

SYNTACTIC DEPENDENCIES IN MANDARIN CHINESE

Ning Zhang

Department of Linguistics
University of Toronto

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Department of Linguistics
University of Toronto
Toronto, Ontario, M5S 3H1
twpl.ling@utoronto.ca

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by

Ning Zhang

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This thesis investigates two kinds of syntactic dependencies in Mandarin Chinese: uninterpretable feature checking of clause-level functional heads and *dou* quantificational binding. Three issues are discussed with respect to checking: object shift, yes/no questions, and the aspect particle *le* raising. Chinese object shift is argued to be triggered by a focus marker which adjoins to an object. This study also presents a unified treatment of various types of yes/no questions in Chinese. The uninterpretable [Q] of yes/no question C is checked either by the merged particle *ma*, by overt movement of *bu/mei(you)-V* from Σ to C, or by covert movement of [Q] of *shi-bu-shi* and A-not-A words. In both object shift and questions the optionality between overt and covert checking occurs. The thesis argues that the strong value of the feature strength of a functional head can be triggered by a certain feature in its complement domain. Thus the choice of overt vs. covert checking can be determined in the computation. The thesis also explains the interactions between yes/no questions and negation by Relativized Minimality and feature compatibility. Furthermore, the thesis argues that sentence final *le* is base-generated in I and moves to C.

As for *dou* quantification, it is shown that a licenser of *dou* can be an element which is capable of measuring the eventuality, a universal quantifier, an interrogative operator of a WH variable, or an element which has the word *wulun* 'no-matter' adjoined to it. A pronominal binding approach is adopted rather than a movement checking or unselective operator binding approach. *Dou* binding allows multiple licensers and the *Ba/Bei*-phrase blocking effect is explained by the notion of Complete Functional Complex. Like checking, *dou* binding also respects the Shortest Distance Principle. When *dou*'s licenser has a dependent, whether it is a trace or an operator variable, the dependent must be base-generated in the same clause where *dou* occurs. Based on the case studies of both checking and binding, the thesis advocates a unified treatment to these two kinds of syntactic dependencies in the computation system.

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1.1 Goals

A central question in linguistics is: what principles govern choices among syntactic operations within a language. For example, Chinese yes-no questions can be represented by merging of a question marker *ma* at C in one case, by merging and subsequent movement of a word such as *meiyou* to C in another, and furthermore, by no special overt merge or move to C at all, as in A-not-A questions. The first case is similar to English embedded yes-no questions, where a word *whether* or *if* is merged at CP. The second case is similar to English matrix yes-no questions, where *do*-support may be required and an auxiliary raising to C occurs. The third case is similar to Chinese WH questions, where no special overt merge or move to C can be found. All of these three options are available for a matrix Chinese yes-no question. However, they do not co-occur in one sentence. The current feature strength parameter hypothesis cannot explain the variation within one language. Recall that more than a decade ago, when quite a few linguistic parameters were proposed, syntactic operations used in different languages were taken to be unrelated. For example, it was assumed to be pointless to ask why Chinese does not have overt WH movement while English has. Recent research has revealed that the choice of movement is morphologically decided (Tsai 1994, among others). Even within Chinese, the morphological properties of a WH form decide whether the dependency between a question operator and its variable involves a covert movement or merge-binding. This study aims to further explore the choice between overt and covert checking operations. We will see that the choice among syntactic operations is, to a certain degree, related to the morphological

properties of the elements involved, and to the feature interactions of the elements in the course of the computation, rather than to the language type in general. Different numeration plus the interactions of the relevant features in the course of the computation explain why a formal feature is strong in one case and weak in another and decide the convergent syntactic operations. The development of linguistic theories is providing explanations for the parameters or choices with respect to syntactic operations and reducing the arbitrariness in the theories. Thus the first goal of this thesis is to explore the principles underlying the apparent choices among computational operations. The data studied are Chinese object shift and yes-no questions.

Another central question in the theory of grammar is: what principles govern the syntactic dependencies between two elements in a sentence. Anaphor binding exhibits one kind of dependency, while movement of an element shows another. The other goal of this thesis is to capture the similarities and differences between these two kinds of dependencies in Mandarin Chinese. The dependencies studied involve feature checking of Chinese clause level functional categories. Specifically, I study object shift, aspect particle movement and movement of elements in yes-no questions. The case study of non-movement dependencies is the investigation of Chinese adverb *dou* 'all', which provides a sentence with a distributive meaning.

1.2 Theoretical framework and assumptions

1.2.1 Strength of uninterpretable features and (c)overt checking

This thesis adopts as its theoretical foundation the feature attraction model of Chomsky's (1995, Chapter 4) Minimalist Program of Generative Grammar. In this model, cross-linguistic variation, expressed by parameters in the past, is restricted to an irreducible difference in the strength value of uninterpretable features associated with functional categories such as C (Complementizer), I (Inflection), \bar{y} (the head of v^{max}) and D (Determiner). Syntactic computations aim to check off all uninterpretable features, either overtly, if the feature is strong in the language, or covertly, if the feature is weak in the language.

