to treat a wh-word in RWQ on a par, i.e., it involves an N-operator in its internal structure.



In (11) the N-operator binds its coindexed indefinite, giving rise to the negative quantifier construal. If this word-level maneuver is on the right track, we can formulate the following morphological rule for an English wh-word in RWQ.

(12) Insert an N-operator to bind a pronominal variable to form a negative QP.

An immediate question is if a wh-word can be a negative QP before it is merged into a derivation, then why cannot the wh-question in (13a) be construed as a RWQ (This example is taken from Sadock (1974, 125)) to have an interpretation as indicated in (13a')? <sup>28</sup>

(13) a. Bill lent money to who(m)?

a' \*Bill lent money to no one.

The question really boils down to why a wh-NP in English RWQ must overtly move, to which I will turn in the next section.

### 3.2.3. PolP and Neg-Feature Checking

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<sup>28</sup> Note that (13a) can be interpreted as an echo question..

Culicover (1991) argues that there are two sentence-initial functional projections before the subject in English, as illustrated in (14)

(14) [CP Spec C [PolP Spec Pol [IP ...]]]

He shows, convincingly, that PolP is needed as a landing site for Negative Inversion. Consider the following examples.

- (15) a. Lee said that at no time would she agree to visit Robin  
b. It is apparent that only on Fridays will the traffic be too heavy to get there in time.

If *that* is in C, and if there is only one functional projection before the subject, then there seems to be no way to accommodate negative phrases like *at no time* and *only on Fridays*. Thus, Culicover concludes that there must be a substitution site for the negative phrase in Negative Inversion. Culicover argues that the negative phrases in (15) have moved to SpecPolP. According to him, the head of PolP in English can host the neg-feature and, therefore, a negative phrase landing in SpecPolP is licensed under spec-head agreement.

Following Culicover's insight, I propose that a wh-NP in English RWQ moves to SpecPolP for feature checking. On this analysis, (16a, b) are the LF-forms for (1, 3), respectively.

- (16) a. [<sub>PolP</sub> who<sub>i</sub> [<sub>IP</sub> t<sub>i</sub> [<sub>VP</sub> understands English]]]  
b. [<sub>PolP</sub> what<sub>i</sub> [<sub>Pol'</sub> did [<sub>IP</sub> John [<sub>VP</sub> say t<sub>i</sub> at the seminar]]]]

Applying an interpretive procedure to (16) results in something like (17).<sup>29</sup>

- (17) a. NO (x), such that x understands English.  
b. NO (x), such that John says x at the seminar.

There is more evidence for the claim that PolP exists and wh-NPs in RWQ move to SpecPolP for feature checking. Consider the following examples.

- (18) a. ?Who never has John agreed with?  
b. Who has John never agreed with?  
(i) Who is x, such that John has never agreed with x?  
(ii) There is no x, such that John has never agreed with x.

Sentence (18a) where Negative Inversion occurs is not perfect, but if interpreted, it must be a real wh-question (i), not a rhetorical wh-question (ii).<sup>30</sup> (18b) where no Negative Inversion occurs can be interpreted as both WQ and RWQ. This follows if two functional projections are postulated. (18a) cannot be interpreted as a RWQ, because if so it would require that both *who* and *never* be in SpecPolP for feature checking. This is not permitted because I assume that the neg-feature cannot be doubly checked. To interpret (18a) as a WQ, however, does not have such a problem: *never* moves to SpecPolP to check the neg-feature, *who* to SpecCP to check the wh-feature, as illustrated below.

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<sup>29</sup> As pointed out by Juan Uriagereka (pc.) PolP can be emphatic as well. If that is the case, then PolP can host either the neg-feature or the emp-feature (emphatic).

<sup>30</sup> Thank Fred for providing native speaker's judgments on these data and discussing them extensively with me.

(19) [CP who<sub>j</sub> [P<sub>oIP</sub> never<sub>i</sub> [P<sub>oI</sub> has [IP John [VP t<sub>i</sub> agreed with t<sub>j</sub>]]]]]

(18b) can be either WQ or RWQ because *who* can be in either SpecCP or SpecPolP.

Further evidence to this effect is observed by Sadock (1974, 126). In some dialects RWQ can appear in a nonrestrictive clause, but WQ cannot.

- (20) a. Symbolic logic, which who cares about anyway, is awfully tough.  
a'. Symbolic logic, which no one cares about anyway, is awfully tough.  
b. \*Symbolic logic, which, by the way, who invented (?), isn't my cup of Postum.

(20a), if acceptable, can only be interpreted as a RWQ, having the same meaning as (20a'). This is expected if we assume that *which* is in SpecCP and *who* in SpecPolP. Each has its own Spec-position, hence there is no traffic jam. This is a clear indication that a wh-NP in RWQ is not in SpecCP, for if it were, there would be a traffic jam. For (20b) to be interpretable as WQ, *who* must end up in SpecCP. This, however, is not possible because the position has already been taken by *which*.

Another point that needs to be emphasized is that though Negative Inversion can occur in both matrix and embedded clauses, or even within an island, as illustrated in (21), RWQ is restricted to a matrix clause only, as shown by (22).

- (21) a. At no time has John said anything like that.  
 b. John believes that at no time has Mary said anything like that.  
 c. John likes the book that never has anyone read.
- (22) a. \*John said what Mary ever knows.  
 a'. John said that Mary knows nothing.  
 b. \*The book that who likes to read has been published.  
 b'. The book that no one likes to read has been published.

If an embedded clause could be a RWQ, then (22a) should be acceptable with the interpretation as indicated in (22a'), and (22b) should be acceptable with the interpretation as indicated in (22b'). But, they cannot mean what is intended.<sup>31</sup>

32

We have established the fact that a *wh*-NP in RWQ moves to SpecPolP for feature checking. Now we turn to the next question: why the *wh*-NP cannot stay in place until LF for feature checking. In keeping with the Minimalist assumption that overt movement is motivated by checking a strong feature, I claim that in English the *neg*-feature in PolP, just like the *wh*-feature in CP, is

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<sup>31</sup> The question, then, is why a nonrestrictive clause can be a RWQ. I take this to indicate that a nonrestrictive clause is not embedded at all.

<sup>32</sup> This restriction might be due to the fact that an embedded clause can hardly be used to make an assertion. Bearing on this issue is the debate over whether a sentence like “The man who is drinking a martini is John.” is true or not if it turns out that the man is John but is not drinking a martini. Donnellan (1966) argues that the sentence is true even if John is not drinking a martini, because “the man who is drinking a martini”, used here referentially, succeeds in its

strong and must be checked off before Spell-Out.<sup>33</sup> Consider the following negative polarity licensing facts.

- (23) a. Who did Bill ever lend money to?  
a'. Bill lent money to no one.  
b. \*Bill ever lent money to who(m)?

In (23a) *who* has raised for the neg-feature checking in SpecPolP from which it c-commands the NPI *ever*, hence *ever* is licensed. In (23b) *whom* stays in situ. If there is a PolP, then its feature is not checked off before Spell-Out, and the derivation therefore cannot converge; if there is no PolP, then *ever* cannot be licensed because it is not c-commanded by anything negative. This is why (23b) cannot be interpreted even as an echo question. The same licensing effect obtains in the case of Negative Inversion.

- (24) a. Never has anybody agreed with me?  
b. \*Anybody has never agreed with me

In (24a) *never* has moved to PolP for feature checking and from this position it c-commands *anybody*, hence it can license the latter. In (24b) *never* stays in situ

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referring. This indicates that we don't use an embedded clause to assert, therefore whether it turns out to be true or not is not an issue.

<sup>33</sup> If this analysis is correct it predicts that a language could have no movement for RWQ but movement for WQ in principle or vice versa. (Norbert Hornstein, pc.) I don't know if there is such a language.

and *anybody* is not c-commanded by anything negative and therefore is not licensed.

### 3.2.4 Some Nice Results

The immediate attractiveness of this analysis is that it captures the fact that RWQ patterns together with Negative Inversion, but not with WQ, in terms of locality.<sup>34</sup> As observed by Han (1997) movement of a wh-NP in RWQ is clause bounded.

(25) a. What does Mary think that John said at the seminar?

(i) \*Mary thinks that John said nothing at the seminar.

(ii) What is x such that Mary thinks John has said x at the seminar.

b. \*What did Mary think that anybody ever said at the seminar?

Mary thinks that there is nothing that anybody said at the seminar.

In (25a) the wh-NP has moved from the embedded object position to the sentence-initial position, across one clausal boundary. As a consequence, the sentence cannot be interpreted as a RWQ. In (25b) the same wh-NP has moved out of the embedded clause, and the resulting sentence is ungrammatical. It cannot be interpreted as a RWQ because this movement violates the constraint

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<sup>34</sup> RWQ patterns with Y/N questions in terms of locality. This adds more plausibility to Norbert Hornstein's suggestion that the rhetorical wh be treated as a bud of Y/N Q.

of clause boundedness; nor can it be interpreted as a WQ because, if so, the negative polarity item would not be licensed.

Negative Inversion is likewise clause bounded, as illustrated in (26).

- (26) a. Never did Mary agree with Sam?  
b. \*Never did Mary believe that Sam has agreed with Peter

(26b) is ungrammatical under the indicated indexation where *never* is construed with the embedded clause, i.e., the sentence cannot mean Mary believed that Sam has never agreed with Peter.<sup>35</sup> This shared similarity should not be surprising if we assume that in both cases a moved phrase (a negative phrase in Negative Inversion and a wh-NP in RWQ) targets SpecPolP.

By contrast to RWQ, movement in WQ, as widely known, is unbounded. A wh-NP can move arbitrarily away from its base position as long as no island intervenes, as shown in (27).

- (27) a. Who do you think that John will like?  
b. Who do you think that John believe that Mary will like?

In addition, RWQ and WQ differ with respect to scope. Han (1997) points out that in a RWQ the wh-NP, interpreted as a negative quantifier, must

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<sup>35</sup> It has to be admitted that judgments may vary depending on a number of factors (unknown to me). As pointed out by Norbert Hornstein a sentence like (a) where the NPI is associated with the embedded clause is acceptable.

(a) Under no circumstance do I think/believe that Bill would ever quit his job voluntarily.

have broad scope: in (28) the wh-NP unambiguously has scope over deontic *must*.

(28) What must John do?

(i) There is nothing such that it is obligatory for John to do it.

(ii) \*It is obligatory for John to do nothing.

That a wh-NP as a negative quantifier must take broadest scope can be further illustrated by the following example.

(29) Who has every student agreed with?

(i) There is no x, x is a person, for every y, y is a student, y has agreed with x.

(ii) \*For every y, y is student there is no x, x is a person such that y has agreed with x.

The difference between the two interpretations is subtle. The possible interpretation in (i) says there is no single person that every student has agreed with unanimously, but it is quite possible for every student to agree with a different person. The impossible interpretation in (ii) says that no student has agreed with any person.

One more example to this effect is presented as follows.

(30) Who has John not agreed with?

(i) There is no x such that John has not agreed with x.

(ii) \*It is not the case that there is no x such that John has agreed with x.

(30) is not ambiguous and it only has the reading indicated in (i) where the negative quantifier scopes over the negation, not the reading as indicated in (ii) where the scope is reversed. The possible interpretation says that John has agreed with everyone, but the impossible one is a much weaker assertion: it just says that John has agreed with someone but does not preclude the possibility that John has not agreed with someone.

A wh-NP in WQ, however, does not necessarily have broad scope. This can be shown by (31) where the wh-NP and the universal quantifier can scope each other.

(31) What did everybody buy?

(i) what is x, for every y, such that y bought x.

(ii) for every y, what is x, such that y bought x.

That RWQ is similar to Negative Inversion, but different from WQ with respect to locality and scope conforms with our assumption that RWQ and WQ check different features in different functional projections. The former checks the neg-feature, the latter the wh-feature. I assume that raising to SpecPolP to check the neg-feature is an instance of A-movement. This explains the two properties associated with RWQ: (a) movement is clause bounded; (b) the wh-NP, as a

negative quantifier, must take broadest scope. Wh-movement, on the other hand, is an instance of A'-movement, whose purpose is to check a wh-feature, with the pronominal portion of a wh-NP being pied-piped for PF-convergence (Chomsky, 1995). At LF the pronominal portion has an option of being put back to its theta position for scope interpretation, which is why a sentence like (31) exhibits scope ambiguity.

### 3.3. RWQ in Chinese

Chinese wh-NPs in WQ do not move overtly for wh-feature checking and, as argued by Tsai (1994), among many others, they do not undergo LF-movement, either. Instead, they are bound by a Q-operator in SpecCP via unselective quantification. Given this it is expected that wh-NPs in RWQ should stay in situ as well. This expectation is, by and large, borne out. Consider the following examples.

- (32) a. Zhangsan hui xihuan na ge laoshi?  
Zhangsan will like which CL teacher  
(i) There is no teacher Zhangsan likes.  
(ii) Which teacher will Zhangsan like?
- b. na ge laoshi hui xihuan Zhangsan?  
which CL teacher will like Zhangsan  
(i) No teacher will like Zhangsan.  
(ii) Which teacher will like Zhangsan?



the following are the LF-structures for (32a, b).<sup>37</sup>

- (34) a. [<sub>CP</sub> N-operator<sub>i</sub> [<sub>IP</sub> Zhangsan hui [<sub>VP</sub> xihuan [na ge laoshi]<sub>i</sub> ]]]  
Zhangsan will like which CL teacher
- b. [<sub>CP</sub> N-operator<sub>i</sub> [<sub>IP</sub> [nai ge laoshi]<sub>i</sub> hui [<sub>VP</sub> xihuan Zhangsan]]]]  
which CL teacher will like Zhangsan

What we do in (34) is insert the N-operator in SpecCP, leave the wh-NP in situ, and establish a binding relation between them. This means that we must interpret the restrictions (is a teacher) in situ. For example, applying an interpretive procedure to (34a) should result in something like (35a) where the restriction stays in situ, not the one in (35b) where the restriction is moved up.

- (35) a. NO (x), Zhangsan likes x, x is a teacher.
- b. NO (x), x is teacher, Zhangsan likes x.

Given the discussion in Chapter 2, a non-trivial question is whether leaving the restriction in situ like this will cause an interpretive problem. It turns out that (35a) and (35b) are logically indistinguishable. We will see in later discussions that sometimes leaving the restriction in situ does cause an interpretive problem, and the RWQ thus formed are not acceptable.

### 3.3.2. No Island Effects

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Zhangsan has done nothing.

If RWQ in Chinese do not involve movement and wh-in-situ are bound by the N-operator via unselective quantification, it is expected they will not display island effects. Again, this expectation is borne out. As illustrated below, RWQ are not sensitive to any strong island.

(36) a. Subject Island

[shei chang zhe shou ge] hui haoting ne?  
 who sing this CL song will pleasant to ear Q

- (i) No one can sing this song very well.
- (ii) \*It will be pleasant to ear that no one sings this song.

b. Complex NP Island

Zhangsan hui xihuan [na ge zuojia xie de shu] ne?  
 Zhangsan will like which CL writer write DE book Q

- (i) Zhangsan will not like any books written by any authors.
- (ii) \*Zhangsan will like the books that no author writes.

c. Adjunct Island

Zhangsan hui [yinwei na ge xuesheng bu lai] shengqi ne?  
 Zhangsan will because which CL student not come angry Q

- (i) Zhangsan will not be angry about any student's absence.
- (ii) \*Zhangsan will be angry because every student is present.

In each of the above examples the wh-NP is caught in a strong island, but the sentence thereby formed can be interpreted as a RWQ, as indicated by the English translation in (i). The same unselective strategy applied to WQ applies here. The N-operator is inserted at LF in the matrix CP and binds the wh-NP into an island. This is not a problem because unselective quantification allows an

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<sup>37</sup> Note that in English RWQ wh-NPs raise to SpecPolP, rather than SpecCP, for neg-feature checking. There is not much evidence for the need to postulate PolP for Chinese.

operator to bind variables arbitrarily far away as long as they are in its c-commanding domain.<sup>38</sup>

Again the question is whether leaving the restriction inside a strong island will cause an interpretive problem. For example, applying an interpretive procedure to (36c) results in something like (37) where the restriction *x is a student* stays inside the adjunct island.

(37) NO (x), Zhangsan will be angry because x is a student, x does not show up.

It turns out that (37) is logically indistinguishable from (38) where the restriction is lifted up and interpreted outside the island.

(38) NO(x), x is a student, Zhangsan will be angry because x does not show up.

The same applies to (36a, b) where the interpretation obtained by leaving the restriction inside the island is logically indistinguishable from the one obtained by lifting the restriction out of the island. This discussion again brings up the question of whether leaving the restriction in situ or lifting it up can have different logical interpretations, and if so, how it is dealt with. I will come back to these issues shortly.

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<sup>38</sup> I thank Juan Uriagereka (pc.) for bringing an important question to my attention. If RWQ is clause-bounded and if there is no embedded RWQ, how can an N-operator bind into an island? I will say that this is exactly where two languages differ. English RWQ involves movement

In addition, as shown by (36), RWQ cannot be embedded. None of the three sentences can mean what is indicated by the English translation in (ii) where the embedded clause is interpreted as a RWQ.<sup>39</sup> Consider one more example.

- (39) Zhangsan zhidao shei hui lai canjia zhe zhong wanhui.  
 Zhangsan know who will come attend this kind party  
 (i) Zhangsan knows who will come and attend this kind of party.  
 (ii) \*Zhangsan knows that no one will come and attend this kind of

party.(39) can only be an embedded wh-question, but not an embedded rhetorical wh-question, though it makes perfect sense.

What this means for N-binding is that the N-operator cannot be covertly inserted in any embedded CP. This is reminiscent of Chomsky's (1995) suggestion that a phonologically null C may be inserted covertly at the root of a derivation only. What Chomsky has in mind is covert Q. As I argued above, prohibiting covert Q from being inserted in an embedded CP makes a sentence like (40) unredeemable.<sup>40</sup>

- (40) \*Zhangsan xiangxin Lisi weishenme sha ren de shoufa?  
 Zhangsan believe Lisi why kill person DE claim

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whereas Chinese doesn't. Instead, Chinese adopts an unselective binding strategy. Thus, there is nothing that prevents an N-operator from binding into an island.

<sup>39</sup> In fact, two of them do not make good sense.

<sup>40</sup> An interesting question to ask is why the N-operator must be inserted at LF (Norbert Hornstein, pc.). What prevents the N-operator from being inserted overtly? Unlike the wh-operator that can be morphologically selected, the N-operator is not morphologically selected, which is why a wh-question can be embedded but a rhetorical wh-question cannot. If the N-operator could be overtly inserted, there would be no way to prevent it from being inserted in an embedded CP. I have no explanation for why this is so.

What is the reason  $x$ , such that Zhangsan believes the claim that Lisi killed some person for  $x$ .  
 (40) is ungrammatical because *weishenme* cannot be Q-licensed in the minimal clause in which it appears, namely, in the complex NP island. Crucially, covert Q cannot be inserted in the island clause: if it could, (40) would be saved. Likewise, a covert N-operator cannot be inserted anywhere except at the root, as formulated by the following condition.

(41) A covert N-operator can only be inserted at the root.

This correctly deprives (39) of the possibility of being interpreted as an embedded RWQ.

### 3.3.3. More Evidence for the Unselective Binding Analysis

One striking characteristic of unselective quantification is that an operator can bind any number of variables as long as they fall within its binding domain (c-commanding domain). Take a multiple wh-question like (42) for example. There are three wh-NPs, all of which are bound by the Q-operator in SpecCP.

(42) shei xiwang she dabai shei  
 who hope who defeat who  
 For which  $\langle x, y, z \rangle$ ,  $x$  hopes  $y$  defeats  $z$ .

Similarly, as shown by (33b) repeated here as (43), the U-operator binds two wh-variables in a donkey sentence.

(43) [CP U-operator<sub>i</sub> [IP [IP shei<sub>i</sub> xian lai, [IP she<sub>i</sub> xian chi ]]]]

who first come who first eat  
For every x, x is a person, if x comes first, x eats first.

Further evidence for the unselective binding treatment of RWQ comes from RWQ involving *weishenme*.<sup>41</sup> As argued earlier, *weishenme* cannot be unselectively bound. It displays “island effects” because it must be Q-licensed in the minimal clause in which it appears. Similarly, RWQ involving *weishenme* display “island effects”. As shown by (44), a simplex sentence having *weishenme* in it can have a rhetorical reading as indicated by the English translation in (ii).

- (44) a. Zhangsan *weishenme* bu qu?  
Zhangsan why not go  
(i) Why does Zhangsan not go?  
(ii) There is no reason that Zhangsan should not go/ Zhangsan must go

However, when (44) is embedded in an adjunct island as in (45), the resulting sentence becomes ungrammatical.

- (45) \*Lisi hui [yinwei Zhangsan *weishenme* bu qu] er gaoxing ne?  
Lisi will because Zhangsan why not go then happy Q  
(i) There is no reason that Lisi should be happy because Zhangsan does not go.  
(ii) Zhangsan will be happy because there is no reason that Zhangsan shouldn't go.

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<sup>41</sup> For some independent reasons, the N-operator cannot bind more than one wh-variable. (a) can be either interpreted as in (b) (multiple wh-question) or as in (c), but not as in (d).

- (a) shei pa shei?  
who fear who  
(b) Who fears who?  
(c) No one fears anyone.  
(d) \*No one fears no one.

(45) cannot be interpreted as (i) where the rhetorical force is associated with the matrix clause, nor can it be interpreted as (ii) where the rhetorical force is associated with the adjunct clause. For the (i) reading to be possible, the covertly inserted N-operator in the matrix CP would have to bind *weishenme* into an island, which is not permitted since *weishenme* cannot be unselectively bound.<sup>42</sup> For the (ii) reading to be possible, the N-operator would have to be inserted in the CP of the adjunct clause. This, however, is not permitted because the condition in (41) prohibits covert insertion of an N-operator at any point of a derivation except at the root. Thus, (45) is ruled out correctly.

#### 3.3.4. Roofing Effects

In some environments a wh-NP cannot be interpreted as a negative quantifier. These environments are as follows: (a) when it is trapped in an IF-island; (b) when it is c-commanded by a quantifier; (c) when it is c-commanded by a negator. This series of roofing effects is surprising given that RWQ do not display standard island effects. I will argue that what underlies the roofing effects is the interpretive problem caused by leaving the restriction in situ, a

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<sup>42</sup> As noted earlier, *weishenme* (why) does not denote a set of individuals, and it cannot function as a variable. Thus, it is not subject to unselective quantification. *Weishenme* must be licensed by Q. Since licensing tends to be local, hence island effects.

contention that is supported by the fact that the roofing effects can be eliminated by overtly moving the wh-NP over its blocker.

### 3.3.4.1. IF-Island

For the “IF-island” effect consider the following example.

- (46) ruguo na ge zhexuejia lai Zhangsan hui gaoxing ne?  
if which CL philosopher come Zhangsan will happy Q  
(i) Who is x, such that if x is philosopher and x comes, Zhangsan will be happy.  
(ii) \*No x, such that if x is a philosopher and x comes, Zhangsan will be happy.

(46) where the wh-NP caught in an “IF-island” can be interpreted as a WQ (i), not as a RWQ (ii).

This is unexpected for the following two reasons. First, as shown above, no strong island prevents a wh-question from having a rhetorical interpretation, it is unclear why the “IF-island” does so. Second, if in both WQ and RWQ wh-in-situ are bound via unselective quantification, it is unclear why N-binding is sensitive to the “IF-island” and Q-binding is not.

Recall that when wh-in-situ are unselectively bound, its restriction is left in situ for interpretation. Leaving the restriction in situ does not cause an interpretive problem for the strong island cases because the interpretation thereby obtained is logically indistinguishable from the one where the restriction

is lifted up. This leads us to suspect that, perhaps, in the case of the “IF-island” it is the restriction left in situ that causes the sentence to be uninterpretable as a RWQ.

Consider the quasi-logical structure given in (46ii) and compare it with (47) where the restriction is lifted out of the “IF-island.”

(47)  $\text{NO}(x)$ ,  $x$  is a philosopher, such that if  $x$  comes, Zhangsan will be happy.