Checking is feature attraction to the checking domain of the relevant functional head. Checking can proceed either by merging of an element which contains a corresponding feature, or by copying such a feature from the complement domain of the relevant functional head. In overt checking, the copying of a feature is accomplished by copying the category which hosts the feature (pied-piping).

1.2.2 Relativity of feature interpretability

In this thesis, I will adopt Chomsky's (1995) distinction between interpretable and uninterpretable syntactic features. In addition, I will adhere strictly to a principle which is implied in Chomsky (1995). I call this principle *Relative Interpretability*.

(1) Relative Interpretability:

The interpretability of a certain feature depends on its host.

For example, according to Chomsky (1995), a phi feature of a verb is uninterpretable, while a phi feature of a nominal is interpretable. Similarly, a categorial feature of a lexical item is interpretable, while a categorial feature of a functional category is not interpretable.

This Relative Interpretability has some desirable consequences. For instance, a feature being interpretable on one category does not entail that the same kind of feature is interpretable when hosted by another category. For example, the [Q] feature of a WH phrase in English is interpretable (Chomsky 1995: 290). However, the [Q] feature of C is not necessarily interpretable. Chomsky (1995: 289) claims that [Q] of C is interpretable and can be checked by [Q] of a WH phrase. Thus it seems that two interpretable features can check each other. This contradicts Chomsky's (1995) assumption that the motivation for checking is to eliminate uninterpretable features. If we treat [Q] of C as an uninterpretable feature, as we do with a phi feature of a verb, no such contradiction occurs. In Chapter 4, I will assume that [Q] of yes-no interrogative C in Chinese is uninterpretable, and can be checked by interpretable [Q] of question words such as A-not-A words.

1.3 Main claims and empirical contributions

1.3.1 Main claims

This thesis will make theoretical claims regarding choices among different checking operations and regarding the relationship between binding and checking.

With respect to choice in checking operations, I will claim that languages differ in the default strength of a formal feature, rather than in the absolute strong/weak values of the feature. The choices between overt and covert checking can be decided by the presence of a certain feature in the complement domain of the relevant functional head. The analyses of Chinese object shift and yes-no questions support my claim.

Binding and checking are different in many respects. For example, checking involves feature deletion, while binding does not. Checking requires all unchecked formal features, both interpretable and uninterpretable ones, such as Case, to be compatible between the attractor and the attracted, while binding only requires the compatibility of interpretable features, such as phi features, between a bindee and its binder. In this thesis, the dependency exhibited in Chinese *dou* sentences will be argued to be a kind of binding operation, rather than a checking operation. My study on the Chinese *dou* dependency will show that like local anaphor binding in English, *dou* binding also requires the notion of Complete Functional Complex (CFC, Chomsky 1986a) to restrict the binding domain. CFC is basically a semantic notion rather than a syntactic one. In checking, a semantic notion such as CFC plays no role.

However, binding and checking do exhibit some similarities. My study of the Chinese *dou* dependency will show that binding, like checking, also requires the Shortest Distance Principle in certain contexts. In addition, *dou* binding requires *dou* and the dependent of its licenser, regardless of whether it is a trace or an operator variable, to be in the same clause. This fact suggests that the two kinds of dependent, a trace of movement and a variable of binding, play the same role.

In the concluding chapter (Chapter 8), I will pursue the possibility of integrating binding with checking in the syntactic computation system, contrary to Chomsky (1995b, 1995 lecture notes), who assumes that binding is external to the syntactic computation. I will claim that both checking and binding serve to eliminate undesirable elements for Full Interpretation. Checking deletes uninterpretable features while binding repairs referentially defective features. Checking operations such as merge and copy are driven by Attract (Chomsky 1995) and binding is driven by Greed. Attract means roughly that a feature enters into a certain dependent relation to satisfy the morphological requirement of another feature, the attractor, while Greed means roughly that a feature enters into a certain dependent relation in order to satisfy its own morphological requirement. Both Greed and Abstract can be generalized under Lasnik's (1995) Enlightened Self-Interest. Regardless of the dependency orientation, both checking and binding serve interpretation and ensure the syntactic acceptability of a sentence.

1.3.2 Research Findings

The empirical contributions of this thesis include a description of the syntactic properties of Chinese focus markers and root and epistemic modals, an analysis of the base position of the aspect particle *le*, a unified treatment of various types of yes-no questions, the licensers of *dou*, the binding properties and some of its semantic characteristics of *dou* sentences.