(46ii) and (47) are truth-functionally distinguishable. For (47) to be true, the value assigned to  $x$  must be a philosopher. As such, the state of affair in which a linguist comes and Zhangsan is happy about his coming cannot make the sentence false. In other words, Zhangsan can be happy about the coming of anyone other than philosophers. But, for (46ii) where the restriction  *$x$  is a philosopher* is sitting inside the If-island, the whole conditional is true no matter what value is assigned to  $x$ , since the restriction is part of the antecedent clause of an implication. This makes quantification over  $x$  unrestricted. Suppose  $x$  turns out to be a linguist and  $x$  comes, the whole conditional is still true. Since  $x$  could be anyone, the sentence, then, would mean that there is no  $x$  such that  $x$ 's coming would make Zhangsan happy. Thus, the state of affairs in which a linguist comes and Zhangsan is happy about his coming would make the sentence false. This is an unwelcome result, because we want the value of  $x$  to be all and only those individuals who are philosophers, i.e., we don't want to preclude the possibility

that Zhangsan might be happy if someone other than philosophers comes.

Leaving the restriction inside the IF-island does preclude such a possibility, if it were to be interpreted. This is why (46) cannot be a rhetorical wh-question.

The question, then, is if Q-binding employs the unselective binding strategy in the same way as N-binding, why the construal of (46) as a wh-question does not cause the same sort of problem. Here I think Reinhart (1994) provides a good answer. Reinhart proposes that one way to solve an interpretation problem of this sort is to allow existential quantification over choice functions, i.e., functions applying to a set and yielding an individual member of the set. This has the effect of assigning wide scope to wh-in-situ without pulling its restriction out. Applying this procedure to (46) results in (48), where the choice function  $f$  bound by the Q-operator selects a value from the philosopher set.<sup>43</sup>

- (48) a. *ruguo na ge zhexuejia lai Zhangsan hui gaoxing ne?*  
if which CL philosopher come Zhangsan will happy Q
- b. For which  $\langle f \rangle$ , if  $f(\text{philosopher})$  comes, then Zhangsan will be happy.
- c.  $\{P \mid (\langle f \rangle) (P = \wedge((f(\text{philosopher}) \text{ comes}) (\text{Zhangsan will be happy}))))\}$

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<sup>43</sup> The question, then, is why we cannot pull the same trick for the corresponding RWQ sentence (Norbert Hornstein, pc.) I suggest that, as I will discuss at great length in the next section, *ruguo* (if) acts as a blocker because it is quantificational.

Now the values permitted in the answer set can only be from the philosopher set, although the restriction occurs in the if-clause. (48c) denotes the set of true propositions P, each stating that for some function **f**, if the philosopher selected by **f** comes, then Zhangsan will be happy. Thus, we circumvent the problem of leaving wh-in-situ.<sup>44</sup>

### 3.3.4.2. QP as a Blocker

Another instance of roofing effects has to do with universal quantifiers. As illustrated by the example below, the presence of a universally quantified NP blocks the RWQ reading. (49) where the subject NP is a universal quantifier can be interpreted as a WQ (ii), but not as a RWQ (i).

- (49) a. mei-ge xuesheng dou hui kan shenme shu?  
every CL student all will read what book  
(i) \*There is no book that every student will read.  
(ii) What book will every student read?

Again, this is surprising given that the corresponding English sentence does allow the RWQ reading.

- (50) a. Who has everyone agreed with?  
a'. There is no one that everyone has agreed with.  
b. Who has everyone not agreed with?

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<sup>44</sup> Now the question is why the same problem cannot be circumvented for N-binding by applying a choice function, to which I don't have a good answer. I want to suggest that it

b'. There is no one that everyone has not agreed with.

A closer look reveals that blocking only obtains when the quantified NP c-commands the wh-NP. In (51a) the wh-NP in subject position is not c-commanded by the quantified NP in object position, and the RWQ reading is available. In (51b) the quantified NP is deeply embedded in the relative clause and therefore does not c-command the wh-NP in object position, again, the RWQ reading is possible.

- (51) a. shei hui zuo shu-shang de mei-dao ti?  
      who will do book-LOC DE every CL item  
      (i) No one will do every exercise in the book.  
      (ii) Who will do every exercise in the book?
- b. mei-ci juhui dou bu qu de ren hui xihuan shenme ne?  
      every CL party all not go DE person will like what Q  
      (i) There is nothing that the person who does not go to any party will like.  
      (ii) What does the person who does not go to any party like?

Thus, the generalization is that the RWQ reading is unavailable when the wh-NP is c-commanded by a quantified NP. I will argue that this is an interpretation problem of the same sort as we have discussed above.

Applying an interpretive procedure to (49) will give us the logical structure in (52) where the restriction is left in situ.

- (52) NO (x), such that for every y, if y is a student, x is a book, y will read x.

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perhaps has to do with the fact that a negative quantifier denotes an empty set (or it denotes nothing at all) so that a choice function cannot apply to it properly.

The problem with (52) is that the restriction *x is a book* occurs in the antecedent clause of the conditional. Thus, anything assigned to *x* will make the conditional true. Suppose that there is no magazine that has been read by every student. (52), unfortunately, is true of this state of affairs. In fact, it will be true of any state of affairs as long as there is nothing, whether it is a book or not, that has been read by every student. This unwanted result makes the sentence pragmatically not useful.

### 3.3.4.3. Negation as a Blocker

Negation also blocks the otherwise available RWQ reading. For example, (53) can be interpreted as a WQ as indicated in (i), but not as a RWQ as indicated in (ii).

- (53) Zhangsan bu hui du na yi ben shu?  
 Zhangsan not will read which one CL book  
 (i) \*There is no book Zhangsan will not read.  
 (ii) Which book will Zhangsan not read?

Note that the presence of negation does not prevent English wh-questions from having such a reading. (54a) can be interpreted as a RWQ, as shown in (54b).

- (54) a. Who has John not agreed with?  
 b. There is no one that John has not agreed with.

Again, it is the c-commanding negator that blocks the RWQ reading. (55a) where the wh-NP in subject position is not c-commanded by the negator can be

interpreted as a RWQ. In (55b) the negator is deeply embedded in the relative clause and therefore does not c-command the wh-NP in the matrix object position, again, the RWQ reading is possible.

- (55) a. shei hui bu du zhe ben shu?  
       who will not read this CL book  
       (i) Everyone will read this book.  
       (ii) Who will read this book?
- b. bu du shu de ren hui xie shenme wenzhang ne?  
       not read book DE person will write what article Q  
       (i) There is no article that the person who does not read can write.  
       (ii) What article will the person who does not read write?

Why does an intervening negator disrupt N-binding needed for the RWQ construal? Note that wh-NPs in Chinese are sensitive to negation and they tend to be interpreted as NPIs under its scope, as shown by (56)

- (56) Zhangsan bu mai shenme.  
       Zhangsan not buy what  
       Zhangsan does not buy anything.

This leads me to argue that for (53) before the covert N-operator is introduced the wh-NP has already been bound by the overt negator. Thus, the later inserted N-operator is not able to bind the wh-NP. Instead, it binds the entire proposition, resulting in the structure given in (57b)

- (57) a. [<sub>CP</sub> N-operator [<sub>IP</sub> Zhangsan bu<sub>i</sub> hui [<sub>VP</sub> du [na yi ben shu]<sub>i</sub> ]]]?  
       Zhangsan not will read which one CL book
- b. It is not the case that Zhangsan will not read any one of the books.

(57b), however, is logically different from (58) where the restriction is lifted up out of the scope of the negator.

(58) There is no one book such that Zhangsan will not read.

Suppose there are ten books in the domain of discourse. For (57b) to be true, Zhangsan only needs to read one book in this ten-book set. For (58) to be true, Zhangsan needs to read all of them. In a sense, (57b) is a weak assertion, (58) is a strong assertion. (58) entails (57b), but not the other way around.

Thus, the negative assertion obtained by leaving the restriction in situ under the scope of a negator is weak if interpreted. But, as pointed out by Sadock (1971, 1974), a RWQ (Queclarative in his terms) is employed to make a strong negative assertion. This, I believe, underlies the difficulty of interpreting (53) as a RWQ.<sup>45</sup>

In short, anything that is quantificational in nature (negation, QP and the conditional operator) blocks an otherwise available RWQ reading.

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<sup>45</sup> Also, RWQ are sensitive to factive island. Consider the following contrast.

- (a) \*Zhangsan hui zhidao shei qu canjia wuhui ne?  
Zhangsan will know who go attend dancing party Q  
There is no x, such that Zhangsan knows that x will attend the dancing party.
- (b) Zhangsan hui xiwang shei qu canjia wuhui ne?  
Zhangsan will hope who go attend dancing party Q  
There is no x, such that Zhangsan hopes x will attend the dancing party.

The verb in (a) is factive and the sentence cannot be interpreted as a RWQ as intended. By contrast, the verb in (b) is nonfactive and the sentence can be interpreted as a RWQ as intended. I am not sure why weak islands mess things up. The answer to this question may lie in the semantic properties of weak islands.

### 3.3.5. Breaking the Roof

Further evidence to support the above analysis is that a wh-NP under the roof can break it by moving over its blocker as long as this movement obeys subjacency. Take (49) for example. The wh-NP can overtly raise over the universal quantifier, and the sentence thereby formed can be easily, or sometimes preferably, interpreted as a RWQ.<sup>46</sup>

- (59) shenme shu hui mei-ge xuesheng dou kan?  
what book will every CL student all read  
(i) There is no book such that every student will read.  
(ii) What book will every student read?

Similarly, for sentence (53), the wh-NP can overtly move over the negator to regain the RWQ reading, as shown in (60).

- (60) na yi ben shu hui Zhangsan bu du?  
which one CL book will Zhangsan not read  
(i) There is no book Zhangsan will not read.  
(ii) Which book will Zhangsan not read?

(46) cannot be saved by moving the wh-NP out of the IF-island because such movement would violate subjacency.

This is expected on the present analysis, because after moving out of the c-commanding domain of the universal quantifier, the restriction of the wh-NP

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<sup>46</sup> It is interesting to note that in order to have a RWQ reading, *hui* (will) in (53) must move over the universally quantified subject, which is unnecessary for WQ. This is reminiscent of Negative Inversion where Sub-Aux Inversion must take place concurrently.

can be interpreted outside its scope. Thus, (59) has the following logical structure where only those in the book-set can be allowed to be a value of  $x$ , a desired result.

(61)  $\text{No}(x)$ ,  $x$  is a book, such that for every  $y$ , if  $y$  is a student, then  $y$  reads  $x$ .

Similarly, once the  $\text{wh-NP}$  has moved out of the  $c$ -commanding domain of the negator, its restriction can be interpreted outside its scope accordingly. The logical structure thereby obtained is the one in (58), as desired.

The necessity of moving the  $\text{wh-NP}$  overtly to regain the otherwise unavailable RWQ construal provides direct evidence to the contention that the problem at hand is caused by leaving the restriction in situ. This also argues in favor of Hornstein's (1995) view on QR. Hornstein (1995, 70) points out that the Minimalist contention that movement is driven by morphology "requires that we postulate some morphological feature that is checked whenever we assume movement. For  $\text{wh}$ -movement, focus movement or even topicalization, this requirement is not particularly onerous.... When it comes to standard quantifier movement, however, things are much less clear. There is no obvious analogue of  $\text{wh}$ -features for quantifiers in general." Hornstein further suggests that Minimalism should dispense with QR altogether.<sup>47</sup> The data witnessed here

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<sup>47</sup> Hornstein (1995) explores this possibility and successfully reduces ACD and relative quantifier scope to A-movement.

at least suggests that a quantifier does not raise covertly for scope purposes, for if it did, the wh-NP in (49) or (53) would be able to LF-move over the universal quantifier or the negator to circumvent the interpretation problem, but it does not. The fact that we need overt raising indicates that there is no covert raising.

## **Chapter 4**

### **Wh-Topicalization**

#### **4.1. Introduction**

There exists syntactic movement of whs in Chinese, a phenomenon that has not received enough attention in the literature. I start this chapter by teasing apart the subtle but real semantic difference between the wh-question with movement and the one without, and then argue that this movement is an instance of topicalization by showing that it shares every property that topicalization exhibits and differs from wh-movement, wh-scrambling and wh-in-situ with respect to scope, weak crossover, superiority and others. I conclude the chapter by making an attempt to extend this analysis to the peculiar behavior of D-linked wh-NPs in English.

## 4.2. Syntactic Movement of Whs

A Chinese wh-NP can undergo overt movement as shown in (1b) in contrast to

(1a) where the wh-NP stays put.

- (1) a. Zhangsan mai -le shenme?  
Zhangsan buy ASP what  
What has Zhangsan bought?
- b. Shenme<sub>i</sub> Zhangsan mai -le t<sub>i</sub>?  
what Zhangsan buy ASP  
What has Zhangsan bought?

In fact, when there is negation, the question with movement is much better than the one without. (2) where the wh-NP raises sounds much more natural than (3) where the wh-NP stays in situ.<sup>48</sup>

- (2) ?Zhangsan meiyou mai shenme?  
Zhangsan not buy what  
What did Zhangsan not buy?
- (3) shenme<sub>i</sub> Zhangsan meiyou mai t<sub>i</sub>?  
what Zhangsan not buy.  
What did Zhangsan not buy?

The question that concerns me is why the wh-NP moves and where it moves to. On the Minimalist assumption that movement must be triggered by checking a strong feature and wh-movement by checking the wh-feature, it is clear that the movement in question cannot be motivated by checking the wh-feature since Chinese wh-elements can stay in situ and be bound unselectively.

One way to get around this problem is to say that the wh-feature in Chinese is optionally strong, a move that is not desirable because it is just restating the problem in featural terms. To really understand this movement, we need to look at whether it contributes anything to the derivation, i.e., whether (1b) is in any way different from (1a).

### **4.3. The Semantic Nature of This Movement**

As wh-questions, both (1a, b) presuppose that some act of buying has been performed by Zhangsan. What distinguishes (1b) from (1a) is that (1a) does not presuppose any particular set of things regarding what Zhangsan has bought, but for (1b) to be felicitous, both the speaker and the hearer have a set of things in the presupposition background. Thus, in the situation where no particular set of things to be bought is presupposed, it is appropriate to ask question (1a), but not (1b). If the speaker, or the hearer, or both, recommended a particular set of items to Zhangsan before he went shopping, and in addition, they have been informed that Zhangsan did buy some items from the list recommended, then it is appropriate for the speaker to ask (1b), but not (1a).

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<sup>48</sup> Without rising intonation (2) is more naturally interpreted as “Zhangsan has not bought anything.” with the wh-NP acting like a negative polarity item. I will come back in later discussions to the question of why (3) is preferable to (2).

So for wh-question (1b) that involves movement to be felicitous, two things need to be in the presupposition background: (a) the act of buying has been performed; (b) the things bought are from the pre-established set of which both the speaker and the hearer have knowledge; but for wh-in-situ question (1a) to be felicitous, only (a) is presupposed.<sup>49</sup> Given Karttunen's semantics of questions where a wh-NP is treated as an existential variable whose value is assigned by a set of true answers, we can distinguish (1a) from (1b) in terms of what constitutes this set of true answers. In (1a) this set is not constrained in the sense that anything can be taken from the domain to supply a value to the wh-variable. In other words, to answer such a question, one is not provided with a particular set from which to choose members. But, to answer question (1b) one is provided with such a set that has been established in the previous discourse, and from this set the value assigned to the wh-variable is taken. (1a) and (1b) can be formalized as (4a) and (4b), respectively.

- (4) a.  $\{P \mid \exists x \ E \ \& \ P = \wedge(\text{Zhangsan bought } x) \ \& \ \text{true}(P)\}$   
 b.  $\{P \mid \exists x \ \{D\text{-constrained set}\} \ \& \ P = \wedge(\text{Zhangsan bought } x) \ \& \ \text{true}(P)\}$

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<sup>49</sup> It needs to be pointed out that the presupposition in (1a) can be denied but the one in (1b) cannot. Thus, it is appropriate to answer question (1a) by saying "Zhangsan has not bought anything," which, however, is not a possible answer to (1b).

The only difference between (4a) and (4b) is that in (4a) the value assigned to  $x$  is taken from the domain of individuals  $E$ , whereas in (4b) the value assigned to  $x$  is taken from the D-constrained set.<sup>50</sup>

Based on this, I propose that this movement is an instance of topicalization: the *wh*-NP raises to SpecTopP to check the topic feature, as shown below for (1b).<sup>51</sup>

- (5)  $[_{\text{TopP}} \text{shenme}_i [_{\text{IP}} \text{Zhangsan} [_{\text{VP}} \text{mai -le } t_i ]]]$   
           what           Zhangsan       buy ASP

The topic feature in Chinese is strong and must be checked before Spell-out.

#### 4.4. Negative Effect

With the above semantic analysis in mind, we are ready to explain why (2b) that involves movement is more natural than (2a) that does not. To ask a negative *wh*-question like “What didn’t John buy?” one must presuppose a set of things John was supposed to buy, and from such a set the value to  $x$  is taken. If a *wh*-

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<sup>50</sup> Jimenez (1996) points out that in Spanish the situation is reversed: the *wh*-in-situ is D-constrained, whereas the moved *wh*-NP is not. This is expected because Spanish is a *wh*-movement language and the in-situ strategy is invoked to meet the discourse need. Based on this, Jimenez proposes to distinguish two types of Q: Strong Q and Weak Q. Strong Q is associated with Presupposition 1 in which the variable introduced by the presupposition is assigned values taken from the domain of individuals  $E$ , Weak Q is associated with Presupposition 2 in which the variable is assigned values taken from the D-constrained set. Strong Q triggers *wh*-movement, Weak Q does not. This works for Spanish, but cannot be extended to Chinese since the opposite is true.

<sup>51</sup> Grohmann (1998) has a very detailed discussion of *wh*-topicalization and has reached the similar conclusion reached here. A reader is referred to his for a more elaborate and systematic treatment of this topic across various languages.

variable in a negative question is not constrained as such, the question is just not answerable, because in principle there is an infinite number of things that John has not bought. This provides a hint to the correctness of the proposed analysis; for movement of a wh-NP in Chinese is to check the topic feature, to make the wh-NP D-linked. In so doing it provides a harmony between syntax and discourse. This is why in the negative form the wh-question with movement is preferable to the one without.

There is another set of data that eludes the present analysis. First, when the subject is focused, the object wh-NP must move up, hence (6b) with movement is acceptable, (6a) without is not.

- (6) a. \*zhiyou Zhangsan mai -le shenme shu?  
       only Zhangsan buy ASP what book
- b. shenme shu zhiyou Zhangsan mai -le?  
       what book only Zhangsan buy ASP  
       What book has only Zhangsan bought?

Similarly, (7b) with movement is acceptable, (7a) without is not.

- (7) a. \*lian Zhangsan dou mai -le shenme shu?  
       even Zhangsan all buy ASP what book
- b. shenme shu lian Zhangsan dou mai -le?  
       what book even Zhangsan all buy ASP  
       What book has even Zhangsan bought?

Second, a downward-entailing quantified subject forces the wh-object to move up. This is shown by the contrast in (8): (8b) with movement is acceptable, (8a) without is not.

- (8) a. \*meiyou/henshao ren    mai shenme shu?  
      no        few    person buy what    book
- b. shenme shu meiyou/henshao ren    mai?  
          what    book no        few    person buy  
          What book has/have no one/few people bought?

Though a downward entailing quantifier is associated with the negative force, it is unclear to me how this makes a wh-NP D-linked. Equally unclear to me is why in the presence of a focus marker a wh-NP must be D-linked. It is quite possible that the movement in question is not motivated by checking the topic-feature. I will leave it for future research.

#### **4.5. More Arguments for Wh-Topicalization**

In what follows I present more evidence to argue in favor of the proposed analysis. This movement, as an instance of wh-topicalization, differs from wh-movement and wh-in-situ with respect to scope, weak crossover and others.

##### **4.5.1. Scope Asymmetry**

On a closer examination, we find that this movement has an interesting effect on scope interpretation. Consider the following contrast.

- (9) a. *meigeren dou mai-le shenme?*  
everyone all buy what  
What did everyone buy?  
(i) For every x for which y, x bought y  
(ii) For which y, for every x, x bought y
- b. *shenme<sub>i</sub> meigeren dou mai-le t<sub>i</sub>*  
what everyone all buy  
What did everyone buy?  
(i) \*For every x, for which y, x bought y  
(ii) For which y, for every x, x bought y

Of interest to us here is that there is an asymmetry in scope interpretation between (9a) and (9b). (9a) where the wh-object stays in situ has both the individual and the distributive reading, i.e., either *meigeren* (everyone) or *shenme* (what) can have scope over the other. By contrast, (9b) where the wh-object has moved to the initial position can only have the individual reading, i.e., *meigeren* (everyone) cannot scope over *shenme* (what).

The absence of a distributive reading of (9b) provides a *prima facie* reason to believe that the wh-NP in question is not wh-moved because, as the analogous English sentence in (10) shows, wh-movement does not prevent a QP from scoping over a wh-NP.

- (10) who does everyone like?  
(i) For which x, for every y, y likes x?

(ii) For every y, for which x, y likes x?

(10) is ambiguous with *who* either scoping over *everyone* or under it. Thus, it can be answered by either (11a) or (11b).

(11) a. Everyone likes the President

b. John likes the President, Mary likes the Vice President, Fred likes the Secretary of State ....

If it is not wh-movement, what is it? To answer this question, let us first consider the following example.

(12) a. Everyone has read two of these books.

(i) For every x, x is a person, there are two y, y is a book, x reads y.

(ii) There are two y, y is a book, for every x, x is a person, x reads y.

b. Two of these books everyone has read.

(i) \*For every x, x is a person, there are two y, y is a book, x reads y.

(ii) There are two y, y is a book, for every x, x is a person, x reads y.

(12a) is ambiguous as indicated. The two readings depend on whether *everyone* has scope over *two of these books* or vice versa. (12b), however, is not ambiguous when *two of these books* is topicalized, and it can only have the reading indicated in (ii), i.e., the topicalized phrase must have scope over the

universal QP. Topicalization of a QP eliminates the distributive reading which a sentence might otherwise have. The scope asymmetry witnessed here stands in a striking parallel to that in (9). This leads me to claim that the movement of a wh-NP in (9b) is an instance of topicalization.

The question, then, is why wh-topicalization eliminates scope ambiguity but wh-movement does not. I believe that it is due to the fact that wh-topicalization and wh-movement are checking different features: a topic feature in the former and a wh-feature in the latter. As noted above, in wh-topicalization, it is the [pro] portion of a wh-NP that needs to raise for feature checking, the [wh] portion goes along for PF-convergence. In wh-movement, as suggested by Chomsky (1995), it is the [wh] portion that raises for feature checking and the [pro] portion goes along for PF-convergence. The consequence of this is that in wh-movement the [pro] portion can be, or is preferably, reconstructed at LF. This explains scope asymmetry between wh-topicalization and wh-movement.

#### **4.5.2. Weak Crossover**

Weak crossover effects also distinguish wh-movement from wh-topicalization.

Wh-movement induces a weak crossover effect.

(13) a. \*Who<sub>i</sub> does his<sub>i</sub> mother like t<sub>i</sub> ?

b. \*Who<sub>i</sub> does the girl that he<sub>i</sub> likes miss t<sub>i</sub> ?

Neither *his* in (13a) nor *he* in (13b) can be interpreted as a bound variable, bound by the wh-operator.

Topicalization, on the other hand, does not induce a weak crossover effect:

- (14) a. John<sub>i</sub>, his<sub>i</sub> mother likes t<sub>i</sub>.  
b. John<sub>i</sub>, the girl he<sub>i</sub> likes misses t<sub>i</sub>.  
c. John<sub>i</sub>, his mother<sub>i</sub> thinks that Mary likes t<sub>i</sub>

Both *his* in (14a) and *he* in (14b) can be coindexed with *John* in spite of there being a “variable” to its right.

If the movement under discussion is an instance of topicalization, no weak crossover effect should be induced, and this expectation is borne out:

- (15) a. shei<sub>i</sub> ta<sub>i</sub> de muqing hen xihuan t<sub>i</sub>?  
who he DE mother very like  
Who does his mother like?  
b. shei<sub>i</sub> ta<sub>i</sub> xihuan de guniang hen xiangnian t<sub>i</sub>?  
who he like DE girl very miss  
Who does the girl that he likes miss?  
c. shei<sub>i</sub> ta<sub>i</sub> de muqing renwei Lisi hen xihuan t<sub>i</sub>?  
who he DE mother think Lisi very like  
Who does his mother think that Lisi likes very much?

In (15a,b) the pronoun *ta* (he) can be coindexed with *shei* (who), even though there is a “variable” to its right.

It must be pointed out that the corresponding wh-in-situ questions of (15) do induce a WCO violation. In (16) the wh-in-situ cannot be coindexed with the pronoun to its left.

- (16) a. \* $ta_i$  de muqing hen xihuan  $shei_i$ ?  
who he DE mother very like  
Who does his mother like?
- b. \* $ta_i$  xihuan de guniang hen xiangnian  $shei_i$ ?  
who he like DE girl very miss  
Who does the girl that he likes miss?

The contrast here is not surprising: Wh-in-situ questions like (16) induce a weak crossover violation simply because the unmoved wh-NP is a variable, bound by the covert Q-operator inserted in SpecCP, therefore resulting in a WCO configuration.

- (17) \* $Q_i$  ... pronoun<sub>i</sub> ... variable<sub>i</sub>

The question, then, is: if wh-topicalization is an instance of A'-movement, leaving a variable behind, sentences like (15) should result in a WCO configuration as well, so why can they remedy a weak crossover violation.<sup>52</sup> One possible answer is that the trace left by wh-movement is a syntactic as well as

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<sup>52</sup> I thank Norbert Hornstein for bringing this problem to my attention.

semantic variable, but the trace left by wh-topicalization is a pure syntactic variable. WCO ignores a pure syntactic variable for its calculation.<sup>53</sup>

One more example to this effect.

- (18) a. meigeren dou renwei ta de muqing hen xihuan shei?  
everyone all think he DE mother very like who  
Who does everyone think that his mother like?
- b. shei<sub>i</sub> meigeren dou renwei ta de muqing hen xihuan t<sub>i</sub>?  
who everyone all think he DE mother very like  
Who does everyone think that his mother like?

Note that the pronoun in both (18a) and (18b) can be interpreted as deictic or as bound to the universal quantifier. There are some expected results from the proposed analysis. First, (18a) can be given a pair-list answer like (19), but (18b) cannot. This is because the wh-topic must enjoy widest scope and therefore cannot be interpreted under the scope of the universal quantifier.

- (19) John thinks his mother likes Mary, Bill thinks his mother likes Sally,  
Chris thinks his mother likes Jane.

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<sup>53</sup> There is some plausibility to this claim. Recall that in wh-topicalization it is the [pro] portion that needs to raise for feature checking. What it means is that the [pro] portion must stay in its target position, and the trace left behind contains no [pro] and therefore cannot serve as a semantic variable. In wh-movement it is the [wh] portion that needs to raise for feature checking and the [pro] is dragged along for PF-convergence. At LF the [pro] can be reconstructed, which is why the trace left by wh-movement can serve as both a syntactic and a semantic variable.

Second, the pronoun in (18a) cannot be coindexed with *shei* due to the WCO constraint. The pronoun in (18b), however, can be coindexed with *shei* because wh-topicalization obviates the WCO effect. Third, if the pronoun in (18b) is coindexed with *shei*, then it can no longer be interpreted as a bound pronoun, bound to the universal quantifier. This is because a wh-topic question can never be given a pair-list answer, i.e., only a single value taken from the D-constrained set can be assigned to the wh-variable, whereas by being bound to a universal quantifier, the value of a pronoun varies with the permutation of a quantifier. These two requirements are contradictory, hence the pronoun in (18b) cannot be coindexed with the wh-topic and bound to the universal quantifier simultaneously.

#### 4.5.3. Superiority Effect

Whether superiority effects are induced by overt movement of wh-NPs is also a good test for distinguishing wh-movement from wh-topicalization. The following are typical examples of superiority effects:

- (20) a. Who<sub>i</sub> t<sub>i</sub> saw what?  
b. \*What<sub>i</sub> did who see t<sub>i</sub>?

- (21) a. Who<sub>i</sub> did you persuade t<sub>i</sub> to read what?

b.\*What<sub>i</sub> did you persuade who to read t<sub>i</sub>?

In the good cases, the trace of the moved wh-NP c-commands the wh-NP in situ, whereas in the bad cases, the wh-NP in situ c-commands the trace of the moved one. Given this, if the Chinese wh-NPs under discussion were wh-moved, they should exhibit a superiority effect, but this is not the case.

(22) a. shenme<sub>i</sub> shei mai le t<sub>i</sub>?  
what who buy  
\*What did who buy?

b. shenme dongxi<sub>i</sub> ni quan shei bu yao mai t<sub>i</sub>  
what thing you persuade who not buy  
\*What did you persuade who not to buy?

The Chinese multiple questions in (22) are perfectly acceptable in spite of the fact that the unmoved wh-NP c-commands the trace of the moved one.

This asymmetry between wh-movement and wh-topicalization with respect to superiority can be explained in a principled way under the Minimalist approach in which superiority is reduced to the Economy Condition: Wh-movement is to check the wh-feature, a task that can be accomplished by any one of the wh-NPs in a multiple question. Economy considerations will rule out the derivation in which the lower wh-NP moves over the higher one, because the alternative derivation in which the higher wh-NP moves is more economical. In other words, superiority shows up when a less economical derivation is chosen over a more economical one. (See Kitahara (1997) for detailed discussion). Wh-

topicalization, on the other hand, involves checking the topic feature, the feature that is not inherent to a wh-NP. Therefore, it is only legitimate to move the wh-NP that is to serve as a topic, whether it is the lower one or the higher one, hence the absence of superiority effects.<sup>54</sup>

It is also instructive to compare (22) with their wh-in-situ counterparts in (23).

- (23) a. shei mai-le shenme.  
      who buy-ASP what.  
      Who bought what?
- b. ni quan shei bu yao mai shenme dongxi.  
          you persuade who not buy what thing  
          You persuade who not to buy what?

(22) in which the lower wh-NP has moved over the higher one can only have the individual reading. (23) in which both wh-NPs stay put can have both the individual and the pair-list readings. For example, the list of answers given in (24) can be employed as a response to (23a), but not to (22a).

- (24) John bought a TV set, Bill bought a VCR, Mary bought a computer.

To give a pair-list answer to a multiple wh-question, we pair members in the set denoted by the first wh-NP with members in the set denoted by the second one.

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<sup>54</sup> As to the question raised by Norbert Hornstein as to what happens if there are multiple topics, I have no substantial set of data to argue one way or another. A reader is referred to Grohmann (1998) where he has a detailed treatment of multiple wh-topics in German.

But for a topicalized wh-NP only a single value taken from the D-constrained set can be assigned to it, hence no pairing relation can be established.

In this connection, let us consider the following contrast.

- (25) a. \*What does John wonder whether Bill has bought?  
b. shenme dongxi<sub>i</sub> Zhangsan xiang zhidao Lisi mai mei mai t<sub>i</sub>?  
what thing Zhangsan want know Lisi buy-not-buy  
What did Zhangsan want to know whether Lisi bought?

In the English case *what* moves across the wh-island, the resulting sentence is barely acceptable. A plausible analysis of this is that it is an instance of superiority violation: the lower wh *what* has moved over the higher wh *whether*. Whatever the analysis might turn out to be for the English case is not our concern. What is at issue is that the corresponding Chinese sentence in (25b) where *shenme dongxi* has moved over the wh-island (the A-not-A form) is perfectly acceptable, i.e., it is not sensitive to the wh-island. This indicates the movement involved is not checking the wh-feature. Moreover, as shown in (26), topicalization in English is not sensitive to the wh-island, either.

- (26) That book<sub>i</sub> John wonders whether Bill has bought t<sub>i</sub> .

This leads me to conclude what is involved in (25b) is wh-topicalization.

#### 4.6. Embedded Wh-Topic

Lasnik and Uriagereka (1988) points out that a wh-NP cannot be topicalized on the basis of the following evidence.

(27) a. Who thinks that I like who.

b. \*Who thinks that who<sub>i</sub> I like t<sub>i</sub>.

Why that should be, as admitted by them, is unclear.<sup>55</sup> They suggest that it might be due to the fact that the S-adjoined wh-NP is not available for LF-movement.<sup>56</sup> Thus, the topicalized wh-NP in the embedded clause in (27b) will not be able to raise to the matrix [+wh] Comp to receive its appropriate scope. Whatever reason it might be for the ungrammaticality of (27b), it can only be taken as evidence for the unavailability of wh-topicalization in English.<sup>57</sup>

The Chinese sentence in (28), which is structurally analogous to the English sentence in (27b), is perfectly acceptable.

(28) Zhangsan renwei shenme shu<sub>i</sub> meigeren dou bixu kan t<sub>i</sub>  
Zhangsan think what book everyone all must read  
What book does Zhangsan believe that everyone must read?

Importantly, in (28) the topicalized wh-NP in the embedded topic position can, or rather, must have matrix scope (Note that the embedded Comp is not wh-

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<sup>55</sup> As pointed out by Norbert Hornstein, even topicalization of a non-wh-NP in an embedded clause is barely acceptable.

(a) \*Who thinks that this guy I like.

<sup>56</sup> In GB it is widely accepted that a topicalized phrase is adjoined to S.

marked). If we believe that there is LF-movement of wh-NPs, the Chinese fact seems to suggest that an SS-moved wh-NP can still undergo LF-movement. If we believe that wh-NPs stay where they are at LF, the analysis which I assume all along, we can say that the wh-NP in (28) stays in the embedded topic position at LF, bound by the Q-operator in the matrix CP.

#### 4.7. ATB and PG

In Chapter 2, I briefly mentioned that in order to support a conjunctive wh-question, the wh-NPs must undergo ATB movement. Thus, (29a) that involves movement can be, or rather, must be interpreted as a conjunctive question. (29b) where the wh-NPs stay put can only be interpreted as two separate questions as indicated by the English translation.

- (29) a. shenme<sub>i</sub> Zhangsan xihuan e<sub>i</sub>, Lisi bu xihuan e<sub>i</sub>  
       what Zhangsan like Lisi not like  
       What does Zhangsan like but Lisi does not like?
- b. Zhangsan xihuan shenme, Lisi bu xihuan shenme?  
       Zhangsan like what Lisi not like what  
       What does Zhangsan like? and what does Lisi not like?

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<sup>57</sup> Epten (1992) provides an economy account for the ungrammaticality here, i.e., S-structure topicalization always represents an "extra" move, because the wh-phrase would eventually LF-move to the matrix Comp, and it can stay in situ and move directly to the matrix Comp at LF.

Similarly, in order to license a parasite gap, the wh-NP must raise. Thus, (30a) is good where the wh-NP raises to the front; (30b) is bad where the wh-NP stays in situ.

- (30) a.  $shei_i$  Zhangsan zai meiyou kanjian  $t_i$  zhiqian jiu aishang-le  $e_i$ ?  
 who Zhangsan at not see before then love ASP  
 Who did Zhangsan fall in love with without seeing?
- b. \*?Zhangsan zai meiyou kanjian  $shei_i$  zhiqian jiu aishang-le  $e_i$ ?  
 Zhangsan at not see who before then love ASP  
 Who did Zhangsan fall in love with without seeing?

These are also instances of wh-topicalization. As shown below, topicalization likewise supports a conjunctive reading (31a) and a PG construction (31b).

- (31) a. zhe ben shu Zhangsan xihuan, Lisi bu xihuan.  
 this CL book Zhangsan like Lisi not like  
 This book Zhangsan likes but Lisi hates.
- b. zhe ge guniang<sub>I</sub> Zhangsan zai meiyou kanjian  $t_i$  zhiqian jiu aishang-le  $e_i$   
 this CL girl Zhangsan at not see before then love ASP  
 This girl Zhangsan fell in love with without seeing.

What interests me is the fact that the gap position can be filled by a pronoun to save (30b). This filled pronoun, however, is not necessarily coindexed with the wh-NP. It can pick up any contextually salient entity as well, as shown in (32a). This gap position can also be filled by a pronoun when the wh-NP is topicalized to the front. But, in such a case, the filled pronoun and the wh-NP must be coindexed, as shown in (32b).

- (32) a. Zhangsan zai meiyou kanjian shei<sub>i</sub> zhiqian jiu aishang-le ta<sub>i/j</sub>?  
 Zhangsan at not see who before then love ASP her/him  
 Who did Zhangsan fall in love with without seeing?
- b. shei<sub>i</sub> Zhangsan zai meiyou kanjian t<sub>i</sub> zhiqian jiu aishang-le ta<sub>i/\*j</sub>?  
 who Zhangsan at not see before then love ASP her/him  
 Who did Zhangsan fall in love with without seeing?

*Ta* in (32a) is just an ordinary pronoun, which is why it can be linked anaphorically to *shei*, or used deictically. The question is why (32b) cannot be derived from (32a) by raising *shei* to SpecTopP, in other words, why *ta* in (32b) is necessarily coindexed with the fronted wh-NP. If (32b) were derived from (32a), it should be possible for *ta* to be conindexing with *shei*.

I suggest that *ta* in (32b) is a resumptive pronoun used to spell out the trace. Following Nunes (1995) and Hornstein (class lecture), I argue that *shei* in (32b) is in fact not base-generated in the “trace” position as indicated in (32b). Rather, it starts from the “gap” position and then undergoes sideward movement to the “trace” position and finally raises up to the topic position.<sup>58</sup> Given this, (30a) should have the structure in (33) where both the empty positions are traces, or rather, copies of *shei*.

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<sup>58</sup> Nunes (1995) and Hornstein (class lecture) argue that for an English PG sentence like (a) *which article* starts from the object position of the adjunct clause and undergoes sideward movement to the matrix object position, and finally raises to SpecCP.

(a) Which article<sub>i</sub> did John read t<sub>i</sub> without filing t<sub>i</sub>?

They assume that sideward movement is permitted as long as it is driven by feature checking. The first movement is driven by checking the theta-feature of *read*. Whether the theta-feature is

- (33) shei<sub>i</sub> Zhangsan zai meiyou kanjian t<sub>i</sub> zhiqian jiu aishang-le t<sub>i</sub>?  
 who Zhangsan at not see before then love ASP  
 Who did Zhangsan fall in love with without seeing?

Either trace, or both, can be spelt out by a resumptive pronoun. But, whether spelt out or not they must be coindexed with the fronted wh-NP, a desirable result.

- (34) a. shei<sub>i</sub> Zhangsan zai meiyou kanjian ta<sub>i</sub> zhiqian jiu aishang-le t<sub>i</sub>?  
 who Zhangsan at not see before then love ASP  
 Who did Zhangsan fall in love with without seeing?

- b. shei<sub>i</sub> Zhangsan zai meiyou kanjian ta<sub>i</sub> zhiqian jiu aishang-le ta<sub>i</sub>?  
 who Zhangsan at not see before then love ASP  
 Who did Zhangsan fall in love with without seeing?

#### 4.8. Wh-Topicalization Vs. Wh-Scrambling

Wh-topicalization differs from wh-scrambling as found in Japanese and Hindi, though they share some property, say, in not exhibiting a superiority effect.

The so-called scrambled wh-NP in Japanese, as pointed out by Saito (1992), among many others, has to be “reconstructed” at LF for scope interpretation.

- (35) Nani-o John-ga [Mary-ga t katta ka] sitteiru (koto)  
 what-Acc -Nom -Nom bought Q knows fact  
 John knows what Mary bought.

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a formal feature and needs to be checked is still an open question. Chomsky (1995), for

In (35) the embedded wh-object is scrambled to the matrix clause, but it can still take embedded scope. In fact it must take embedded scope, since the matrix clause is not specified as interrogative (in Japanese, interrogative clauses are marked by question markers such as *ka* and *no*).

The fronted wh-NP in Chinese, as I have been arguing thus far, must be interpreted in its surface position for scope. Consider (36), the Chinese analogue of (35).

- (36) \*shenme<sub>i</sub> Zhangsan wen wo Lisi mai-le t<sub>i</sub>  
 what Zhangsan ask me Lisi buy  
 Zhangsan asked me what Lisi bought

Unlike its Japanese counterpart, (36) is bad. This is expected because the wh-NP in (36), that has been moved there by topicalization, cannot be reconstructed to its base position for scope and, as such, the selectional requirement of the embedded [+wh] Comp cannot be satisfied.

In addition, as pointed out by Mahajan (1989), long distance wh-scrambling does not remedy weak crossover violations in Hindi.

- (37) \*kis-ko<sub>i</sub> uskii<sub>i</sub> bahin-ne socaa [ki raam-ne t<sub>i</sub> dekhaa thaa]  
 who his sister thought that Ram seen be-past  
 Who<sub>i</sub> his<sub>i</sub> sister thought that Ram has seen t<sub>i</sub>

If a scrambled wh-NP has to be reconstructed to its base position at LF, and if a reconstructed wh-NP is a variable, then the WCO violation observed is parallel

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example, does not take the theta-feature as a formal one.

to the case of wh-in-situ where the WCO effect obtains as well. Wh-topicalization, however, does remedy the WCO violations, (see 4.5.2. for detailed discussion), and the Chinese sentence analogous to (37) is perfectly acceptable with its relevant coindexation.

- (38) shei<sub>i</sub> ta<sub>i</sub> de jiejie renwei Lisi bu xihuan t<sub>i</sub>?  
who he DE sister think Lisi not like  
Who does this sister think that Lisi does not like?

Why wh-scrambling must be reconstructed is not our concern here. But the fact that a scrambled wh-NP must be interpreted in its base position while a topicalized one in its surface position suffices for us to say that wh-scrambling and wh-topicalization are two different operations.

#### **4.9. A Possible Extension**

The proposed analysis can be extended to D-linked wh-NPs in English, i.e., they are moved by wh-topicalization rather than by wh-movement. There is something right about this suggestion. For example, it provides a good explanation of a range of observed asymmetries between D-linked wh-NPs and non D-linked ones.

First, it explains their scope asymmetry. (39a) has both the distributive and the individual readings, but (39b) has the individual reading only.<sup>59</sup> If *which book* in (39b) is moved by topicalization rather than by wh-movement, its lack of a distributive reading falls out, as expected.

- (39) a. What did everyone buy?  
b. Which book did everyone buy?

Second, it explains the long-observed asymmetry regarding superiority effects, as shown in (40). The multiple question with one *which*-phrase fronting over the other does not exhibit a superiority effect. This is not surprising if the movement in question is an instance of topicalization. Recall that wh-topicalization does not induce a superiority violation.<sup>60</sup>

- (40) a. \*What did who buy?  
b. Which book did which man buy?

Third, it seems that the movement of a D-linked wh-NP does not induce a WCO violation as strongly as that of a non D-linked one, as shown by the

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<sup>59</sup> As mentioned by Norbert Hornstein (p.c.), some English speakers can get a distributive reading for this sentence. I have nothing to say about this.

<sup>60</sup> Norbert Hornstein (pc.) points out that a sentence like (a) is very bad.

(a) \*Which book didn't which man buy?

Somehow negation causes this sentence to be unacceptable. I have no good explanation for that. Also, see Grohmann (1998) for a detail analysis of this topic.

contrast in (41). Again, this result is expected because *wh*-topicalization, as shown above, does remedy the WCO violation.

- (41) a. \*Who<sub>i</sub> does his<sub>i</sub> father like t<sub>i</sub>?  
b. ?Which son<sub>i</sub> does his<sub>i</sub> father like t<sub>i</sub>?

Finally, as pointed out by Cinque (1990), there is a sharp contrast between (42a) and (42b).

- (42) a. \*What does John wonder whether Bill has bought?  
b. Which book does John wonder whether Bill has bought?

(42a) is barely acceptable, but (42b) is very good. If *what* in (42a) is *wh*-moved to the front while *which book* is moved to that position by topicalization, this contrast is not surprising at all: (42a) is a violation of superiority, i.e., the lower *wh what* has moved over higher *wh whether*. (42b) does not have this problem because *which book* is topicalized rather than *wh*-moved. As argued extensively above, *wh*-topicalization is not subject to the superiority condition.

Since the behavior exhibited by D-linked *wh*-NPs in English is so similar to that exhibited by fronted *wh*-NPs in Chinese, it is highly desirable, if not necessary, to treat them alike, except for one caveat, that is, the movement of a D-linked *wh*-NP in English seems to have a dual purpose: to check the *wh*-feature as well as the topic feature. I leave the question of how it can be done aside

## **Chapter 5**

### ***Dou-Quantification***

#### **5.1. Introduction**

The syntax of *dou* has always been controversial and there are at least three competing approaches in generative literature.<sup>61</sup> In this chapter I propose a Minimalist analysis of *dou*-quantification. On this analysis, *dou* is a functional head projecting to Distributional Phrase (DistP for short).<sup>62</sup> This projection is quantificationally strong and its Q-feature must be checked by a strong Q-element either moved or merged into its spec-position via spec-head agreement. This derives the so-called Leftward Quantification in a Minimalist way. Following Barwise and Cooper (1981), I distinguish two types of NPs: strong vs. weak in terms of their Q-feature strength. On the assumption that a checker and a checkee in such a case must agree in their Q-feature strength, another important but hitherto unnoticed fact, i.e., that *dou* is unable to quantify a weak NP (whether singular or plural), can be attributed to the mismatch of their Q-feature strength.<sup>63</sup> This analysis covers all other *dou*-related facts, such as

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<sup>61</sup> What I have in mind is Chiu's (1993) floating quantifier analysis, Cheng's (1995) adverbial analysis and Zhang's (1997) binding analysis. The coverage of the three analyses is limited in that they only deal with *dou*-quantification of NPs. As we will see in this chapter, *dou* can be quantificationally associated with some adverbs as well. The proposed analysis can capture this fact without invoking any ad hoc assumption.

<sup>62</sup> Li Xiaoguang in his dissertation (1997), following Beghelli and Stowell (1995), proposes a similar kind of analysis of *dou*, i.e., *dou* is the head of a functional projection called DistP. Since Li's and mine are made independently of each other, it adds credence to the idea itself. Li's focus of analysis is more on the correlation between *dou* and the lack of a tense marker as well as its historical implication. Mine is to capture all the relevant facts regarding *dou*-quantification in Minimalist terms. The two analyses diverge in their focus but not in their spirit.

<sup>63</sup>The strong/weak feature distinction is similar to the one used in standard MP, but not identical. They are similar in that the strong feature triggers overt movement in both. In standard

locality restrictions and blocking effects, quantification of adverbs, focus interpretation, binding of *wh*-phrases into an island, without invoking any ad hoc assumptions. As we will see, this analysis is not just couched in Minimalist terms, but it is true to the Minimalist spirit in that it is highly derivational.<sup>64</sup>

## 5.2. The Syntax and Semantics of *Dou*-Quantification

In this section I set the stage for further discussion by presenting the basic facts concerning the syntax and semantics of *dou*, some of which, to the best of my knowledge, have not been noticed.

### 5.2.1. Leftward Quantification

The most conspicuous fact concerning *dou* is that it can only quantify an NP to its left.

- (1) a. zhexie xuesheng dou xihuan wo.  
these student all like me  
All of these students like me.
- b. \*dou zhexie xuesheng xihuan wo.  
all these student like me  
All of these students like me.

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MP, the weak feature presumably triggers LF-movement, but there is no LF-checking at DistP. To distinguish this use of feature from the one in MP, I refer to it as Q-feature.

<sup>64</sup>One theoretical question remaining to be answered is whether an interpretable feature must be checked. I assume without further discussion that an interpretable feature can be checked, but does not have to be. I will leave such a theoretical issue aside for future research.

- (2) a. Zhangsan zhexie shu dou kan-le.  
 Zhangsan these book all read  
 Zhangsan has read all of these books.
- b. \*Zhangsan dou kan-le zhexie shu.  
 Zhangsan all read these book  
 Zhangsan has read all of these books.

Sentence (1a) is acceptable where *zhexie xuesheng* (these students) is on the left of *dou*; sentence (1b), by contrast, is unacceptable where the same NP is on the right of *dou*.. Similarly, sentence (2a) is acceptable where the object *zhexie shu* is moved to the left of *dou*; sentence (2b) is unacceptable where the same object stays put.<sup>65</sup>

### 5.2.2. Locality

*Dou* does not have to be adjacent to the NP it quantifies, but there is, however, a certain locality restriction.

- (3) a. zhexie xuesheng wo dou xihuan.  
 these student I all like  
 All of these students I like.
- b. \*zhexie xuesheng zhidao [<sub>IP</sub> wo dou xihuan Zhangsan]  
 these student know I all like Zhangsan  
 All of these students know that I like Zhangsan

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<sup>65</sup> A sentence like (2b) is acceptable under a focus reading where *dou* acts somewhat like English *even*.. I will come back to these issues in later discussions.

*Dou* in (3a) can quantify the object *zhexie xuesheng* in the topic position even though the subject intervenes between them. *Dou* in the embedded clause of (3b), however, is not able to quantify the matrix subject *zhexie xuesheng*. This indicates that *dou*-quantification is clause bounded.

However, it appears that *dou* sometimes can quantify an NP over clausal boundaries. Consider the following contrast.

- (4) a. *zhexie xuesheng<sub>i</sub> wo xiangxin [<sub>IP</sub> Lisi dou xihuan t<sub>i</sub>]*  
 these student I believe Lisi all like  
 All of these students, I believe Lisi likes (them).
- b. \**zhexie xuesheng<sub>i</sub> wo dou xiangxin [<sub>IP</sub> Lisi xihuan t<sub>i</sub>]*  
 these student I all believe Lisi like  
 All of these students, I believe Lisi likes (them).

Of interest here is the fact that *dou* in (4a), though in the embedded Infl, can quantify *zhexie xuesheng* in the matrix topic position, whereas *dou* in (4b), being in the same clause as the topic *zhexie xuesheng*, is not able to quantify it. By merely looking at where the topic has been moved from, we can make the following generalization: Cross-clausal *dou*-quantification is only possible when *dou* and the NP it quantifies are base-generated in the same clause. In (4a), but not in (4b), *dou* and the topic were in the same clause before the movement took place.

### 5.2.3. Plurality Required?

*Dou* distributes the property of a predicate over an NP. For example, in sentence

(1a) *dou* distributes the property of *liking me* over the subject *these students*.

Given its semantics, it looks like the NP that *dou* is associated with must be

plural. This requirement, however, is not necessary. As pointed out by Lin

(1996), among others, *dou* can quantify over parts of a single object.

- (5)   zhe-ben shu Zhangsan dou kan-le.  
      this CL book Zhangsan all read  
      Zhangsan has read every part of the book.

In (5) the object *zhe-ben shu* (this book) that *dou* quantifies is semantically singular, but the sentence is perfectly acceptable. What *dou* does here is quantify over each and every page of the book.

More importantly, this plurality requirement is not sufficient, either.

Sentence (6), for example, is unacceptable, though the subject that *dou* is intended to quantify is semantically plural.

- (6)   \*yixie xuesheng dou chuxi-le huiyi.  
      some students all attend meeting  
      Lit. Some students have all attended the meeting.

Given these facts we are forced to abandon the plurality requirement since it is neither necessary nor sufficient. Now, the question is what notion, if any, can be employed to distinguish the NP that is *dou*-quantifiable from those that are not.

Zhang (1997) proposes that an NP that *dou* quantifies must be semantically measurable to the eventuality expressed by the predicate. He notes that though sentence (5) is acceptable, the corresponding sentence where *borrow* is substituted for *read* is unacceptable.

- (7) \*zhe-ben shu Zhangsan dou jie-le.  
this CL book Zhangsan all borrow  
\*Zhangsan has borrowed all of this book.

Zhang argues that the entity of a single book is measurable to the event of reading, but not to the event of borrowing, hence the contrast.

There is no denying the fact the property of a predicate plays a role in *dou*-quantification since what *dou* does is distribute the property of a predicate over an NP. But measurability cannot be used as a defining property of *dou*-quantification of NPs. Consider the examples in (8).

- (8) a. \*yi-ben shu Zhangsan dou du-le  
one CL book Zhangsan all read  
b. \*yi-ben shu Zhangsan dou jie-le  
one CL book Zhangsan all borrow

What (8) demonstrates is that an indefinite cannot be quantified by *dou* regardless of what predicate is involved. On Zhang's analysis it is not clear why a definite is measurable and an indefinite is not to the eventuality expressed by the same predicate.

It seems that we need some other notion to characterize NPs with respect to their *dou*-quantifiability, to which I will turn in the next section.

### **5.3. Two Types of NPs**

In this section I first sketch out Barwise and Cooper's (1981) proposal to distinguish two types of NPs in terms of a strong/weak distinction. Then I point out that this is the very property that separates the NPs that can be quantified by *dou* from those that cannot.

#### **5.3.1. Strong/Weak NPs**

Barwise and Cooper (1981) propose to distinguish two types of determiners by using the following general form.

(9) Det N' is an N'

They observe that with determiners like *every* and *the*, sentences of this form are always true regardless of the choice of N'.

- (10) a. Every man is man.  
b. Every unicorn is a unicorn.  
c. The man is a man.  
d. The unicorn is a unicorn.

However, with determiners like *some* or *few*, sentences of this form are sometimes true and sometimes false depending on whether the N' in question is or is not true of some object. Therefore, (11a) is true, but (11b) is false; (11c) is false, but (11d) is true.

- (11) a. Some man is a man.  
b. Some unicorn is a unicorn.  
c. Few men are a man.  
d. Few centaurs are centaurs.

They refer to the first type of determiner as strong and an NP containing such a determiner as a strong NP, and the second type of determiner as weak and an NP containing such a determiner as a weak NP.

Barwise and Cooper argue that the strong/weak distinction is precisely the property that determines the distribution of NPs in an existential construction, that is, a strong NP cannot appear in such a construction, but a weak one can.<sup>66</sup>

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<sup>66</sup>As pointed out by Norbert Hornstein (pc.) this analysis is challenged by Keenan (1987). Also, it is not clear how this analysis works for a sentence like (a).

- (a) There is someone's mother in the room.

(a) is perfectly acceptable. I don't have a good answer for this, but I want to point out that there is a contrast between (a) and (b).

- (b) \*There is John's mother in the room.

So it looks like what matters that is a possessor must be indefinite when a genitive phrase occurs in an existential construction.

- (12) a. There is some man in the room.  
 b. There are few men in the room.  
 c. \*There is every man in the room.  
 d. \*There is the man in the room.

### 5.3.2. Only a Strong NP is *Dou*-Quantifiable

With the above distinction in mind, let us consider what type of NP can be quantified by *dou* and what type cannot. It turns out that all NPs that can be quantified by *dou* are precisely those that are strong in Barwise and Cooper's sense. Consider the following examples.

- (13) a. mei-ge xuesheng dou chuxi-le huiyi.  
 every CL student all attend meeting  
 Every student has (all) attended the meeting.
- b. dabufen xuesheng dou chuxi-le huiyi.  
 most student all attend meeting  
 Most students have (all) attended the meeting.
- c. zhexie xuesheng dou chuxi-le huiyi.  
 these student all attend meeting  
 These students have all attended the meeting
- d. zhe-ben shu Zhangsan dou du-le.  
 this CL book Zhangsan all read  
 Zhangsan has read every part of this book.

The NP in (13a) is a universal quantifier; the one in (13b) is a quasi-universal quantifier.<sup>67</sup> In (13c) and (13d) the NPs associated with *dou* are both definite: plural in the former and singular in the latter. These NPs are strong as none of them can appear in an existential construction. We have already seen that restriction as exemplified by the English examples in (12c, d) for a universal quantifier or a definite NP. A quasi-universal quantifier (most N') has the same restriction as shown by both the Chinese and English examples in (14).

- (14) \*fangjianli you dabufen xuesheng.  
       in room exist most student  
       \*There are most students in the room.

By contrast, all NPs that can't be quantified by *dou* are precisely those that are weak in Barwise and Cooper's sense. More examples are given below in addition to (6) and (8).<sup>68</sup>

- (15) a. \*sange xuesheng dou chuxi-le huiyi  
       three student all attend meeting  
       Three students have attended the meeting
- b. \*mei you xuesheng dou chuxi-le huiyi.  
       no exist student all attend meeting  
       None of the students have attended the meeting.

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<sup>67</sup> Quasi-universal quantifier is used for lack of a better term.

<sup>68</sup> It must be pointed out that (15a) is acceptable if the subject is interpreted as definite. Note that a numeral quantifier in Chinese is ambiguous, and can be interpreted as indefinite or as definite depending on context.

That all these NPs are weak is evidenced by the fact that they can all appear in an existential construction.

- (16) a. fangjianli you yixie xuesheng.  
in room exist some student  
There are some students in the room.
- b. zhuozishang you yi-ben shu.  
on table exist one CL book  
There is a book on the table.
- c. fangjianli you sange xuesheng.  
in room exist three student  
There are three students in the room.
- d. fangjianli mei you xuesheng.  
in room not exist student  
There is no student in the room.

This leads me to conclude that the property that determines *dou*-quantifiability of an NP is nothing but this strong/weak distinction, viz., a strong NP is *dou*-quantifiable, a weak one is not.

(17) appears to be a counterexample to the conclusion just reached: *Xuduo xuesheng* (many students) can be quantified by *dou* (17a) as well as appear in an existential construction (17b).

- (17) a. xuduo xuesheng dou chuxi-le huiyi.  
many student all attend meeting  
Many of the students have attended the meeting.
- b. fangjianli you xuduo xuesheng.

in room exist many student  
There are many students in the room

I argue that such an NP is ambiguous: it can be interpreted as partitive or as existential.<sup>69</sup> (17a) is acceptable only under the partitive interpretation, that is, the speaker takes the number of students attending the meeting in proportion to a discourse-fixed set of students. If 6 out of 10 counts as many, and if this discourse-fixed set of students contains 20 members, then for (17a) to be true there must be 12 or more students attending the meeting. Construed this way, *xuduo xuesheng* is equivalent to English *many of the students*, i.e., they are both partitive. (17b), by contrast, is acceptable only under the existential interpretation, namely, there is no discourse-fixed set of students for its truth evaluation. It is equivalent to English *many students*, i.e., it is existential.

That the partitive reading is strong while the existential reading is weak can be demonstrated by the following English examples where *many of the students* cannot appear in an existential construction, but *many students* can.<sup>70</sup>

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<sup>69</sup> For reasons not clear to me, only *xuduo* (many) NP can have either a partitive or existential reading. A *yixie* (some) NP is not ambiguous: It is existential when the NP stays to the right of *yixie*, partitive when the NP moves over *yixie*. Thanks to Norbert Hornstein for pointing this out. Also, it is worth mentioning that in (17) if the NP moves over *xuduo*, it can only have a partitive reading. For a fuller discussion of this, see chapter 6.

- (a)     *xuesheng xuduo dou chuxi-le huiyi.*  
          student many all attend meeting  
          (i) Many of the students have attended the meeting  
          (ii) \*There are many students attending the meeting.

<sup>70</sup> Norbert Hornstein (pc.) points out that a sentence like (a) is fine.

- (a)     There are many of our students at the cafeteria.

(18) a. ?There are many of the students in the room.

b. There are many students in the room.

Now we can conclude that a strong NP is *dou*-quantifiable and a weak NP is not, which, as we will see, is crucial for the proposal to be outlined in the next section.

#### 5.4. A Minimalist Proposal

This section outlines a Minimalist analysis of *dou*-quantification based on the observations made in the previous sections. The proposed analysis is shown to derive the above facts in a principled way.

##### 5.4.1. *Dou* as the Head of DistP

I propose that *dou* is a functional head projecting to a Distributional Phrase.<sup>71</sup>

This projection sits between AgrsP and VP. I assume the following clause structure for Chinese.

(19) [TopP [AgrsP [DistP [Dist' *dou* [VP ]]]]]

There are four related claims to this proposal.

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But as also pointed out by Norbert Hornstein (pc) (a) does not have a proportional reading, so it does not affect the analysis here.

<sup>71</sup> Beghelli and Stowell (1995) is the first to propose the existence of a Distributional Phrase as a functional projection.

- (20) a. *Dou* hosts the strong Q-feature and for the derivation to converge the feature must be checked before Spell-Out.
- b. For Q-feature checking a checker and a checkee must agree not only in their feature but also in their feature strength.
- c. The Q-feature can be checked either by Move or by Merge.
- d. The quantificational relation between *dou* and its associate can be established as long as the associate passes through SpecDistP at some point in the derivation.

Now let us look at how this proposal derives the above facts. First, the Leftness Quantification follows directly without any further assumption. Let us illustrate this with example (1a). The following is its derivation at the point of Spell-Out.

- (21)  $[_{\text{DistP}} \text{zhexie xuesheng}_i [_{\text{Dist}'} \text{dou} [_{\text{VP}} t_i [_{\text{V}'} \text{xihuan wo}]]]]$   
           these student           all           like me

The subject *zhexie xuesheng* is base-generated in SpecVP and then moved to SpecDistP headed by *dou* to check the Q-feature of *dou*. This checking must be done in overt syntax due to its Q-feature strength, hence *zhexie xuesheng* ends up to the left of *dou*.

The ungrammaticality of (1b) can be explained in a straightforward way:

(1b) is one step short of (1a) in that the subject does not move out of the VP-shell, as shown by (22)

(22)  $[_{DistP} [_{Dist'} \text{dou} [_{VP} \text{zhexie xuesheng} [_{V'} \text{xihuan wo}]]]]$   
           all       these student       like    me

(22) does not converge because the strong Q-feature of *dou* remains unchecked at the point of Spell-Out (without anything in its Spec). What is crucial here is that the strong Q-feature must be checked before Spell-Out; otherwise, we would not be able to rule out (22) because if the subject could raise at LF for feature checking, the sentence would then converge, which is an undesirable result.

This proposed analysis also derives the contrast as shown in (2) that an object must move out of its theta position to the left of *dou* in order for *dou*-quantification to take place. The following is the convergent derivation of (2a) where the object *zhexie shu* raises to SpecDistP and the subject *Zhangsan* then raises to SpecAgrsP. In this way, we derive the word order, as desired.

(23)  $[_{AgrsP} \text{Zhangsan}_j [_{DistP} \text{zhexie shu}_i [_{Dist'} \text{dou} [_{VP} t_j [_{V'} \text{kan-le } t_i ]]]]]$   
           Zhangsan       these books       all               read

(2b) where the object stays put does not converge simply because the feature of *dou* remains unchecked at the point of Spell-Out. (Note that the subject *Zhangsan* cannot check this feature for a semantic reason.)

By assuming that a checker and checkee must agree in their Q-feature strength, we can give a very natural explanation for the unacceptability of the sentences in (6, 8, 15) where the NPs preceding *dou* are all weak. I assume the following derivation for (6) at the point where *dou* is introduced.

(24)  $[_{\text{DistP}} \text{yixie xuesheng}_i [_{\text{Dist}'} \text{dou} [_{\text{VP}} t_i [_{\text{V}'} \text{chuxi-le huiyi}]]]]$   
           some students           all           attend meeting

The subject raises out of the VP to SpecDistP for feature checking. Since the subject is quantificationally weak and a weak NP is not able to check the strong Q-feature of *dou* due to the mismatch of Q-feature strength, this operation cancels the derivation.

It is interesting to point out that if the weak subject in (24) stays inside the VP, thereby leaving the feature of *dou* unchecked as shown in (25), the resulting sentence is even worse.

(25) \*\**dou yixie xuesheng chuxi-le huiyi.*  
           all some students attend meeting

This seems to suggest that the derivation in which the strong Q-feature remains unchecked induces a more severe grammatical violation than the one in which the strong Q-feature is checked by a weak element (mismatch of Q-feature strength).

#### 5.4.2. Locality Explained

The locality condition of *dou*-quantification observed above falls out from this proposal in a very principled way. Take sentence (3b) for example. The following is its derivation.

(26)  $[_{IP} \text{zhexie xuesheng } [_{VP} \text{zhidao } [_{IP} \text{wo } [_{DistP} \text{dou } [_{VP} \text{xihuan Zhangsan}]]]]]$   
 these student know I all like Zhangsan

In (26) *dou* heads the DistP in the embedded Infl. The matrix subject *zhexie xuesheng*, base-generated in SpecVP of the matrix clause, cannot lower to the SpecDistP in the embedded Infl to check the feature of *dou* and then move up to SpecAgrsP in the matrix without violating cyclicity.

For (3a) where the intervening subject does not block *dou*-quantification of the topic, I assume the following derivation.

(27) a.  $[_{DistP} \text{zhexie xuesheng}_i \text{ } [_{Dist'} \text{dou } [_{VP} \text{wo xihuan } t_i ]]]]$   
 these students all I like

b.  $[_{AgrsP} \text{wo}_j \text{ } [_{DistP} \text{zhexie xuesheng}_i \text{ } [_{Dist'} \text{dou } [_{VP} t_j \text{ xihuan } t_i ]]]]]]$   
 I these students all like

c.  $[_{TopP} \text{zhexie xuesheng}_i \text{ } [_{AgrsP} \text{wo}_j \text{ } [_{DistP} t_i \text{ } [_{Dist'} \text{dou } [_{VP} t_j \text{ xihuan } t_i ]]]]]]$   
 these students I all like

The explanation is straightforward: The topic base-generated in object position moves to SpecDistP for feature checking (27a), and then the subject moves directly to SpecAgrsP (27b), and finally the topic raises further to SpecTopP to check the topic-feature (27c). *Dou* can legitimately quantify the topic on the

assumption that the relation between *dou* and its associate can be established as long as the associate passes through SpecDistP at some point in the derivation.

Finally, let us consider the contrast in (4). Recall what happens in (4) is that a topic can be associated with *dou* over clausal boundaries, but on the condition that they must be base-generated in the same clause. The following is the partial derivation of (4a) where the embedded DistP is built and the object *zhexie xuesheng* moves to SpecDistP for feature checking.

(28)  $[_{\text{DistP}} \text{zhexie xuesheng}_i [_{\text{Dist}'} \text{dou} [_{\text{VP}} \text{Lisi xihuan } t_i ]]]$   
           these students           all       Lisi like

We then merge the matrix VP into the tree to yield (29a). Finally, *zhexie xuesheng* moves out of the DistP to SpecTopP in the matrix for feature checking (29b).<sup>72</sup>

(29) a.  $[_{\text{VP}} \text{wo xiangxin} [_{\text{DistP}} \text{zhexie xuesheng}_i [_{\text{Dist}'} \text{dou} [_{\text{VP}} \text{Lisi xihuan } t_i ]]]]]$   
           I believe           these students           all       Lisi like

b.  $[_{\text{TopP}} \text{zhexie xuesheng}_i [_{\text{VP}} \text{wo xiangxin} [_{\text{DistP}} t_i [_{\text{Dist}'} \text{dou} [_{\text{VP}} \text{Lisi xihuan } t_i ]]]]]]$   
           these students           I believe                   all       Lisi like

As shown, the relation between the topic *zhexie xuesheng* and *dou* is legitimately established at some point in the derivation.

This sort of derivational association, however, cannot be set up in (4b). Note that in (4b) the DistP headed by *dou* resides in the matrix IP. At the point

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<sup>72</sup> For ease of illustration, I skip subject raising in both the embedded and the matrix clauses.

where *dou* is merged we have already built up both the embedded VP and the matrix VP, as shown by (30).

(30)  $[_{\text{DistP}} [_{\text{Dist}'} \text{dou} [_{\text{VP}} \text{wo xiangxin} [_{\text{IP}} [_{\text{VP}} \text{Lisi xihuan zhexie xuesheng}]]]]]$   
           all       I believe           Lisi like these students

At this point the topic *zhexie xuesheng* is still sitting in the embedded object position. For an NP to be quantified by *dou*, it must be in SpecDistP for feature checking. In order to do so, *zhexie xuesheng* would have to move across the finite Infl. This operation, however, is not permitted because the feature checking in question is an instance of A-movement. This explains the unacceptability of (4b).

## 5.5. Blocking Effects: Epiphenomenon of Derivational Timing

The observed blocking effects are in fact an epiphenomenon of derivational timing. In this section I first take a look at the typical data concerning the blocking effects and make some brief comments on Cheng's analysis of them. I then provide more data to show that the blocking has to do with derivational timing.

### 5.5.1. Who Blocks and Who does not?

First, let us consider the typical blocking effect exhibited by a *ba*-phrase.

- (31) a. Zhangsan ba neixie shu dou mai-le  
 Zhangsan BA those book all sell  
 Zhangsan sold all those books.
- b. \*tamen ba nei-ben shu dou mai-le  
 they BA that CL book all sell  
 All of them sold that book.

What (31) shows is that when *dou* is preceded by a *ba*-phrase it must quantify the NP within that *ba*-phrase. In (31a) this quantification is possible because the *ba*-NP *neixie shu* (those books) is plural, but in (31b) the same quantification is not possible because the *ba*-NP *neiben shu* (that book) is singular and the event of buying cannot be distributed over each and every page of a single book.

Given the fact that *dou* can quantify a topic over the intervening subject as shown by (3a), the question concerning us is why *dou* in (31b) cannot reach the potentially *dou*-quantifiable subject over the intervening *ba*-phrase.

What makes the blocking effect a bit messy is that a prepositional phrase in the same position does not seem to block *dou*-quantification of a subject.

- (32) a. zhexie xuesheng [ gen Zhangsan ] dou hen shu.  
 these student with Zhangsan all very familiar  
 All of these students are familiar with Zhangsan.
- b. Zhangsan [gen zhexie xuesheng] dou hen shu.  
 Zhangsan with these student all very familiar.  
 Zhangsan is familiar with all of these students.

*Gen Zhangsan* (with Zhangsan) in (32a) intervenes between *zhexie xuesheng* (these people) and *dou*, but does not block the latter from quantifying the

former. Note that *dou* can also quantify the NP within a prepositional phrase, as shown in (32b).<sup>73</sup>

### 5.5.2. Cheng's (1995) Analysis

Cheng (1995) gives an economy account for the blocking effects. She assumes that *dou* LF-moves to adjoin its associated NP to satisfy its own quantificational requirement and this movement has to obey the Principle of Economy (i.e. making the shortest move). The NP within a *ba*-phrase c-commands *dou* and thus is accessible to it. To obey the Principle of Economy, *dou* must adjoin to the *ba*-NP, instead of the subject, since the former is closer.

The assumption that *dou* undergoes LF-movement is dubious and it is called into question by the following example (to which I will come back when discussing *dou*-binding of adverbs).

- (33) \*zhexie xuesheng ouer dou qu jiaotang.  
these student occasionally all go church  
All of these students occasionally go to church.

In (33) *dou* cannot quantify the subject over the intervening adverb: it cannot mean what is intended by the English translation. On Cheng's analysis it is not

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<sup>73</sup> There is no standard analysis as to where a PP sits. I assume that it has its own projection above DistP. To ensure that an NP inside PP can check the strong Q-feature, I have to assume that the feature of a strong NP can percolate up to PP. So, in fact it is the PP rather than the NP

clear why this is so. If *dou* could move at LF to adjoin to the subject, it should be able to quantify the subject, contrary to fact.

Cheng attributes the lack of a blocking effect shown in (32) to the so-called dual status of a preposition in Chinese, that is, a preposition can be either a dummy case marker which does not project to an XP projection or a real preposition having a maximal PP projection. For (32a), where *dou*-quantification of the subject over the intervening PP is possible, she claims that the preposition projects to a full PP projection, thereby rendering the NP within it inaccessible to *dou*. Thus, *dou* can move over the PP to adjoin to the subject without inducing an economy violation. For (32b), where *dou* quantifies the NP within the PP, she claims that the same preposition is a dummy case marker, not projecting to a PP projection. Thus, the contained NP is accessible to *dou*, and to make the shortest move, *dou* must LF-adjoin to it rather than to the subject which is farther away.

Again, the assumption that a preposition has a dual status is dubious. As a matter of fact, some prepositional phrases are always opaque. For example, (34) cannot mean what is intended by the English translation, namely, *dou* cannot quantify the subject over the intervening PP.

- (34) \*zhexie xuesheng yong kuaizi dou chifan.  
these student with chopsticks all eat  
All of these students eat with chopsticks.

On Cheng's analysis, we are forced to say that an instrumental prepositional phrase always has a full PP projection. The question then is why some prepositions project, while others don't.

Cheng's analysis, as shown, invokes a number of dubious assumptions, thus lacking an explanatory force.

### 5.5.3. Derivational Timing

Before we proceed to give an account, let us consider some more data of this sort. The contrast in (35) shows that a temporal adverb, if it does not have a quantificational force, does not interfere with *dou*-quantification (35a), but a manner adverb does (35b).

- (35) a. zhexie xuesheng zuotian dou qu jiaotang le.  
these students yesterday all go church  
All of these students went to church yesterday.
- b. \*zhexie xuesheng jingjing-de dou zuo zai jiaoshili.  
these student quietly all sit in classroom  
All of these students are quietly sitting in the classroom.

This distinction prompts me to rethink the problem. As generally assumed, a temporal adverb is IP-adjoined while a manner adverb is VP-adjoined. Given the clause structure postulated in (19) what this means, from the derivational point of view, is that a temporal adverb can be merged into the tree after DistP has been built, but a manner adverb must be merged into the tree

prior to the construction of DistP. Consider the derivation of (35a): when *dou* is merged with the structure to project to DistP, the temporal adverb is still sitting in the numeration as shown in (36a). At this point we can raise the subject to SpecDistP for feature checking and then merge the adverb (by perhaps adjoining to DistP) as in (36b). Finally we raise the subject further to SpecTopP (36c).

- (36) a. [<sub>DistP</sub> [<sub>Dist'</sub> *dou* [<sub>VP</sub> *zhexie xuesheng* [<sub>V</sub> *qu jiaotang le*]]]]  
           all       these students       go church
- b. [<sub>DistP</sub> *zuotian* [<sub>DistP</sub> *zhexie xuesheng<sub>i</sub>* [<sub>Dist'</sub> *dou* [<sub>VP</sub> *t<sub>i</sub>* [<sub>V</sub> *qu jiaotang le*]]]]]  
           yesterday   these students       all       go church
- c. [<sub>TopP</sub> *zhexie xuesheng<sub>i</sub>* [<sub>DistP</sub> *zuotian* [<sub>DistP</sub> *t<sub>1</sub>* [<sub>Dist'</sub> *dou* [<sub>VP</sub> *t<sub>i</sub>* [<sub>V</sub> *qujiaotang*  
           these students       yesterday       all       go church  
           le]]]]]  
       PART

However, for a sentence like (35b) the manner adverb has already been merged with the VP prior to the building of DistP. The following is a partial derivation to derive (35b).

- (37) [<sub>DistP</sub> *jingjing<sub>i</sub>* *dou* [<sub>VP</sub> *t<sub>i</sub>* [<sub>VP</sub> *zhexie xuesheng zuo zai jiaoshi li* ]]]  
           quietly all       these students sit in classroom

The reason this derivation is unacceptable is that the manner adverb with no Q-feature to check has wrongly raised to SpecDistP for feature checking.

One might ask why we cannot derive the sentence in (35b) by first moving the subject to SpecDistP for feature checking (38a) and then raising the

manner adverb to adjoin DistP (38b) and finally raising the subject further to SpecTopP (38c).

- (38) a. [<sub>DistP</sub> zhexie xuesheng<sub>i</sub> dou [<sub>VP</sub> jingjing-de [<sub>VP</sub> t<sub>i</sub> zuo zai jiaoshi li ]]]  
 these students all quietly sit in classroom
- b. [<sub>DistP</sub> jingjing-de<sub>j</sub> [<sub>DistP</sub> zhexie xuesheng<sub>i</sub> dou [<sub>VP</sub> t<sub>j</sub> [<sub>VP</sub> t<sub>i</sub> zuozai jiaoshili ]]]]]
- quietly they all sit in classroom
- c. [<sub>TopP</sub> zhexie xuesheng<sub>i</sub> [<sub>DistP</sub> jingjing-de<sub>j</sub> [<sub>DistP</sub> t<sub>i</sub> dou [<sub>VP</sub> t<sub>j</sub> [<sub>VP</sub> t<sub>i</sub> zuo zai jiaoshili ]]]]]]  
 these students quietly all sit in  
 classroom

The reason this derivation is not permitted is that on the Minimalist assumption any movement is triggered by feature checking, but in (38b) the movement of the manner adverb to adjoin to DistP does not check any feature and therefore is not legal. So given the clause structure postulated in (19) the only way to get a manner adverb to the left of *dou* is by moving it there for feature checking. Since a manner adverb is not able to check the Q-feature of *dou*, doing so would cancel the derivation.

With this in mind, let us look at how we derive the facts discussed in section 5.5.1. First let us consider why a *ba*-phrase acts as a blocker. I assume that a *ba*-phrase is base-generated within the VP-projection.<sup>74</sup> Take (31a) for example. The following is the relevant step of the derivation.

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<sup>74</sup> Assuming Larson's VP-shell I would say that a *ba*-phrase is merged into the higher VP responsible for its causative meaning. It is also possible to think of a *ba*-phrase as being formed

- (39) [DistP [Dist' dou [VP ba neixie shu<sub>i</sub> [VP Zhangsan [V' mai-le t<sub>i</sub>]]]]]  
 all BA those books Zhangsan buy

At this point we can move either the subject or the *ba*-phrase to SpecDistP for feature checking, as they are equidistant from the target. Since moving the subject would cancel the derivation, we raise the *ba*-phrase instead, thereby deriving the word order, as desired.

What goes wrong in (31b) is that at the point where *dou* is merged we move the *ba*-phrase, instead of the subject, for feature checking. This operation cancels the derivation because the *ba*-phrase, for a semantic reason, is not able to check the feature of *dou*.

In short, given the clause structure postulated in (19) the only way to get a *ba*-phrase to the left of *dou* is by moving it there for feature checking. A *ba*-phrase in such a position is either quantified by *dou* if their feature strength matches, as in (31a) or cancels the derivation if their feature strength does not match, as in (31b).

In a similar vein, I argue that an instrumental PP is base-generated within the VP-projection. For reasons not clear to me, an instrumental PP can never

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by moving from the postverbal object position to SpecAgroP to check Accusative Case. Either analysis is compatible with the fact that a *ba*-phrase must be base-generated below DistP. Evidence for this is the following example where the *ba*-phrase follows *dou* and *dou* quantifies the subject.

- (a) tamen dou ba nei-ben shu kan-le  
 they all BA that CL book read  
 All of them have read that book.

check the strong Q-feature of *dou*.. So what happens in (34) is that the instrumental PP has wrongly moved to SpecDistP, thus canceling the derivation.

Now, let us focus our attention on the question of why the PP in (32) does not block *dou*-quantification. By going through a not long list of prepositions in Chinese, I find that there are only few prepositions that are transparent to *dou*-quantification. In addition to *gen* (comitative *with*), *dui* (relational to) and *bi* (comparative) are perhaps of this category.<sup>75</sup>

- (40) a. zhexie xuesheng dui wo dou hen hao.  
these student to me all very kind  
All of these students are kind to me.
- b. zhexie xuesheng bi wo dou gao.  
these student than me all tall  
All of these students are taller than me.

I assume that these PPs are not theta-marked within the VP-projection. They are more like English *with-phrases* in a sentence like *John went to the park with Mary*. *With Mary* is a comitative phrase, and it is not assigned a theta role by *go*. If this is correct, this type of PP is more on a par with a temporal adverb than with a manner adverb.

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<sup>75</sup> The category of preposition is not well-defined in Chinese. *Bi* (comparative) is more like a conjunctive than a preposition. *Gen* (with) is sometimes used to conjoin noun phrases. Perhaps, it is a mistake to treat *gen*-NP as a PP. If that is the case, then it is something else (rather than a PP) that is transparent to *dou*-quantification. For not knowing enough about the syntax of these phrases, I still refer to them as PPs for convenience.

Given this assumption it becomes clear why this type of PP is transparent to *dou*-quantification: like a temporal adverb, it can be introduced into the derivation later than *dou*. Thus, we can derive the lack of blocking effects in (32) by assuming the following derivation for (32a).

- (41) a. [<sub>DistP</sub> zhexie xuesheng<sub>i</sub> [<sub>Dist'</sub> dou [<sub>VP</sub> t<sub>i</sub> [<sub>V</sub> hen shu]]]]  
           these students           all                   very familiar
- b. [<sub>DistP</sub> gen Zhangsan [<sub>DistP</sub> zhexie xuesheng<sub>i</sub> dou [<sub>VP</sub> t<sub>i</sub> [<sub>V</sub> hen shu]]]]  
           with Zhangsan   these students   all           very familiar
- c. [<sub>TopP</sub> zhexie xuesheng<sub>i</sub> [<sub>DistP</sub> gen Zhangsan [<sub>DistP</sub> t<sub>i</sub> [<sub>Dist'</sub> dou [<sub>VP</sub> t<sub>i</sub> [<sub>V</sub> hen  
           these students           with Zhangsan                   all           very  
           shu]]]]]  
           familiar

The subject first moves to SpecDistP for feature checking (41a) and then the PP merged to adjoin to DistP (41b) and finally the subject raises further over the PP to SpecTopP.

(32b) has a slightly different derivation in that when *dou* is introduced, instead of raising the subject, we merge the PP into SpecDistP for feature checking, and then raise the subject directly to SpecTopP.

Summarizing, given the clause structure postulated in (19) where DistP is above VP, anything that must be merged within the VP-projection will block *dou*-quantification if it surfaces to the immediate left of *dou*; anything that can be merged after DistP has been built will be transparent to *dou*-quantification. A

*ba*-phrase, instrumental PPs and manner adverbs are opaque as they are assumed to be generated within the VP-projection; domain adverbs, temporal adverbs and comitative phrases are transparent as they are generated outside the VP-projection.

### 5.6.1. *Dou*-Binding of Adverbs

In this section, I treat *dou*-binding of adverbs along the same lines, thereby showing that the proposed analysis has wider empirical coverage than others.

One important fact that has been ignored (for an obvious reason) is that *dou* can quantify a high frequency adverb to its left as shown by (42a) but not a low frequency one as shown by (42b).

- (42) a. Zhangsan *yizhi*/*changchang* *dou* *qu* *jiaotang*.  
Zhangsan always often all go church  
Zhangsan always/often goes to church.
- b. \*Zhangsan *youshi*/*ouer*/*dou* *qu* *jiaotang*.  
Zhangsan sometimes/seldom all go church  
Zhangsan sometimes/seldom goes to church.

The question is why there is a cut like this. Along the line pursued for NPs, I argue that we can treat high frequency adverbs like *yizhi* (always), *changchang* (often) as a universal or a quasi-universal quantifier, low frequency ones like *youshi* (sometimes) or *ouer* (occasionally) as an existential quantifier, over events (Davidson 1967). Thus, Barwise and Cooper's strong/weak

distinction can be extended to these adverbs, i.e., a high frequency one is strong, a low frequency one is weak. Given this extension, it is clear why (42a) is acceptable, (42b) is not: A strong adverb can check the Q-feature of *dou*, a weak one cannot due to the mismatch of Q-feature strength. This contrast is parallel to that of NPs discussed above with the exception that in the case of adverbs what gets distributed is event variables.<sup>76</sup>

I assume that a frequency adverb (F-adverb) is adjoined to VP, so for sentences like (42) the following is the partial derivation to the point where *dou* is merged into the structure.

(43)  $[_{DistP} [_{Dist'} \text{dou} [_{VP} \text{F-adverb} [_{VP} \text{Zhangsan qu jiaotang}]]]]$   
           all           F-adverb     Zhangsan go church

The next step is to move an F-adverb to SpecDistP for feature checking. For (42a) this operation is successful because a high F-adverb by assumption has the strong Q-feature and therefore matches the feature strength of *dou*. (The subject *Zhangsan* is subsequently moved to SpecAgrsP.) For (42b) the same operation

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<sup>76</sup> As pointed out by Norbert Hornstein (pc.) there is an asymmetry between NPs and adverbs in terms of whether they can appear in EC: Strong adverbs like *always*, *usually* can appear in EC.

(a)       There is always/usually someone in the room.

This is true for English but not for Chinese. The corresponding Chinese sentences are bad.

(b)       \*you zongshi/changchang yixie ren zai fangjianli  
           exist always/usually     some people in room  
           There are always/usually some people in the room.

I will leave this aside for future research.

cancels the derivation due to the mismatch of Q-feature strength: a low F-adverb is quantificationally weak and therefore is not able to check the feature of *dou*.

### 5.6.2. More on Blocking Effects

Given the minimalist assumption that movement is only triggered by feature checking and the assumption that an F-adverb is VP-adjoined, it is predicted that an F-adverb sitting between a subject and *dou* will block *dou*-quantification of the subject. This prediction is indeed borne out. Consider the following contrast.

- (44) a. zhaxie xuesheng changchang dou qu jiaotang.  
these students often all go church  
These students often go to church (not somewhere else).
- b. zhaxie xuesheng dou changchang qu jiaotang.  
these students all often go church  
All of these students often go to church.

In (44a) the F-adverb *changchang* intervenes between the subject and *dou*. (44a) means that these students often go to church, not somewhere else. Suppose there are 10 going-out events for consideration, for this sentence to be true, most of the 10 events must be going-to-church, that is, *dou* quantifies over events of going-to-church. This is because *dou* is associated with *changchang*, and *changchang* quantifies over event variable *e* (Davidson, 1967). What is crucial here is that *dou* cannot go over *changchang* and be associated with the subject *zhaxie xuesheng*. That is, (44a) cannot mean what (44b) means. In (44b), where

*changchang* is to the right of *dou* (VP-adjoined), *dou* must be associated with the subject *zhexie xuesheng*. (44b) says that all these students are church-goers.

They may miss one or two church-going events, but they participate in a majority of them. That is, *dou* in (44b) quantifies over the set of students.

This meaning difference is subtle but real, and it can be made clearer by what can follow the two sentences. For example, (45a) is a natural continuation of (44a), not of (44b), but (45b) is a natural continuation of (44b), but not (44a).

- (45) a. *lian libaiyi ye qu*  
 event Monday also go  
 (They) go to church even on Monday.
- b. *lian Zhangsan ye qu le*  
 event Zhangsan also go ASP  
 These church-goers even include Zhangsan.

Given the structure postulated in (19), the following is the structure common to both (44a) and (44b) at some point in the derivation.

- (46) [<sub>DistP</sub> [<sub>Dist'</sub> *dou* [<sub>VP</sub> *changchang* [<sub>VP</sub> *zhexie xuesheng* [<sub>V'</sub> *qu jiaotang*]]]]]  
 all often these students go church

We can raise either the adverb or the subject to SpecDistP for feature checking since they are both qualified checkers and equidistant from the target. Raising the adverb (followed by the subject raising to SpecAgrsP) derives (44a); raising the subject to DistP for feature checking derives (44b).

Now consider the case where a weak F-adverb is in such an intervening position.

- (47) \*zhexie xuesheng ouer            dou qu jiaotang.  
      these students occasionally all go church  
      All of these students occasionally go to church.

As expected, the intervening F-adverb blocks *dou*-quantification. And also, as expected, the sentence is unacceptable: An F-adverb is base-generated in a VP-adjoined position, i.e., below DistP in the tree. Given this, in order for *dou* to be associated with the subject, we must derive (47) by first moving the subject to SpecDistP and then raising the F-adverb to adjoin to DistP and finally raising the subject further to SpecTopP. This derivation, however, cannot converge because raising of the F-adverb is not motivated by any feature checking. Another way to derive the surface order of (47) is by first raising the F-adverb to SpecDistP for feature checking and then raising the subject to SpecAgrsP, or SpecTopP. This is not permitted because the F-adverb *ouer* is weak, and raising it to SpecDistP for feature checking cancels the derivation due to the mismatch of their Q-feature strength.

It is worth pointing out that for sentences like (47) if a weak F-adverb stays in its VP-adjoined position and the subject raises to SpecDistP for feature checking, the resulting sentence is acceptable.

- (48) zhexie xuesheng dou ouer            qu jiaotang.

these student all occasionally go church  
All of these students occasionally go to church.

Conversely, if a subject NP is weak but an F-adverb is strong, the subject can be left inside VP and the F-adverb can be raised to SpecDistP for feature checking.

(49) changchang dou you yixie xuesheng qu jiaotang.  
often all there some student go church  
It is often the case that some students go to church.

### **5.7. *Dou* as a “Focus Marker”**

There is another use of *dou* which has been alluded to in the previous discussion, that is, *dou* can act like a “focus marker” to yield a reading equivalent to English *even*. By showing that only a definite NP can be “focused” as such, I argue that we can extend the above analysis to this use as well, thereby providing a unified account for *dou*.

#### **5.7.1. Definites Vs. Indefinites**

Sentences like (50) (without *lian*) were judged as unacceptable because in (50a) the event of reading cannot be distributed over a single person and in (50b) the event of buying cannot be distributed over each and every page of a single book.

However, both sentences are perfectly acceptable under the reading indicated by the English translation here.

- (50) a. (lian) Zhangsan dou kan-le zhexie shu.  
even Zhangsan all read these book  
Even Zhangsan has read these books.
- b. Zhangsan (lian) zhe-ben shu dou mai-le.  
Zhangsan even this CL book all buy  
Zhangsan has read even this book.

Two remarks are in order; First, *lian* (even) is optional, but the sentence with it is slightly better than the one without it. If not overtly there, *lian* can be thought of as being covertly realized. Second, I believe that *lian* is a real focus marker equivalent to English *even*, but unlike *even*, it has to rely on *dou*'s presence to perform its focusing function. Given this, it is inaccurate to say that *dou* in this use is a focus marker. And, as we will see in later discussion, it is crucial for us not to treat *dou* as a focus marker. But for ease of discussion I will still refer to this *dou* as a focus marker.

Now the question is whether this *dou* is the same as the distributive *dou* we have been discussing throughout. In what follows I will argue that they are the same *dou*, i.e., the head of DistP.

As a first approximation, it looks like the property that distinguishes the NPs that are *dou*-quantifiable from those that are not is the very same property that determines which NP can be focused by *dou* and which NP cannot. Thus,

though the sentences in (50) under the focus reading are acceptable, when the focused constituent is replaced by an indefinite, the resulting sentences are unacceptable.

- (51) a. \*yige xuesheng dou kan-le zhexie shu.  
one student all read these book  
\*Even one student has read these books.
- b. Zhangsan (lian) yi-ben shu dou mai-le.  
Zhangsan even one CL book all buy  
\*Zhangsan bought even a book.

Recall that according to Barwise and Cooper's classification a definite is strong and an indefinite is weak. If we treat focus *dou* as the head of DistP whose feature must be checked by a strong NP, this restriction on weak NPs is not surprising at all.<sup>77</sup>

For sentences like (50) and (51) the NP focused by *dou* is moved there (SpecDistP) for feature checking. This checking operation is successful in (50) because the moved NP is strong and therefore is able to check the Q-feature of

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<sup>77</sup> The following example appears to indicate that an indefinite can be focused by *dou*.

- (a) Zhangsan (lian) yi-ge pingguo dou yao.  
Zhangsan even one-CL apple all want  
Zhangsan wants even an apple.

A little reflection, however, reveals that this use of an indefinite has some peculiar property: it indicates the amount of the lowest value, not the existence of an apple. What this sentence means is something like Zhangsan wants things as worthless as an apple, let alone those of higher value. This use is more like a negative polarity item, which perhaps is why it can only be used to express an irrealis activity.

*dou*; the same operation in (51) cancels the derivation because the moved NP is weak, and does not match the Q-feature strength of *dou*.

If focus *dou* is the head of DistP, namely, a distributor, and if in (50) the event of reading cannot be distributed over a single person and the event of buying cannot be distributed over each and every page of a single book, then the question is what focus *dou* distributes over, to which I turn in the next subsection.

### **5.7.2. Quantification over an Alternative Set**

On Rooth's (1985, 1992) theory of focus interpretation there is a second mode of meaning in which focused and unfocused constituents differ. This second mode of meaning is what Rooth calls "P-set": the set of semantic alternatives to a given constituent. Consider the following pair.

- (52) a. John went to the party.  
b. Even JOHN went to the party.

For an unfocused constituent like John in (52a), the set of alternatives consists of the singleton set, which has the denotation of John as a member. For a focused constituent like JOHN in (52b), which is associated with *even*, the P-set consists of all the denotations in the domain of the denotation of John. Put differently, sentence (52a) is true if and only if John went to the party, regardless of whether

anyone else went to the party; and for sentence (52b) to be true, however, we need to check if everyone in the domain went to the party. If everyone in the domain including John went to the party, the sentence is true; otherwise it is false. In Rooth's formalism the second mode of meaning of (52b) has the following form.

(53)  $[[\text{Even JOHN went to the party}]]^f = \{P: P = x \text{ went to the party}\}$

To evaluate its truth value, we substitute everything in the domain of the same semantic type as JOHN, namely, an e-type expression, for variable x in the P-set. Thus, (52b) is truth functionally equivalent to (54).

(54) Everyone, including John, went to the party.

By translating a focused sentence into a quantified one like this, we correctly capture its semantics.<sup>78</sup>

In light of Rooth's theory of focus, I propose that focus *dou* is a distributor, but distributing over Rooth's P-set. As said earlier, *dou* distributes the property of a predicate over an NP. If the NP is plural *dou* will distribute over the individual members; if the NP is singular, *dou* may distribute over every part of this single entity depending on whether the given property can be

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<sup>78</sup> It must be pointed out that *Even John went the party* presupposes that it was expected that John did not go the party, or that John occupies the end of a scale of relevant entities that are ordered with respect to the probability that they went to the party. Loosely speaking, the sentence says that among the people in the relevant set John was least likely to go to the party, and now even John went to the party, let alone all the other people in this set who were more

distributed or not. If both fail, then *dou* introduces Rooth's alternative P-set as the domain of universal quantification and distributes over this set. So, for a sentence like (50a) *dou* distributes over alternatives to *Zhangsan*.. Let us say there are two alternatives to *Zhangsan* in the domain and they are *Lisi* and *Wangwu*. (50a) asserts that all three of them, *Zhangsan*, *Lisi* and *Wangwu*, have read these books.

In this context, let us consider another interesting question: Why is *dou* compatible with focus marker *lian* (even), as shown in (50), but not with focus marker *zhiyou* (only), as shown in the following examples.

- (55) a. \**zhiyou Zhangsan dou kan-le zhexie shu*  
only Zhangsan all read these book  
Only Zhangsan has read these books.
- b. \**Zhangsan zhiyou zhe-ben shu dou mai-le.*  
Zhangsan only this CL book all buy  
Zhangsan has read only this book.

If we treat focus *dou* as a distributor, distributing over an alternative set to a focused constituent, the answer to this question is obvious. Let us first consider how Rooth analyzes focus sentences like (56).

- (56) Only JOHN went to the party.

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likely than John to go to the party. So, the determination of the quantification domain is in part influenced by such a scale

For (56) to be true we need to verify if there is anyone else other than John in the domain who went to the party. If there is none, the sentence is true; otherwise it is false. In Rooth's formalism the second mode of meaning of (56) has the following form.

(57)  $[[\text{Only JOHN went to the party}]]^f = \{P: P = x \text{ went to the party}\}$

To evaluate its truth value, we substitute everything in the domain of the same semantic type as JOHN for variable  $x$ . But (57) differs from (53) in that for (53) to be true the predicate must be true of everyone in the domain including John; for (57) to be true the predicate must be true of no one except John. Thus, (57) is truth functionally equivalent to (58).

(58) No one, except John, went to the party.

Given Rooth's semantics of *only*, we are now in a position to see why *dou* is incompatible with *zhiyou* (only). *Zhiyou*, like *lian*, invokes an alternative P-set, but unlike *lian*, it requires that the predicate be true of no member in this alternative P-set except the one that is being focused. But, focus *dou* as a distributor must distribute the property of a predicate over every member of this alternative set. So, in a sense, there is no way to reconcile the conflict of their semantic requirements, hence they are not compatible.

### 5.8. *Dou*-Quantification of Wh-NPs

This section attempts to show that the proposed analysis can be extended to account for *dou*-quantification of wh-NPs. Chinese wh-NPs are variables, with their quantificational force being determined by whatever operator binds them. When appearing to the left of *dou*, a wh-NP is interpreted as a universal quantifier. I argue that a wh-NP in such a case likewise moves to SpecDistP for feature checking, with its universal interpretation being supplied by the binder *dou*--the head of DistP. There are some unique properties about *dou*-quantification of wh-NPs, however. For example, a wh-NP blocks anything that has checked the feature of *dou* from raising further, and also *dou* can quantify wh-NPs into an island. These properties are brought into line with the proposed analysis with minimal additional assumptions.

### 5.8.1. Leftward Quantification Again

First, *dou*-quantification of a wh-NP obeys the Leftness Condition of the same sort:

- (59) a. shei dou lai-le.  
           who all come  
           Everybody has come.
- b. Zhangsan shenme<sub>i</sub> dou chi t<sub>i</sub>  
           Zhangsan what all eat  
           Zhangsan eats everything.

In both (59a, b) the wh-NP appears to the left of *dou*, and is interpreted as a universal quantifier. The sentences with a wh-NP appearing to the right of *dou* are not acceptable:

- (60) a. \**dou shei lai le.*  
           all who come ASP  
           Everybody has come.
- b. \**Zhangsan dou chi shenme*  
           Zhangsan all eat what  
           Zhangsan eats everything.

Precisely the same account can be given for (59) and (60): the wh-subject in (59a) is moved from the VP-internal subject position to SpecDistP to check the strong Q-feature. Similarly, the wh-object in (59b) is moved from the object position to SpecDistP. (60a, b) are ruled out because the strong feature of *dou* in neither case has been checked off before Spell Out. In (60a) there is nothing in SpecDistP for feature checking, hence the derivation crashes. In (60b) the subject Zhangsan is not able to check the feature of *dou*, and again the derivation cannot converge.

### 5.8.2. Locality Again

The locality restriction of the same sort holds in *dou*-quantification of wh-NPs.

Consider the following contrast.

- (61) a. \**shei xiangxin [IP ta dou lai le]*

who believe      he all come ASP  
Everybody believes that he has come.

b. shei dou xiangxin [<sub>IP</sub> ta lai    le]  
who all believe      he come ASP  
Everybody believes that he has come

(61a) has the wh-subject in the matrix and *dou* in the embedded clause. The sentence cannot be interpreted as indicated by its English translation with *dou* being associated with the wh-subject. In order for an NP to be associated with *dou*, it must pass through SpecDistP at some point of the derivation. This is not possible for (61a) because the wh-NP is a matrix subject base-generated within the matrix VP, and *dou* heads the embedded DistP, and for them to be related the wh-subject would have to lower to the embedded IP to check the Q-feature of *dou*, and then raise up to the matrix subject position. This violates cyclicity, however. (61b) is good because both the wh-subject and *dou* are in the matrix Infl. The wh-subject base-generated within the matrix VP can move to SpecDistP for feature checking.

The same analysis adopted earlier carries over to the following contrast.

(62) a. shei<sub>i</sub> wo xiangxin [<sub>IP</sub> Lisi dou hen xihuan t<sub>i</sub>]  
who I believe Lisi all very like  
Everyone, I believe Lisi likes.

b. \*shei<sub>i</sub> wo dou xiangxin [<sub>IP</sub> Lisi hen xihuan t<sub>i</sub>]  
who I all believe Lisi very like  
Everyone, I believe Lisi likes.

The contrast here is parallel to that in (5). For both (62a, b) the *wh*-object is base-generated in the embedded clause. (62a) is good for the same reason that (5a) is good, that is, the *wh*-object can move to SpecDistP in the embedded Infl to check the feature of *dou* and then raise further to its final position by topicalization. (62b) is bad for the same reason that (5b) is bad, that is, the *wh*-object in the embedded clause cannot move to SpecDistP in the matrix Infl, because this movement is clause bounded. As such the feature of *dou* remains unchecked before Spell Out, hence the derivation crashes.

### **5.8.3. Divergence**

Though *wh*-NPs and ordinary NPs enjoy striking similarity with respect to *dou*-quantification, they diverge in the following two aspects. First, when there are two *wh*-NPs to the left of *dou*, it is the one to its immediate left that gets universally quantified. This, however, is not true for the case of ordinary NPs where either one can get quantified. Second, *dou* appears to be able to quantify a *wh*-NP, but not an ordinary one, into an island.

#### **5.8.3.1. No Crossed Linking**

*Dou*-quantification of *wh*-NPs seems to observe the “Minimal Link Condition.”

Consider (63).

- (63) shenme shei dou chi  
 what who all eat  
 (i) What does everybody eat?  
 (ii) \*Everybody eats everything  
 (iii) \*Who eat everything?

In (63) both the wh-NPs are to the left of *dou*. The only available reading is in (i) where *shei* is interpreted as non-interrogative (*dou*-bound), *shenme* as interrogative (Q-bound). The reading in (ii) where both the wh-NPs are *dou*-bound is not possible.<sup>79</sup> For this we can simply say that the feature of *dou* cannot be doubly checked. This prevents *dou* from multiple linking to more than one NP. Of concern to us is the reading in (iii) where *shenme* is *dou*-bound and *shei* Q-bound is not permitted. This is unexpected given the fact that in (64) *dou* can be associated with either the subject or the object to its left.

- (64) zhaxie shu tamen dou du le.  
 these book they all read ASP  
 (i) All of these books they have read  
 (ii) These books, all of them have read.

(i) indicates the reading where *dou* quantifies the object *zhaxie shu* across the subject *tamen*. This reading can be derived by first moving *zhaxie shu* to SpecDistP, then *tamen* to SpecAgrsP, finally *zhaxie shu* further to SpecTopP.  
 (ii) indicates the reading where *dou* quantifies the subject *tamen*. This can be

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<sup>79</sup> The two whs cannot be both Q-bound because if so *dou*-quantification would be vacuous.

derived by first moving *tamen* to SpecAgrsP, then *zhexie shu* all the way up to SpecTopP.<sup>80</sup>

The question is why one of the two derivations that generate the two readings in (64), respectively, is not possible for (63), namely, why the following derivation is out.

- (65) a. [<sub>DistP</sub> shenme<sub>i</sub> dou [<sub>VP</sub> shei chi t<sub>i</sub>]]  
           what    all        who eat
- b. [<sub>AgrsP</sub> shei<sub>j</sub> [<sub>DistP</sub> shenme<sub>i</sub> dou [<sub>VP</sub> t<sub>j</sub> chi t<sub>i</sub>]]]  
                   who        what    all        eat
- c. [<sub>TopP</sub> shenme<sub>i</sub> [<sub>AgrsP</sub> shei<sub>j</sub> [<sub>DistP</sub> t<sub>i</sub> dou [<sub>VP</sub> t<sub>j</sub> chi t<sub>i</sub>]]]

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<sup>80</sup> Zhang (1997) claims that *dou* can be multiple linked to NPs. He cites the following example as evidence.

- (a)    tamen gei haizimen dou mai-le wanju  
         they for children all buy-ASP toy  
         (i) They (together) bought toys for each of the children  
         (ii) Each of them bought toys for each of the children

In the first reading *dou* links to the benefactive only, while in the second reading *dou* links to both the benefactive and the agent. Whether the second reading exists or not is very hard to judge. To tease it apart we can use what I call the *shenzhi* (even) test, which in fact forces the discourse-relevant set, of which the focused constituent is a member, to be distributive.. (a) can be felicitously continued by (b) or (c). This means that in (a) either the benefactive set or the agent set can be distributed over. (Zhang (1997) does not address the latter reading where *dou* links to the agent only.) Importantly, the benefactive and the agent cannot be focused by *shenzhi* simultaneously, as illustrated in (d). I take this to suggest that Zhang's second reading does not exist.

- (b)    shenzhi gei Wangwu ye mai -le  
         even    for Wangwu also buy ASP  
         (They bought a toy even for Wangwu.
- (c)    shenzhi Zhangsan ye mai -le  
         even    Zhangsan also buy ASP  
         Even Zhangsan bought toys for the children
- (d)    shenzhi Zhangsan shenzhi gei Wangwu ye mai -le  
         even    Zhangsan even    for Wangwu also buy ASP  
         Even Zhangsan bought a toy for even Wangwu.

what            who            all            eat

In (65) the wh-object first moves to SpecDistP (65a), and the wh-subject raises to SpecAgrsP (65b), and finally the wh-object moves further across the wh-subject to SpecTopP (65c).

There is nothing wrong with moving the wh-NP further after having checked the feature of *dou*.. (66) is just such a derivation. As illustrated in (67), the wh-object makes a midway stop in SpecDistP for feature checking before it moves further to SpecTopP.

(66) shenme Zhangsan dou chi  
       what Zhangsan all eat  
       Zhangsan eats everything.

(67) a. [<sub>DistP</sub> shenme<sub>i</sub> dou [<sub>VP</sub> Zhangsan chi t<sub>i</sub>]]  
           what      all      Zhangsan eat

      b. [<sub>AgrsP</sub> Zhangsan<sub>j</sub> [<sub>DistP</sub> shenme<sub>i</sub> dou [<sub>VP</sub> t<sub>j</sub> chi t<sub>i</sub>]]]  
           Zhangsan      what      all      eat

      c. [<sub>TopP</sub> shenme<sub>i</sub> [<sub>AgrsP</sub> Zhangsan<sub>j</sub> [<sub>DistP</sub> t<sub>i</sub> dou [<sub>VP</sub> t<sub>j</sub> chi t<sub>i</sub>]]]  
           what           Zhangsan           all           eat

The derivation in (67) and that in (65) are exactly the same except that the subject in (65) is a wh-NP and the one in (67) is an ordinary NP

As a first approximation, a wh-NP cannot move across another wh-NP after having checked the feature of *dou*. In fact this restriction is more general

than this: Anything that has checked the feature of *dou* cannot move further across a wh-NP. This is illustrated by (68)

- (68)    *zhexie shu shei dou xihuan*  
         these book who all like  
         (i) These books, everyone likes.  
         (ii) \*all of these books who likes.

In (68) *dou* cannot link to *zhexie shu*, i.e., the reading indicated in (ii) is not possible. In order to obtain such a reading the object *zhexie shu* would have to move to SpecDistP for feature checking, (followed by the wh-subject raising to SpecAgrsP), and then raise further across the wh-subject to SpecTopP. This derivation is not permitted.

Thus, the following generalization can be reached.

- (69)    Anything that has checked the Q-feature of *dou* in SpecDistP cannot raise further across a wh-NP.

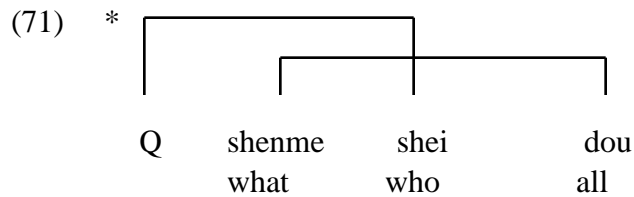
Where does this restriction come from? I will argue that there is nothing wrong with the derivation in which an NP, after having checked the feature of *dou* in SpecDistP, moves further across a wh-NP. Such a derivation does converge, but it does not meet the interpretive requirement formulated in (70)

- (70)    No Crossed Linking at LF

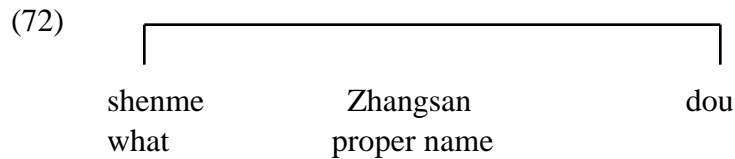
Remember that a wh-NP needs to link to the LF-inserted Q-operator at matrix CP. Take (63) for example, repeated here for convenience. To get the

impossible reading in (iii) we would have to have a crossed linking as illustrated in (71). This linking violates the prohibition against crossing, hence it is thrown out as uninterpretable. The same is true for (68).

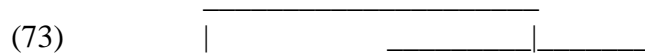
- (63) shenme shei dou chi  
 what who all eat  
 (i) What does everybody eat?  
 (ii) \*Everybody eats everything  
 (iii) \*Who eat everything?



(66) is not problematic because the intervening NP is a referential one that does not need to be bound by anything. Thus, as illustrated in (72), there is only one chain that crosses over *Zhangsan*.



This constraint is not intended to be a general principle in grammar. As pointed out by Norbert Hornstein (pc.), there is abundant evidence that natural language allows crossed linking. For example, (73) is a perfect sentence where two linkings are intertwined.



|                    |                    |                    |  
 Every man told a woman that he loves her.

What this constraint does is to prevent *dou* from binding a *wh* when there is a closer one that it can bind. So, in a sense, this constraint has some sort of “Minimality” flavor. The licit reading of (63) has a linking as illustrated below.

(74)

Q	shenme	shei	dou		
	what	who	all		

There is an intuitive sense that the two links established in (74) here are shorter than those in (71) where they are crossed.<sup>81</sup>

One more case that bears on this issue is the following example where a strong QP sits between a *wh* and *dou*:

- (75)
- a. shenme meigeren dou xihuan  
    what everyone all like  
    (i) What does everyone like?  
    (ii) \*Everyone likes everything.
  
  - b. shenme dabufen ren dou xihuan  
    what most person all like  
    (i) What do most people like?  
    (ii) \*Most people like everything.

In such a case the *wh* must be Q-bound and the strong QP *dou*-bound. This is so because strong QPs like *meigeren* (everyone), *dabufen ren* (most people), for

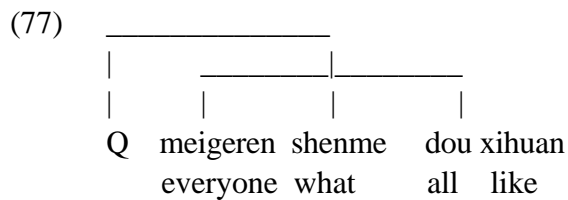
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<sup>81</sup> Li (1992) reaches the similar kind of conclusion for the interaction between what she calls [+Q]-binding and [-Q]-binding.

some independent reason, must be bound by *dou*. This predicts that if such a strong QP is separated from *dou* by a *wh*, the resulting sentence would be unacceptable. This prediction is indeed borne out.

- (76) a. \*?meigeren shenme dou xihuan  
 everyone what all like  
 (i) What does everyone like?  
 (ii) Everyone likes everything.
- b. \*?dabufen ren shenme dou xihuan  
 most person what all like  
 (i) What do most people like?  
 (ii) Most people like everything.

In (76) the strong QP must be *dou*-bound and, if so, it would prevent the *wh* from being *dou*-bound for the reason that the strong Q-feature of *dou* cannot be doubly checked. Neither can the *wh* be Q-bound because, if so, it would yield a cross-linking configuration as illustrated in (77).



### 5.8.3.2. *Dou*-Quantification of a *Wh*-NP into an Island

It appears that *dou* is able to quantify a *wh*-NP into an island. In (78a) the *wh*-NP *nali* is embedded in the sentential subject, but bound by *dou* and interpreted

as a universal quantifier. In (78b) *nali* is embedded in the Complex NP island, but again can be bound by *dou*, and interpreted as a universal quantifier.

- (78) a. [<sub>AgrsP</sub> [<sub>SS</sub> Zhangsan zai nali shui] dou keyi]  
           Zhangsan at where sleep all will-do  
           For every x, x is a place, it will do if Zhangsan sleeps at x.
- b. [<sub>TopP</sub> [<sub>NP</sub> [<sub>IP</sub> Zhangsan zai nali xie t<sub>i</sub>] de shu]<sub>j</sub>] wo dou ai du t<sub>j</sub>]  
           Zhangsan at where write DE book I all like read  
           For every x, x is a place, I likes any book that Zhangsan wrote at x.

Importantly, *dou* can quantify a wh-NP into an island, but not an ordinary NP.

Thus, (78a) would be unacceptable if *nali* (where) were replaced by, say, *naxie difang* (those places), as shown in (79).<sup>82</sup>

- (79) \* [<sub>AgrsP</sub> [<sub>SS</sub> Zhangsan zai naxie difang shui] dou keyi]  
           Zhangsan at those place sleep all will-do  
           It will do if Zhangsan sleeps at all those places.

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<sup>82</sup> For the Complex NP case it looks like the substitution of a non-wh-NP for the wh-one is fine.

- (a) [<sub>TopP</sub> [<sub>NP</sub> [<sub>IP</sub> Zhangsan zai naxie difang xie t<sub>j</sub>] de shu]<sub>j</sub>] wo dou ai du t<sub>i</sub>]  
           Zhangsan at those place write DE book I all like read  
           I like all the books that Zhangsan wrote at those places.

There is some difference between (78b) and (a) in terms of what *dou* quantifies. In (a), I believe, *dou* in fact quantifies the N-head *shu* (books) rather than the plural NP *naxie difang* within the Complex NP. The diagnostic is that if *naxie difang* is replaced by a singular NP like *nage difang* (that place), the resulting sentence is still fine, as illustrated in (b). But if the N-head *shu* is overtly marked for singularity, the resulting sentence is bad, as illustrated in (c).

- (b) [<sub>TopP</sub> [<sub>NP</sub> [<sub>IP</sub> Zhangsan zai nage difang xie t<sub>j</sub>] de shu]<sub>j</sub>] wo dou ai du t<sub>i</sub>]  
           Zhangsan at that place write DE book I all like read  
           I likes all the books that Zhangsan wrote at that place.
- (c) \* [<sub>TopP</sub> [<sub>NP</sub> [<sub>IP</sub> Zhangsan zai naxie difang xie t<sub>j</sub>] de na ben shu]<sub>j</sub>] wo dou ai du t<sub>i</sub>]  
           Zhangsan at those place write DE that book I all like read  
           I like the book that Zhangsan wrote at all those places.

Now, the question is how the *wh*-NP trapped in an island checks the feature of *dou*. The *wh*-NP in such a position cannot move out and then back into the island for feature checking. Neither can it move at LF because the *Q*-feature of *DistP* is strong and must be checked before Spell-out. If such a *wh*-NP does not pass through *SpecDistP* during the derivation, how can it be *dou*-bound and interpreted as a universal quantifier?

There is a way out of this problem, however. Cheng and Huang (1994) argue that in sentences like (78) the island clauses are embedded questions of some sort. A question is a set of propositions (Karttunen, 1977). Based on this, Cheng and Huang argue that *dou* in such cases in fact quantifies over the set of propositions.<sup>83</sup> If this view is correct, the proposed analysis can carry over without further assumptions.

I assume that the sentential subject is base-generated in the *VP*-internal subject position and then moved to *SpecDistP* for feature checking, as illustrated below. Thus, the sentence is derived correctly.

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<sup>83</sup> Norbert Hornstein (pc.) correctly points out that if the *wh* in such a case is interpreted as a universal quantifier, the clause that contains such a *wh* should not be analyzed as a set of propositions. He suggests that we might treat it as a headless relative clause. The question now is if we can somehow interpret a headless relative clause as a set of propositions. It looks like we can. For example, we can interpret the headless relative clause in (a) as a set of propositions illustrated in (b).

- (a) Wherever Bill sleeps is fine.
- (b) (i) That Bill sleeps in the bed is fine.  
(ii) That Bill sleeps on the couch is fine.  
(iii) That Bill sleeps outdoors is fine.

- (80) a. [<sub>DistP</sub> dou [<sub>VP</sub> [<sub>SS</sub> Zhangsan zai nali shui] keyi]  
           all           Zhangsan at where sleep will-do
- b. [<sub>DistP</sub> [<sub>SS</sub> Zhangsan zai nali shui]<sub>i</sub>] dou [<sub>VP</sub> t<sub>i</sub> keyi]  
           Zhangsan at where sleep all       will-do

This analysis proves to be attractive in dealing with examples like (81)

where the sentential subject and *dou* are separated by an IP, but *dou* is still able to bind the wh-NP in the sentential subject.

- (81) [<sub>SS</sub> Zhangsan zai nali shui] wo xiangxin dou keyi  
       Zhangsan at where sleep I believe all will-do  
       For every x, x is a place, I believe that it will do if Zhangsan sleeps at x.

On the present analysis, the derivation of (81) is exactly the same as (62a), repeated here for convenience, except that in (62a) it is the wh-NP that moves, but in (81) it is the entire subject clause. As illustrated in (82), the sentential subject is base-generated in the VP-internal subject position of the embedded clause and moved to SpecDistP in the embedded Infl and finally topicalized to its surface position.

- (62a) shei<sub>i</sub> wo xiangxin [<sub>IP</sub> Lisi t<sub>i</sub> dou hen xihuan t<sub>i</sub>]  
       who I believe Lisi all very like  
       Everyone, I believe Lisi likes.
- (82) a. [<sub>DistP</sub> [<sub>SS</sub> Zhangsan zai nali shui]<sub>i</sub>] dou [<sub>VP</sub> t<sub>i</sub> [<sub>V'</sub> keyi]]]  
           Zhangsan at where sleep all       will-do
- b. [<sub>IP</sub> wo xiangxin [<sub>DistP</sub> [<sub>SS</sub> Zhangsan zai nali shui]<sub>i</sub>] dou [<sub>VP</sub> t<sub>i</sub> [<sub>V'</sub> keyi]]]  
       I believe           Zhangsan at where sleep all       will-do

c. [<sub>TopP</sub> [<sub>SS</sub> Zhangsan zai nali shui]<sub>i</sub> [<sub>IP</sub> wo [<sub>VP</sub> xiangxin [<sub>DistP</sub> t<sub>i</sub> dou [<sub>VP</sub> t<sub>i</sub> [<sub>V</sub>·  
 Zhangsan at where sleep I believe all  
 keyi]]]]  
 will-do

The same analysis applies to (78b) where the Complex NP base-generated in the object position is first moved to SpecDistP for feature checking, and then moved over the subject by topicalization.

(83) a. [<sub>AgrsP</sub> wo<sub>k</sub> [<sub>DistP</sub> [<sub>NP</sub> [<sub>IP</sub> Zhangsan zai nali xie t<sub>i</sub>] de shu]<sub>j</sub>] dou [<sub>VP</sub> t<sub>k</sub> ai  
 I Zhangsan at where write DE book all like  
 du t<sub>j</sub>]]]  
 read

b. [<sub>TopP</sub> [<sub>NP</sub> [<sub>IP</sub> Zhangsan zai nali xie t<sub>i</sub>] de shu]<sub>j</sub>] [<sub>AgrsP</sub> wo<sub>k</sub> [<sub>DistP</sub> t<sub>j</sub> dou [<sub>VP</sub> t<sub>k</sub>  
 Zhangsan at where write DE book I all  
 ai du t<sub>j</sub>]]]]]  
 like read

### 5.8.3.3. *Dou*-Conditionals

Another case I want to bring to the same analysis is *dou*-conditionals. Consider the following example.

(84) ni jiao shei jin lai, wo dou jian  
 you ask who come in, I all see  
 For every x, x is a person, if you ask x to come in, I will see x.

In (84) *dou* and the wh-NP that *dou* binds are in separate clauses, but the binding relation can be established.

In line with the present proposal, I argue that the antecedent clause is base-generated in the object position of the consequent clause and then moved to SpecDistP, and finally across the subject to its surface position, as illustrated in (85).

- (85) a. [<sub>DistP</sub> [<sub>ante-clause</sub> ni jiao shei jinlai]<sub>i</sub> dou [<sub>VP</sub> wo jian t<sub>i</sub> ]]]  
           you ask who come in all I see
- b. [<sub>AgrsP</sub> wo<sub>j</sub> [<sub>DistP</sub> [<sub>ante-clause</sub> ni jiao shei jinlai]<sub>i</sub> dou [<sub>VP</sub> t<sub>j</sub> jian t<sub>i</sub> ]]]]  
           I you ask who come in all see
- c. [<sub>TopP</sub> [<sub>ante-clause</sub> ni jiao shei jinlai]<sub>i</sub> [<sub>AgrsP</sub> wo<sub>j</sub> [<sub>DistP</sub> t<sub>i</sub> dou [<sub>VP</sub> t<sub>j</sub> jian t<sub>i</sub> ]]]]]]  
           you ask who come in I all see

There is some evidence to suggest that this might be the case. First, the object position of the consequent clause in (84) must be empty.

- (86) ni jiao shei jinlai we dou jian (\*ta)  
       you ask who come in I all see him/her  
       For every x, x is a person, if you ask x to come in, I will see x.

This becomes revealing because in the corresponding *ruguo*-conditional (87) the same object position must be filled by a pronoun which is anaphorically linked to the wh-NP in the antecedent clause.

- (87) ruguo ni jiao shei jinlai wo jiu jian \*(ta)  
       if you ask who come I then see him/her  
       If you asks someone to come in, I will see him/her

If in *dou*-conditionals, but not in *ruguo*-conditionals, the antecedent clause is base-generated in the argument position of the consequent clause, and then moved up to SpecDistP for feature checking, then we can explain (86) by saying that the pronoun *ta* (him/her) cannot be employed to spell out the trace left by clause-movement.<sup>84</sup>

Second, the derivation in (85) actually can stop at the point indicated by (85b). That is, the antecedent clause can sit between the subject and the rest of the consequent, as shown in (88). The sentence thus formed has more or less the same interpretation as the one in (84) where the antecedent clause raises further across the subject to SpecTopP.

- (88) wo [ni jiao shei jinlai] dou jian  
 I you ask who come in all see  
 For every x, x is a person, if you ask x to come in, I will see x.

Again, the antecedent clause in a *ruguo*-conditional cannot be sandwiched like this.<sup>85</sup>

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<sup>84</sup> Note that the object position cannot be filled by *ta* (it), either. This is because the third person neutral pronoun in Chinese can never be used to substitute for a clause.

<sup>85</sup> Cheng and Huang (1994) treat *dou*-conditionals on a par with *ruguo*-conditionals, viz., both adopt the E-type strategy. If the analysis here is correct, it weakens their analysis to some extent. Further evidence to suggest that *dou*-conditionals, unlike *ruguo*-conditionals, don't involve the E-type pronoun strategy is that, unlike the latter, the pronoun in the consequent clause of a *dou*-conditional cannot be smoothly replaced by a definite description, hence the following contrast.

- (a) ruguo ni kandao shei, jiu jiao [ni kandao de ren] jinlai.  
 if you see who then ask you see DE person come in  
 If you see someone, ask the person you see to come in.
- (b) \*ni kandao shei, dou jiao [ni kandao de ren] jinlai.

- (89) a. \*wo [ruguo ni jiao shei jinlai] jiu jian ta  
 I if you ask who come then see him/her  
 If you asks someone to come in, I will see him.

On the present analysis, this is not something unexpected. The antecedent clause in a *dou*-conditional can be sandwiched because after checking the feature of *dou*, it does not have to move further if no feature is to be checked up in the tree.<sup>86</sup> The antecedent clause in a *ruguo*-conditional cannot be sandwiched because it is not generated anywhere within the consequent clause in the first place and therefore there is no way for it to be there.

#### 5.8.4. “Multiple Linking” and Wh-Topicalization

As noted above, *dou* cannot be multiple-linked. This explains why the example in (63), repeated here for convenience, cannot have the reading where both the wh-NPs are bound by *dou*, as illustrated by the reading in (ii). Also as pointed out above, if there are two wh-NPs to the left of *dou*, the one that is closer to *dou* gets bound. This explains why the reading in (iii) is impossible.

- (63) shenme shei dou chi  
 what who all eat  
 (i) What does everybody eat?

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you see who all ask you see De person come in  
 No matter who you see, ask the person you see to come in.

<sup>86</sup> It has to be pointed out that (88) is not as smooth as (84). I guess that there might be some heaviness effect at work, viz., the antecedent clause is too heavy and would be better shifted to the left periphery, analogous to the Heavy NP Shift in English.

- (ii) \*Everybody eats everything
- (iii) \*Who eat everything?

(63) is derived by first moving *shei* to SpecDistP for feature checking and then moving *shenme* from object position to SpecTopP. The latter operation is an instance of wh-topicalization. (63) has the scope property that we attribute to wh-topicalization, i.e., it can only have an individual reading. For example, (63) cannot be responded by a list of answers such as John ate a sausage biscuit, Bill ate a fish sandwich and Mary ate a hash brown.

An interesting case to consider is whether *dou* can quantify an embedded multiple wh-question. The judgment here is not clear, but for sentence (89) where the embedded multiple wh-question is a sentential subject, it looks like among the three potential readings, the most favorable one is where the wh-subject is Q-bound the wh-object *dou*-bound, as illustrated by (i). The converse of (i), as shown in (ii), is definitely out, namely, the wh-object, that is closer to *dou* at least in terms of linear distance, must be *dou*-bound. The reading in (iii) where both the whs are *dou*-bound is available, though not so readily for some speakers.

- (89) [DistP [SS *shei chang shenme ge*] *dou haoting*]  
           who sing    what song   all   pleasant to ear
- (i) who is x, x is a person, for every y, y is a song such that y is pleasant to ear when x sings y.
  - (ii) \*what is x, x is a song, for every y, y is a person such that x is pleasant to ear when y sings x

(iii) ?for every x, x is a person, for everyone y, y is a song such that y is pleasant to ear when x sings y.

Two questions need to be addressed. First, why the reading in (ii) is no good, but the one in (i) is? Second why is the reading in (iii) available if *dou* cannot be multiple linked. Let me answer the second question first.

Recall that to explain why *dou* can quantify a wh into an island, Cheng and Huang (1994) treat the clause containing a wh-NP as denoting a set of propositions, and thereby having *dou* quantify over this set. If this analysis is correct, we can likewise say that the clause containing multiple whs denotes a set of propositions and *dou* quantifies over this set. On this view, the multiple-linking witnessed in (iii) of (89) is only apparent.

Now, let us answer the first question. Recall that we employ the so-called “No Crossed Linking” condition to explain why in (63) it is the wh-NP closer to *dou* that gets *dou*-bound. The same explanation, however, cannot be used here because, as argued above, *dou* in (89) quantifies over the sentential subject clause rather than the two wh-NPs contained therein. What is really going on in (89) is that the wh-subject *shei* is moved out of the sentential subject

to SpecTopP for feature checking so that *dou* can no longer “bind” it, as illustrated below.<sup>87</sup>

- (90) [TopP *shei*<sub>i</sub> [DistP [SS *t<sub>i</sub>* *chang shenme ge*] *dou haoting*]]  
           who                  sing what song all pleasant to ear  
           who is x, x is a person, for every y, y is a song such that y is pleasant to  
           ear when x sings y.  
           If this analysis is correct, the wh-object should be able to undergo

topicalization as well. This prediction is borne out. In (91) the wh-object *shenme ge* is moved out of the subject island by topicalization and the wh-subject *shei* stays in situ. As a result, the subject must be Q-bound and the object *dou*-bound. Hence the reading in (i).

- (91) [TopP *shenme ge*<sub>i</sub> [DistP [SS *shei chang t<sub>i</sub>*] *dou haoting*]]  
           what song                  who sing all pleasant to ear  
           (i) what is x, x is a song, for every y, y is a person such that x is pleasant  
           to ear when y sings x.  
           (ii) \*what is x, x is a song, who is y, y is a person such that x is pleasant  
           to ear when y sings x  
           (iii) \*for every x, x is a song, who is y, y is a person such that x is  
           pleasant to ear when y sings x.

Unlike (90) where topic-movement is string vacuous, it is unquestionable that in (91) topic-movement does take place, for the wh-object overtly appears at the front of the sentence. As such, (91), unlike (89), cannot have the reading in (iii)

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<sup>87</sup>A question may arise as to how an element can overtly move out of a subject island. In fact, a subject island in Chinese, for reasons not clear to me, is always porous. For example, (a) is perfectly acceptable though the wh-object has moved out of the subject island by topicalization.

- (a) *shenme ge*<sub>i</sub> [SS *Zhangsan chang t<sub>i</sub>*] *zui haoting*  
       what song          Zhangsan sing          most pleasant to ear  
       What is x, x is a song, such that it is most pleasant to ear if Zhangsan sings x.

where both the wh-NPs are *dou*-bound, no matter how it is forced. This is a welcome result, because after moving out of the sentential subject the wh-object can no longer be “bound” by *dou*..<sup>88</sup>

## Chapter 6

### Topic, Floating Quantifiers and Partitivity

#### 6.1. Introduction

In Chinese an NP can raise and leave its associated quantifier determiner (Q-det) in situ. This is one way to form a partitive phrase. In the following pairs, all the **a** sentences do not involve NP- movement and the Q-det therefore precedes its associated NP; all the **b** sentences involve NP-movement and the NP therefore precedes its associated Q-det.

- (1) a. you yixie xuesheng chuxi-le huiyi.  
exist some student attend meeting  
There are some students attending the meeting.
- b. xuesheng you yixie chuxi-le huiyi  
student exist some attend meeting

---

<sup>88</sup> There is phonological evidence to the claim that wh-topicalization is involved in (90) and (91). A natural intonation for such sentences is that there is a pause between the first wh-NP and the rest of the sentence. This is one of the phonological correlates of topic sentences.

Some of the students have attended the meeting.

- (2) a. you xuduo xuesheng chuxi-le huiyi  
exist many student attend meeting  
There are many students attending the meeting.
- b. xuesheng you xuduo chuxi-le huiyi  
student exist many attend meeting  
Many of the students have attended the meeting
- (3) a. mei you yi-ge xuesheng chuxi huiyi.  
not exist one CL student attend meeting  
There is no student attending the meeting.
- b. xuesheng mei you yi-ge chuxi huiyi.  
students not exist one CL attend meeting  
None of the students have attended the meeting.

In this chapter I first give a detailed semantic analysis of partitive phrases in contrast to their nonpartitive counterparts. Based on this I argue that a Chinese partitive phrase is formed by raising the NP to SpecTopP to check the topic feature and stranding its associated Q-det. A weak Q-det can be stranded inside VP, but a strong Q-det must first move out of VP along with its associated NP to SpecDistP and then can be stranded there. This distinction is attributed to Diesing's (1992) Mapping Principle. Furthermore, a numeral Q-det can stay either inside or outside VP, without an overt NP being associated with it. This is a covert partitive phrase and it is likewise formed by raising the empty NP with the numeral Q-det stranded. If stranded inside VP, the numeral Q-det is

indefinite, linked to its antecedent by the condition of inclusion. If stranded outside VP, it is definite, linked to its antecedent by the condition of identity.

## 6.2. A Semantic Analysis

There are some interesting, though subtle, meaning differences between the *a* sentences and their *b* counterparts. First, consider the pair in (1). (1a) quantifies over a set of students, whereas its counterpart in (1b) quantifies over a contextually fixed set of students. Put differently, in the latter, but not in the former, there is a set of students that has already been established as a topic in the previous discourse. Due to this difference, (1a) is used to introduce *students* as a new piece of information into the upcoming discourse, (1b) is not.

To see more of the difference between (1a) and (1b), let us suppose that there are five students who attended the meeting, and also suppose that this is all the students there are in the domain. In such a situation the speaker might very well utter (1a), but not (1b). For this reason, (4a) is a logically coherent assertion, but (4b) is not.

- (4) a. you yixie xuesheng chuxi-le huiyi, shishishang, suoyou de xuesheng  
exist some student attend meeting in fact all DE student  
dou chuxi-le.  
all attend  
Some students have attended the meeting, in fact, all the students have attended it.

b. \*?xuesheng you yixie chuxi-le huiyi, shishishang, suoyou de  
 student exist some attend meeting in fact all DE  
 xuesheng dou chuxi-le  
 student all attend  
 Some of the students have attended the meeting, in fact, all of them have  
 attended it.

By saying (1b) the speaker has, somehow, linked *students* to the preestablished topic, i.e., he does not just implicate, but asserts that *Not all the students have attended the meeting*. So he cannot continue to say *in fact, all of the students have attended the meeting* without contradicting himself. This explains why (4b) is unacceptable. By saying (1a) the speaker introduces *some students* into the discourse. He may implicate that *Not all the students have attended the meeting*, but does not commits himself to the truth of it. He may very well cancel this implicature if it turns out that all the students in the domain have attended the meeting. This is because *Some students have attended the meeting* will still hold true in the situation where in fact all the students have attended the meeting. Thus, by saying (4a) the speaker is not self-contradictory when he “self-corrects”.

Second, consider the pair in (2) where the Q-det is proportional. In (2a) the Q-det *xuduo* (many) precedes its associated NP *xuesheng*, a normal ordering, while the same Q-det in (2b) follows its associated NP. (2a) is interpreted as meaning that the number of students having attended the meeting is “many” in

proportion to all the people having attended the meeting, whereas (2b) is interpreted as meaning that the number of students having attended the meeting is “many” in proportion to a contextually determined set of students. To better appreciate this subtle difference, let us say that 6 out of 10 counts as “many”, and let us suppose that there are 40 students and only 6 of them have attended the meeting, and let us further suppose that the total number of people having attended the meeting, including these 6 students, is 10. Given this scenario, (2a) turns out to be true, whereas (2b) is false. This is because in (2b) the NP *xuesheng* is discourse-linked, i.e. linked to the set of 40 students in this scenario. By saying (2b) the speaker is taking the number of students having attended the meeting in proportion to this 40-student set. As 6 out of 40 does not count as “many” by our measure, the sentence therefore is false.

Third, consider the pair in (3) where the Q-det involved is negative. To see how they differ, let us first take a look at how we verify the truth value of a negatively quantified sentence like (3a). We first take a set of students and a set of persons having attended the meeting, and then we intersect them. If the set resulting from this intersection is empty, the sentence is true; otherwise it is false. The following is its verification scheme.

(5) {y: y is a student} ∩ {x: x is a person having attended the meeting} = ∅

Of concern to us is that in the case of (3a) the student-set can be empty.

If the set is empty the sentence will come out as true because the intersection of an empty set with any set returns an empty set. What this means is (3a) does not presuppose that there exist students. For this reason, the following sentence makes perfect sense.

- (6)    mei you yi-ge    xuesheng chuxi    huiyi,    yinwei mei you xuesheng  
not exist one CL student attend meeting because not exist student  
There is no student attending the meeting because there are no students.

Saying *There is no student attending the meeting* does not presuppose that there exist any students in the domain. Thus, non-existence of students can be cited as a good reason why there are no students attending the meeting. In contrast, saying (3b) where the NP precedes the negative Q-det does presuppose the existence of students in the domain. That is, for (3b) the student-set cannot be empty, which is why an assertion like (7) is self-contradictory; for the first clause presupposes the existence of students but the second clause denies this presupposition..

- (7)    \*xuesheng mei you yi-ge    chuxi    huiyi,    yinwei mei you xuesheng.  
students not exist one CL attend meeting because not exist student  
\*None of the students have attended the meeting because there are no students.

Finally, the similar kind of meaning distinction can be drawn for the case where the Q-det is a numeral. Consider the following pair.

- (8) a. you liang-ge xuesheng chuxi-le huiyi  
 exist two CL student attend meeting  
 There are two students attending the meeting.
- b. xuesheng you liang-ge chuxi-le huiyi  
 student exist two CL attend meeting  
 Two of the students have attended the meeting.

In (8a) the numeral precedes the NP while in (8b) the NP precedes the numeral.

The NP in (8b), unlike that in (8a), refers to a contextually fixed set of students and this set must contain more than two members in the case at hand. This is why (9) is not a possible continuation of (8b), but is of (8a) if it happens to be the case that there are only two students in the domain.

- (9) ye jiu shi shuo, suoyou de xuesheng dou chuxi-le huiyi  
 also then be speak all DE student all attend meeting  
 In other words, all of the students have attended the meeting.

The examples we have discussed so far involve quantified NPs in subject position. It has to be pointed out that the same thing can happen in object position. Consider the following pair.

- (10) a. Zhangsan chi-le yixie juzi.  
 Zhangsan eat some orange  
 Zhangsan has eaten some oranges
- b. juzi Zhangsan chi-le yixie  
 orange Zhangsan eat some  
 Zhangsan has eaten some of the oranges.
- (11) a. Zhangsan chi-le xuduo juzi.  
 Zhangsan eat many orange  
 Zhangsan has eaten many oranges

b. juzi Zhangsan chi-le xuduo  
orange Zhangsan eat many  
Zhangsan has eaten many of the oranges.

(12) a. Zhangsan chi-le liang-ge juzi  
Zhangsan eat two CL orange  
Zhangsan has eaten two oranges.

b. juzi Zhangsan chi liang-ge  
orange Zhangsan eat two CL  
Zhangsan has eaten two of the oranges.

In all the **a** sentences the Q-det precedes its NP while in all the **b** sentences the Q-det stays in object position and its associated NP appears in sentence-initial position. The semantic distinction between the **a**-sentence and its **b**-counterpart here is analogous to that of the subject case discussed above. That is, for the **b**-sentences, but not for the **a**-sentences, the set of oranges is presupposed, or rather, has already been established as a topic in the discourse.

### 6.3. Partitivity by Movement

The above semantic analysis indicates that a discontinuous quantified NP of this sort is partitive. In set-theoretic terms, a partitive phrase denotes a family of sets consisting of a superset and its subset. Take *some of the students* for example. *The students* denotes the superset, *some* its subset. Of concern to me is that the superset part must be definite (or specific), which is why a partitive

phrase like *some of students*, where the superset part is a bare plural, is not acceptable. Given this I argue that the NP in a partitive phrase must be discourse-linked. Take the following pair for example.

- (13) a. John has read some of the books  
 b. John has read some books.

(13a) cannot be uttered out of the blue. In other words, there must be some mention of books in the previous discourse for *the books* to link to. (13b), on the other hand, does not have such a requirement.

In this light I propose the *b* sentence in (1, 2, 3) is derived from its corresponding *a* sentence by topicalizing the superset part and stranding its subset part. Assuming that the existential *you* marks the left edge of VP, in sentences like (1b, 2b, 3b) the NP raises from the VP-internal subject position to SpecTopP to check the topic feature, leaving its Q-det in situ, as illustrated by (14) for (1b).

- (14)  $[_{TopP} \text{xuesheng}_i [_{VP} \text{you yixie } t_i [_{V'} \text{chuxi-le huiyi}]]]$   
 student exist some attend meeting

In a similar fashion, for sentences like (10b, 11b, 12b) the NP raises from object position to SpecTopP to check the topic feature, leaving its Q-det behind, as illustrated in (15) for (10b).

- (15)  $[_{TopP} \text{juzi}_j [_{AgrsP} \text{Zhangsan}_i [_{VP} t_i [_{V'} \text{chi-le yixie } t_j ]]]]$ <sup>89</sup>

<sup>89</sup> I assume that a subject NP in Chinese raises to SpecAgrsP without further argument.

orange    Zhangsan            eat    some

This analysis is very reminiscent of Sportiche's (1988) account of floating quantifiers in French. Sportiche attempts to capture the relation between *tous* (all) and *les enfants* (the children) in a sentence like (16) where *les enfants* precedes *tous* and the auxiliary verb *ont* (have) intervenes in between.

- (16) Les enfants ont tous vu ce film.  
      the children have all seen this movie

Sportiche argues that (16) is derived from (17) by raising the subject NP *les enfants* from what he calls the NP\* position (the canonical subject position of VP, analogous to the SpecVP position) to SpecIP and stranding *tous* behind, as illustrated in (18).

- (17) Tous les enfants ont vu ce film  
      all the children have seen this movie
- (18) [<sub>IP</sub> les enfants<sub>i</sub> [<sub>I'</sub> ont [<sub>Vn</sub> tous t<sub>i</sub> [<sub>VP</sub> vu ce film]]]]  
      the children have all see this movie

But, there is some fundamental difference between French and Chinese with respect to quantifier floating. For French this is an A-movement and is thus subject to locality conditions. As pointed out by Sportiche, the following sentence where the NP is not in the same clause containing its associated Q-det is ungrammatical.

- (19) \*<sub>[IP</sub> Les enfants l'ont persuade <sub>[IP</sub> de tous acheter ce livre].  
      the children him-have persuade Comp all buy this book

But for Chinese this movement is not subject to such a locality condition. The NP and its Q-det can be distanced from each other by one or more clauses.

- (20) a. [<sub>TopP</sub> **juzi**<sub>i</sub> [<sub>IP</sub> Zhangsan shuo [<sub>IP</sub> Lisi chi-le **yixue**  $t_i$  ]]]  
           orange Zhangsan say      Lisi eat    some  
           Zhangsan said that Lisi has eaten some of the oranges.
- b. [<sub>TopP</sub> **juzi**<sub>i</sub> [<sub>IP</sub> wo jide    [<sub>IP</sub> Zhangsan shuo [<sub>IP</sub> Lisi chi-le **san-ge**  $t_i$  ]]]]  
           orange I remember Zhangsan say    Lisi eat    three CL  
           I remember that Zhangsan said that Lisi has eaten three of the oranges.

In (20a) the NP is separated from its associated Q-det by one IP-node. In (20b) it is separated from its associated Q-det by two IP-nodes. However, the preposed NP can be related to its Q-det downstairs despite this distance. This is an A'-movement, an instance of topicalization.

The question, then is, if the NP undergoes topicalization, why its associated Q-det does not go along with it. Put it differently, why must the NP part company with its associated Q-det during the derivation? Note that all the Q-dets (*yixie* (some), *xuduo* (many), *mei you yi* (none) and numerals) that are stranded in situ are weak on Barwise and Cooper's (1981) classification, i.e., they are indefinite, and the NP that undergoes movement is definite. According to Diesing's (1992) Mapping Principle, an indefinite must be inside VP and a definite must outside VP. This is why the NP must part company with its associated D-det during the derivation. This leads to the next question: whether a strong Q-det can be stranded as such, to which we will turn now.

#### 6.4. Stranding of Strong Q-Dets

Strong Q-dets like *mei* (every) and *dabufen* (most) cannot be stranded in the same way that weak Q-dets are. In (21a, b) *mei-ben* and *dabufen* are left behind in the postverbal object position by their associated NP moving to SpecTopP, and the resulting sentences are unacceptable.

- (21) a. \*shu Zhangsan du-le mei-ben  
book Zhangsan read every CL  
Zhangsan has read everyone of the books.
- b. \*shu Zhangsan du-le dabufen.  
book Zhangsan read most  
Zhangsan has read most of the books.

A strong quantifier has a very different syntax and semantics from a weak one. The most noticeable distinction between the two is that the former is not able to appear in an existential sentence but the latter is. A strong quantified NP is definite (specific), and a sentence like *I have read every book*, if uttered without presupposing the existence of a set of books, is odd at best. According to Diesing's Mapping Principle, a definite cannot be inside VP. This explains why (21) are unacceptable.

Given this explanation, it is predicted that a strong Q-det can be stranded as long as it somehow gets out of the VP-shell before Spell-out. This prediction is indeed borne out.

- (22) a. *shu* Zhangsan *mei-ben* *dou* *du-le*  
 book Zhangsan every CL all read  
 Zhangsan has read everyone of the books.
- b. *shu* Zhangsan *dabufen* *dou* *du-le*.  
 book Zhangsan most all read  
 Zhangsan has read most of the books.

In (22a, b) *mei-ben* and *dabufen* appear to the left of *dou* (all) which, as I argue above, is the head of DistP, a functional projection above VP. The following is the derivation of (22a), for example.

- (23) a. [<sub>DistP</sub> *mei-ben* *shu*<sub>i</sub> [<sub>Dist'</sub> *dou* [<sub>VP</sub> Zhangsan *du-le* *t*<sub>i</sub> ]]]  
 every CL book all Zhangsan read
- b. [<sub>AgrsP</sub> Zhangsan<sub>j</sub> [<sub>DistP</sub> *mei-ben* *shu*<sub>i</sub> [<sub>Dist'</sub> *dou* [<sub>VP</sub> *t*<sub>j</sub> *du-le* *t*<sub>i</sub>]]]]  
 Zhangsan every CL book all read
- c. [<sub>TopP</sub> *shu*<sub>k</sub> [<sub>AgrsP</sub> Zhangsan<sub>j</sub> [<sub>DistP</sub> *mei-ben* *t*<sub>k</sub> ]<sub>i</sub> [<sub>Dist'</sub> *dou* [<sub>VP</sub> *t*<sub>j</sub> *du-le* *t*<sub>i</sub>]]]]  
 book Zhangsan every CL all read

After the VP has been constructed, *dou* is introduced into the derivation to project DistP whose feature is strong and must be checked off before any further step can be taken. It is checked by *mei-ben shu* raising to its Spec, as shown in (23a). Then in (23b) the subject *Zhangsan* raises from the VP-internal subject position to SpecAgrsP. Finally, in (23c) the NP *shu* moves further to SpecTopP, thereby stranding its Q-det *mei-ben* in SpecDistP.

For the similar reason, a strong Q-det cannot be stranded in the VP-internal subject position. It must first move to SpecDistP along with its

associated NP, and then is stranded there while its associated NP moves further to SpecTopP.

- (24) a. *xuesheng mei-ge dou chuxi-le huiyi*  
 student every CL all attend meeting  
 Every one of the student have attended the meeting
- b. *xuesheng dabufen dou chuxi-le huiyi*  
 student most all attend meeting  
 Most of the students have attended the meeting

The following is the partial derivation of (24a)

- (25) a. [<sub>DistP</sub> *mei-ge xuesheng*<sub>i</sub> [<sub>Dist'</sub> *dou* [<sub>VP</sub> *t<sub>i</sub> chuxi-le huiyi*]]]
- every CL student all attend meeting
- b. [<sub>TopP</sub> *xuesheng*<sub>j</sub> [<sub>DistP</sub> [*mei-ge t<sub>j</sub>*]<sub>i</sub> [<sub>Dist'</sub> *dou* [<sub>VP</sub> *t<sub>i</sub> chuxi-le huiyi*]]]]]
- student every CL all attend meeting

As shown in (25a), *mei-ge xuesheng* first raises from the VP-internal subject position to SpecDistP, and subsequently *xuesheng* raises further to SpecTopP, stranding *mei-ge* in SpecDistP (25b). The output of this derivation meets Diesing's Mapping Principle.

Of interest to us is the fact that a numeral Q-det can not only stay inside the VP-shell as shown by examples (8b) and (12b), but also can move out of the VP-shell as shown by the examples below.<sup>90</sup>

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<sup>90</sup> In fact the Q-det in (26) must move out of the VP-shell. Leaving the Q-det in situ would lead to unacceptability:

- (a) \**xuesheng dou san -ge chuxi-le huiyi*  
 student all three CL attend meeting  
 All three students have attended the meeting

- (26) a. xuesheng san-ge dou chuxi-le huiyi  
 student three CL all attend meeting  
 All three students have attended the meeting
- b. juzi Zhangsan liang-ge dou chi-le  
 orange Zhangsan two CL all eat  
 Zhangsan has eaten both oranges.

In both sentences the numeral Q-det appears to the left of *dou*, that is, it is in SpecDistP. I assume that they are derived in the same way as (23) and (25), i.e. the numeral quantified NP in its entirety first raises to SpecDistP, the NP then raises further to SpecTopP with its associated numeral stranded in SpecDistP.

Does this violate Diesing's Mapping Principle? No, it does not because a numeral Q-det can be interpreted as either indefinite or definite depending on whether it is inside or outside the VP-shell. For example, the numeral *liang-ge* (two) in (12b) being stranded inside VP is indefinite in the sense that its associated NP *juzi* denotes a set containing more than two oranges and *liang-ge* denotes any two-member combination within this superset. However, the same numeral in (26b) being stranded outside VP (SpecDistP) is definite in the sense

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- (b) \*juzi Zhangsan dou chi-le liang -ge  
 orange Zhangsan all eat two CL  
 Zhangsan has eaten both oranges.

This is because moving the NP to SpecDistP for feature checking entails that the set denoted by the NP be exhaustively distributed, whereas leaving its associated Q-det entails that only a proper subset be affected. These two requirements cannot be satisfied simultaneously.

that its associated NP *juzi* denotes a set containing exactly two oranges and *liang-ge* denotes the same two-member set.<sup>91</sup>

### 6.5. Wh-Topic and Floating Quantifiers

A wh-NP can be fronted with its associated Q-det stranded in situ, as illustrated by (27a).

- (27) a. *shenme shu<sub>i</sub> Zhangsan du -le san ben t<sub>i</sub>?*  
what book Zhangsan read ASP three CL  
Lit. What books has Zhangsan read three of them.
- b. *Zhangsan du -le san ben shenme shu?*  
Zhangsan read ASP three CL what book  
Lit. What books has Zhangsan read three of them

This is another instance of wh-topicalization: *shenme shu* is moved to SpecTopP for feature checking. There are two pieces of supporting evidence to this claim. First, compare (27a) with (27b) where the same wh-NP stays in situ. In (27a) *shenme shu*, being in topic position, must denote a D-constrained set of books from which a value assigned to the wh-variable is taken. In (27b) *shenme shu*, being in situ, denotes an open set of books from which a value assigned to

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<sup>91</sup> It is interesting to point out that there is another route to derive sentences like (22, 24, 26). Take (22a) for example, we can first move the NP *shu* (book) directly to SpecTopP with its Q-det *mei-ge* (every) stranded in the postverbal object position and then move the stranded Q-det to SpecDistP. This derivation, though involving the same number of steps as the one in (17), is illegitimate, because it is noncyclic, i.e. after the NP has moved to SpecTopP, the stranded Q-det cannot move to any category lower than TopP; otherwise it would violate the Extension Condition to the effect that Generalized Transformation must extend the entire phrase structure.

the wh-variable is taken. Given this, (27a) can be responded to by (28a) only, but (27b) can be responded to by either (28a) or (28b).

- (28) a. Zhangsan has read three classic novels.  
b. Zhangsan has read one classic novel, one contemporary fiction, and one narrative poem.

Second, this movement exhibits exactly the same scope property that we attribute to wh-topicalization. Consider the following pair.

- (29) a. *shenme shu mei ge xuesheng dou du le san ben?*  
what book every CL student all read ASP three CL  
Lit. What books does every student read three of them?  
b. *mei ge xuesheng dou du le san ben shenme shu?*  
every CL student all read ASP three CL what book  
Lit. What books does every student read three of them?

For (29a) *shenme shu* has scope over the universal quantifier and therefore it can only be responded to by an individual answer like (30a). In (29b) the universal quantifier takes scope over *san ben shenme shu* (three what books) and therefore the question can be answered by a list like (30b).

- (30) a. Every student has read three of the classic novels.  
b. John has read three classic novels, Bill has read three contemporary fiction, and Mary has read three narrative poems.

For the same reason discussed above, a strong Q-det must move out of VP along with its associated wh-NP to SpecDistP and then can be stranded there.

- (31) a. *shenme shu Zhangsan mei yi ben dou du le?*  
 what book Zhangsan every one CL all read ASP  
 What books does Zhangsan read every one of them?
- b. *shenme shu Zhangsan san ben dou du le?*  
 what book Zhangsan three CL all read ASP  
 What books does Zhangsan read all three of them?

(31a) is derived by first moving *mei yi ben shenme shu* from object position to SpecDistP for feature checking (32a), and then the wh-NP *shenme shu* raises further to SpecTopP, and *mei yi ben* is thereby stranded in SpecDistP (32b).

- (32) a. [<sub>DistP</sub> [<sub>i</sub> *mei yi ben shenme shu*]<sub>i</sub> dou [<sub>VP</sub> Zhangsan du le t<sub>i</sub> ]]  
 every one CL what book all Zhangsan read ASP
- b. [<sub>TopP</sub> *shenme shu*<sub>k</sub> [<sub>AgrSP</sub> Zhangsan]<sub>j</sub> [<sub>DistP</sub> [<sub>i</sub> *mei yi ben t<sub>k</sub>* ]]<sub>i</sub> dou [<sub>VP</sub> t<sub>j</sub> du le t<sub>i</sub> ]]]  
 what book Zhangsan every one CL all read ASP

Likewise, (31b) is derived by first moving *san ben shenme shu* from object position to SpecDistP (33a) and then *shenme shu* raises further to SpecTopP, leaving *san ben* stranded in SpecDistP (33b).

- (33) a. [<sub>DistP</sub> [<sub>i</sub> *san ben shenme shu*]<sub>i</sub> dou [<sub>VP</sub> Zhangsan du le t<sub>i</sub> ]]  
 three CL what book all Zhangsan read ASP
- b. [<sub>TopP</sub> *shenme shu*<sub>k</sub> [<sub>AgrSP</sub> Zhangsan]<sub>j</sub> [<sub>DistP</sub> [<sub>i</sub> *san ben t<sub>k</sub>* ]]<sub>i</sub> dou [<sub>VP</sub> t<sub>j</sub> du

le t<sub>i</sub> ]]]]  
 ASP  
 what book Zhangsan three CL all read

It is interesting to compare (27a) with (31b) repeated here as (34a, b).

- (34) a. shenme shu<sub>i</sub> Zhangsan du -le san ben t<sub>i</sub>?  
 what book Zhangsan read ASP three CL  
 Lit. What books has Zhangsan read three of them.
- b. shenme shu Zhangsan san ben dou du le?  
 what book Zhangsan three CL all read ASP  
 What books does Zhangsan read all three of them?

Recall that a numeral quantifier can be interpreted either as definite or as indefinite depending on whether it is outside or inside VP. In (34a) the numeral *san ben* is stranded inside VP and therefore is indefinite. What it means is that its associated wh-NP *shenme shu* in topic position must denote a D-constrained set of books that has more than three members, and *san ben* denotes any combination of three books within this set. In (34b) *san ben* stranded in SpecDistP must be definite. What it means is that its associated wh-NP *shenme shu* in topic position must denote a D-constrained set of books that has exactly three members in it, and *san ben* denotes the very same set.<sup>92</sup>

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<sup>92</sup> A wh-det can be stranded as well.

- (a) shu Zhangsan kan -le na ji -ben?  
 book Zhangsan read ASP which several CL  
 Lit. Which several books has Zhangsan read?

## 6.6. Covert Partitive Phrases

Another related case is what I call covert partitive phrases. Let us start our

discussion by considering the following pair of sentences.

- (35) a. Lisi du-le san-ben shu  
Lisi read three CL book  
Lisi has read three books
- b. Lisi du-le san-ben [e]  
Lisi read three CL (book)  
Lisi has read three (of the books)

The minimal difference between the two is that the numeral quantified NP in (35a) consists of both the numeral Q-det and its associated NP (henceforth the complete numeral NP), but that in (35b) consists of the Q-det only (henceforth the truncated numeral NP). The complete numeral NP in (35a) represents a piece of new information, but for (35b) that contains a truncated numeral NP to be acceptable, there must be some mention of books in the previous discourse.

Consider the following pair.

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(a) is derived by moving *shu* to SpecTopP for feature checking and leaving its associated wh-Det

- (36) a. \*Zhangsan kan-le liu-chang dianying, Lisi du-le san-ben [e]  
 Zhangsan see six CL movie Lisi read three CL (book)  
 Zhangsan has seen six movies and Lisi has read three of the books.
- b. Zhangsan jie-le liu-ben shu, Lisi du-le san-ben [e]  
 Zhangsan borrow six CL book, Lisi read three CL (book)  
 Zhangsan has borrowed six books and Lisi has read three (of them).

(36a) is unacceptable because the truncated numeral NP in the second clause cannot link to *six movies* in the first. (36b) is acceptable because the same NP can link to *six books*.

Given the fact that a truncated numeral NP must be antecedently linked, I argue that we can treat it as a partitive phrase, or rather, a covert partitive phrase. I propose that for a sentence like (35b) there is a null NP that is base-generated in the position following its numeral and then moved to SpecTopP to check the topic feature the same way as the overt NP. Thus, the following is the relevant part of its derivation.

- (37) a. [<sub>AgrsP</sub> Lisi<sub>i</sub> [<sub>VP</sub> t<sub>i</sub> du-le san-ben [e] ]]  
 Lisi read three CL (book)
- b. [<sub>TopP</sub> [e]<sub>j</sub> [<sub>AgrsP</sub> Lisi<sub>i</sub> [<sub>VP</sub> t<sub>i</sub> du-le san-ben t<sub>j</sub> ]]]  
 (book) Lisi read three CL

In (37a) the subject Lisi raises to SpecAgrsP and then in (37b) the null NP raises to SpecTopP. Even more interesting is that (35b), though good in (36b), cannot

be used in (38) where the number of books that Zhangsan has borrowed happens to be identical with the number of books that Lisi has read.

- (38) \*Zhangsan jie-le san-ben shu, Lisi du-le san-ben [e]  
Zhangsan borrow three CL book Lisi read three CL (book)  
Zhangsan has borrowed three books and Lisi has read three (of them).

What this indicates is that the previous set that the truncated numeral NP is linked to must be larger than the set denoted by its associated numeral.

Enc (1991) proposes that both definite NPs and partitive NPs must be antecedently linked. She distinguishes a definite NP from a partitive NP in terms of how they are antecedently linked: A definite NP is linked to its antecedent under the condition of **identity**, a partitive NP is linked to its antecedent under the condition of **inclusion**. To illustrate this point, consider the following English examples.

- (39) a. There is a boy entering the room. The boy is wearing a blue hat.  
b. There were five boys entering the room. John knows two of them.

*The boy* in (39a) is a definite NP, and has *a boy* in the preceding sentence as its antecedent. They are coreferential under the condition of identity. *Two of them* in (39b) is a partitive phrase and has *five boys* in the preceding sentence as its antecedent. *Two of them* is not identical with *five boys*, but not disjoint with it, either. Instead, it is included in *five boys*. *Two of them* is not fixed for its reference as to which two boys it denotes among this five-boy set. To be

accurate, it is *them*, rather than *two of them*, that is antecedently linked to *five boys*. This ensures that *two* has an indefinite interpretation as it should.

In light of Enc's theory of antecedent linking it is clear why sentence (35b) can be used in (36b) but not in (38); for in (38) the cardinality denoted by the antecedent is identical with that denoted by the stranded numeral, that is, they are not linked under the condition of inclusion, but rather under the condition of identity. This means that the truncated numeral NP in (38) is definite and what (38) violates is Diesing's Mapping Principle that requires that definites be outside the VP-shell. In other words, the unacceptability of (38) is due to the fact that the numeral Q-det stranded inside VP must be interpreted as partitive and be linked to its antecedent under the condition of inclusion.

However, this linking cannot be established in (38) because the potential antecedent denotes the set that is identical with the one denoted by the numeral.

If this analysis is correct, it predicts that in (38) if the stranded numeral can somehow move out of the VP-shell, the sentence will be acceptable. This prediction is indeed borne out.

(40) Zhangsan jie-le san-ben shu, Lisi san-ben dou du-le  
Zhangsan borrow three CL book, Lisi three CL all read  
Zhangsan has borrowed three books and Lisi has read all three of them.

I assume the following derivation for the second clause of (40).

- (41) a. [<sub>DistP</sub> [san-ben [e]]<sub>i</sub> [<sub>Dist'</sub> dou [<sub>VP</sub> Lisi du-le t<sub>i</sub>]]]  
           three CL (book)           all   Lisi read
- b. [<sub>AgrsP</sub> Lisi<sub>j</sub> [<sub>DistP</sub> [san-ben [e]]<sub>i</sub> [<sub>Dist'</sub> dou [<sub>VP</sub> t<sub>j</sub> du-le t<sub>i</sub> ]]]]  
           Lisi           three CL (book)   all           read
- c. [<sub>TopP</sub> [e]<sub>k</sub> [<sub>AgrsP</sub> Lisi<sub>j</sub> [<sub>DistP</sub> [san-ben t<sub>k</sub> ]<sub>i</sub> [<sub>Dist'</sub> dou [<sub>VP</sub> t<sub>j</sub> du -le t<sub>i</sub> ]]]]]]  
           (book)   Lisi           three CL           all           read

The truncated numeral NP raises to SpecDistP (41a), followed by the subject NP moving to SpecAgrsP (41b) and finally in (41c) the null NP undergoes further movement to SpecTopP, stranding its numeral in SpecDistP.

## REFERENCES

- Aoun, Joseph and Audrey Li. 1993. Wh-in-situ: syntax or LF? *Linguistic Inquiry* 24:199-238.
- Aoun, Joseph, and Audrey Li 1993. *Syntax of Scope*. Cambridge, Mass.: MIT Press.
- Aoun, Joseph, Norbert Hornstein, and Dominique Sportiche. 1981. On some aspects of wide scope quantification. *Journal of Linguistic Research* 1.3:67-95.
- Baker, C. Lee. 1970. Notes on the description of English questions. *Foundations of Language* 6:197-219.
- Baker, C. Lee. 1989. *English Syntax*. Cambridge Mass.: MIT Press.
- Barwise, Jon and Robin Cooper. 1981. Generalized quantifiers and natural language. *Linguistics and Philosophy* 4:159-219.
- Beghelli, Filippo and Tim Stowell. 1995. Distributivity and negation. ms. UCLA.

- Boskovic, Zeljko and Daiko Takahashi. 1995. Scrambling and last resort. Ms. University of Connecticut and Tohoku University.
- Brody, Michael. 1993. Lexico-logical form: radically Minimalist theory. ms. University of London.
- Cheng, Lisa L.-S., 1991. On the typology of wh-questions. Ph.D. dissertation. MIT.
- Cheng, Lisa L.-S., and C.-T. James Huang. 1994. Two types of donkey sentences. ms. University of California, Irvine.
- Chierchia, Gennaro. 1991. Functional WH and weak crossover. In D. Bates (ed.) *Proceedings of WCCFL 10*: 75-90.
- Chierchia, Gennaro and Sally McConnell-Ginet. 1990. *Meaning and Grammar*. Cambridge, Mass,: MIT Press.
- Chiu, Bonnie. 1990. A case of quantifier floating in Mandarin Chinese. Paper presented at Northeast Conference on Chinese Linguistics, Cornell University.
- Chiu, Bonnie. 1993. The inflectional structure of Mandarin Chinese, Ph.D. Dissertation, UCLA.
- Chomsky, Noam. 1964. *Current Issues in Linguistic Theory*. The Hague, Paris: Mouton.
- Chomsky, Noam. 1977. On WH-movement. In Peter W. Culicover, Thomas Wasow, and Adrian Akmajian, eds. *Formal Syntax*. New York: Academic Press.
- Chomsky, Noam, 1995. Bare phrase structure. *MIT Occasional Papers in Linguistics* 5, MIT.
- Chomsky, Noam, 1995. *The Minimalist Program*.. Cambridge, Mass,: MIT Press.
- Cinque, Guglielmo. 1990. *Types of A'-Dependency*. Cambridge, Mass,: MIT Press.

- Collins, Chris. 1997. *Local Economy*. Cambridge, Mass.: MIT Press.
- Culicover, Peter. 1991. Polarity, inversion, and focus in English. In *Proceedings of ESCOL 1991*: 46-68.
- Davidson, Donald. 1967. The Logical form of action sentences. In N. Rescher, ed. *The Logic of Decision and Action..* Pittsburgh, PA: University of Pittsburgh Press.
- Diesing, Molly. 1992. *Indefinites*. Cambridge, Mass.: MIT Press.
- Donnellan, Keith. 1966. Reference and definite descriptions. *Philosophical Review* 75: 281-304.
- Enc, Murvet. 1991. The Semantics of specificity. *Linguistic Inquiry* 22, 1-25.
- Epstein, Samuel David. 1992. Derivational constraints on A'-chain formation. *Linguistic Inquiry* 23: 235-260.
- Grohmann, Kleanthes. 1998. Synatactic inquiries into discourse restrictions on multiple interrogatives. ms. University of Maryland, College Park.
- Han, Chung-Hye. 1997. Representing rhetorical Wh-Questions at LF interface level. Paper presented at WCCFL 16.
- Higginbotham, James. 1985. Indefiniteness and predication. ms. MIT, Cambridge, Mass.
- Higginbotham, James, and Robert May. 1981. Questions, quantifier and crossing. *Linguistic Review* 1: 41-80.
- Hornstein, Norbert, 1984. *Logic as Grammar..* Cambridge, Mass.: MIT Press
- Hornstein, Norbert. 1995. *Logical Form: From GB to Minimalism*. Oxford UK and Cambridge USA: Blackwell.
- Huang, C-T. James. 1982. Logical relations in Chinese and the theory of grammar. Ph.D. Dissertation, MIT.

Jimenez, Maria-Luisa. 1996. The role of presupposition in Wh-questions, Paper presented at the Student Conferences in Linguistics, University of Maryland, College Park.

Katz, Jerrold, and Paul Postal. 1964. *Integrated Theory of Linguistic Descriptions*. Cambridge, Mass.: MIT Press.

Keenan, Edwards. 1987. A semantic definition of indefinite NP, in E. Reuland and A. ter Meulen, eds. *The Representation of (In)definiteness*. Cambridge, Mass.: MIT Press.

Kitahara, Hisatsugu. 1997. *Elementary Operations and Optimal Derivations*. Cambridge, Mass: MIT Press.

Larson, Richard and Gabriel Segal. 1995. *Knowledge of Meaning*. Cambridge, Mass.: MIT Press.

Lasnik, Howard, and Mamoro Saito. 1992. *Move  $\alpha$* . Cambridge, Mass.: MIT Press.

Lasnik, Howard, and Juan Uriagereka. 1988. *A Course in GB Syntax*. Cambridge, Mass.: MIT Press.

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

Li, Xiaoquang. 1997. Deriving distributivity in Mandarin Chinese. Ph.D. Dissertation, University of California, Irvine.

Lin, Jowang. 1992. The syntax of *zemeyang* 'how' and *weishenme* 'why' in Mandarin Chinese. *Journal of East Asian Linguistics* 1:293-331

Lin, Jo-Wang. 1996. Polarity licensing and wh-phrase quantification in Chinese. Ph.D. dissertation, University of Massachusetts at Amherst.

Munn, Alan. 1993 Topics in the syntax and semantics of coordinate structures. Ph.D. Dissertation, University of Maryland, College Park.

- Nunes, Jairo. 1995. The copy theory of movement and linearization of chains in the Minimalist Program. Ph.D. dissertation, University of Maryland, College Park.
- McCawley, D. James. 1970. English as a VSO language, *Language* 46.2: 286-99.
- McCawley, D. James. 1993. *Everything That Linguists Have Always Wanted to Know about Logic*. Second Edition, Chicago, Illinois: Chicago University Press.
- Miyagawa, Shigeru: 1997. Against optional scrambling. *Linguistic Inquiry* 28:1-26.
- Karttunen, Lauri. 1977. Syntax and semantics of question, *Linguistics and Philosophy* 1: 3-44.
- Reinhart, Tanya. 1991. Non-quantificational LF, In A. Kasher, ed. *The Chomskyan Turn*. Oxford: Blackwell.
- Reinhart, Tanya. 1994. Wh-in-situ in the framework of the Minimalist Program. ms., *OTS Working Papers*, Research Institute for Language and Speech, Utrecht University.
- Rooth, Mats. 1985. Association with focus. Ph.D. dissertation, University of Massachusetts at Amherst.
- Rooth, Mats. 1992. Theory of focus. *Natural Language Semantics* 1:75-111
- Sadock, Jerrold. 1971. Queclaratives. In *Papers From the Seventh Regional Meeting of the Chicago Linguistic Society* 7: 223-232
- Sadock, Jerrold. 1974. *Towards a Linguistic Theory of Speech Acts*. New York, San Francisco, London: Academic Press.
- Saito, Mamoro, 1992. Long distance scrambling in Japanese. *Journal of East Asian Linguistics* 1:69-118.
- Shi, Dingxu. 1994. The nature of Chinese wh-questions.. *Natural Language and Linguistic Theory* 12: 301-334.

Sportiche, Dominique. 1988. A Theory of floating quantifiers and its corollaries for constituent structure. *Linguistic Inquiry* 19: 425-449.

Takahashi, Taiko. 1993. Movement of wh-phrases in Japanese. *Natural Language and Linguistic Theory* 11:655-678.

Tang, C-C. Jane. 1990. A note on the DP analysis of the Chinese noun phrase. *Linguistics* 28:337-354.

Tsai, Wei-Tien Dylan. 1994. On nominal islands and LF extraction in Chinese. *Natural Language and Linguistic Theory* 12:121-175.

Tsai, Wei-Tien Dylan. 1994. On economizing A-bar dependencies. Ph.D. dissertation, MIT.

Wu, Jianxin. 1996. Wh-topic, wh-focus and wh-in situ. In J.C. Castillo, V. Miglio and J. Musolino, eds. *University of Maryland Working Papers in Linguistics* 4: 173-192.

Wu, Jianxin. 1997. A model-theoretic approach to A-not-A questions. In A. Dimitriadis, L. Siegel, C. Surek-Clark and A. Williams, eds. *Proceedings of the 21<sup>st</sup> Annual Penn Linguistics Colloquium*: 273-289.

Wu, Jianxin. 1998. Topic, floating quantifiers and partitivity. In P.N. Tamanji and K. Kusumoto, eds. *Proceedings of North East Linguistic Society* 28: 485-499.

Wu, Jianxin. forthcoming. More on A-not-A questions in Chinese. In *Proceedings of WCCFL 16*.

Wu, Jianxin and Scott McGinnis. 1998. How to form a partitive construction in Chinese. *Journal of Chinese Language Teachers Association*. 33.1: 31-50.

Xu, Liejiong and Terence Langendoen. 1985. Topic structure in Chinese. *Language* 61.1: 1-27.

Zhang Ning. 1997. Syntactic dependencies in Mandarin Chinese. Ph.D. dissertation, University of Toronto.