In Part A of this thesis I find that prenominal focus markers can adjoin to a nominal, but they are different from adjectives in many respects. In addition, a focused element must be M-commanded by an adverbial focus marker. I also find that object shift is triggered by a focus marker which adjoins to an object. Object shift fact shows that NegP or Σ P in Chinese is projected between \underline{y} P and VP. In a default case, V-to- \underline{y} raising in Chinese is covert. I show that Chinese has Infl, which is neither marked by an aspect suffix nor by modal. Some new arguments support the hypothesis that root modals are control verbs and epistemic modals are raising verbs. Sentence final aspect particle *le* is argued to be base-generated in I and move to C. In Chinese yes-no questions the uninterpretable [Q] of C is checked either by merging of the question particle *ma*, by overt movement of the word *bu/mei(you)-V* from Σ to C, or by covert movement of [Q] of *shi-bu-shi* and an A-not-A word. S-not and S-not-V questions are argued to be PF variants of the same question type. The interactions between sentence negation and a yes-no question show the Relativized Minimality effect. The strong value of the [Q] strength in C is triggered by a feature related to an interrogative Σ . VO-not-VO questions are argued to be alternative questions, different from regular yes-no questions. The contents of Part A are all related to syntactic feature checking.

Part B of this thesis focuses on a case study of binding: *dou* quantification. It shows that a licenser of *dou* can be an element which is capable of measuring the eventuality, a universal quantifier, an interrogative operator of a WH variable, or an element which has the word *wulun* ‘no-matter’ adjoined to it. I also argued that a pronominal binding approach is superior to an unselective operator binding approach and to a movement checking approach. I find that in *dou* binding, the Shortest Distance Principle is respected in certain contexts. The *Ba/Bei*-phrase blocking effect in *dou* linking is explained by the notion of Complete Functional Complex. *Dou* and the dependent of its licenser, a trace or a variable, must be base-generated in the same clause. *Dou* never links to a restrictively focused element, and does not link to an instrument. Finally, I investigate the different syntactic, semantic and phonological properties of *dou* when it occurs in a focus sentence and when it occurs in a distributive sentence.

1.4 Organization of the thesis

There are two major parts in this thesis. Part A is on the checking dependencies of Chinese clause level functional categories. This part includes Chapter 2 on object shift, Chapter 3 on I-to-C raising of the aspect particle *le*, and Chapter 4 on C checking in yes-no questions. Part B is on the binding dependencies in Chinese *dou* sentences. This part contains Chapter 5 on licensing conditions of *dou* and the arguments for the binding relation of *dou* dependency, Chapter 6 on the locality constraints on *dou* binding, and Chapter 7 on some semantic properties of *dou* sentences. Chapter 8 discusses the theoretical implications of this study and concludes the thesis.

Chapter 2 Triggered Object Raising

2.1 Introduction

The main goal of this chapter is to account for the syntactic motivation and the properties of Chinese object shift, as in (2b), which has been taken to be an optional movement in the current literature (Qu 1994 among others).

- (2) a. wo kan-le zheiben shu.
 I read-ASP this book
 'I have read this book.'
- b. wo zheiben shu kan-le.
 I this book read-ASP
 'I have read THIS BOOK.' (not that book)
 (capitalized part is semantically focused.)

I will propose that all types of object shift in modern Chinese check a strong nominal feature of \bar{v} triggered by the focus marker of the object. Thus there is no arbitrary optionality in object shift.

The Trigger Hypothesis proposed in this chapter claims that languages differ in the default strength of a formal feature, rather than the absolute strong/weak parameters, as assumed in the present linguistic theories. The default strength can be changed under certain conditions. Exploring such conditions enables us to explain the variations between covert checking and overt checking of the same formal feature in a single language.

In the following discussion, I introduce three types of focusing: contrastive, additive and restrictive types (the latter two terms are from Konic 1991: 33). An example of the contrastive focusing is (3). The unstressed word *shi* is a contrastive focus marker.¹

- (3) ta shi xingqisan kan-le neichang dianying.
 he be Wednesday see-ASP that movie
 ‘He watched that movie on the WEDNESDAY.’ (not other days)

The additive or inclusive focusing highlights that some alternative is included as a variable of the sentence meaning. The restrictive or exclusive focusing, on the contrary, highlights that none of the alternatives under consideration satisfies the relevant meaning of the sentence. For example, the subject of (4a) is additively focused, while the subject of (4b) is exclusively focused.

- (4) a. **Even** John has come
 b. **Only** John has come.

¹ When *shi* is stressed, it means ‘indeed’, rather than contrastive.

(4a) implies that there are several persons who have come, and John, who was not expected to come, is included. In contrast, (4b) implies that no one else except John has come.

Section 2.2 poses the issues of order variations between SVO and SOV and the absence of focus markers with an in situ object. Section 2.3 describes the structural properties of various focus markers. Focus markers which focalize a nominal are argued to adjoin to a nominal but they are not adjectives. Section 2.4 proposes the Trigger Hypothesis and discusses the locality constraint on triggering and the nature of the triggered strong feature. Section 2.5 extends the research to the interactions between sentence negation and object shift. The last section, 2.6, summarizes and concludes the chapter.

2.2 The issues

2.2.1 Three types of preverbal objects

Chinese has been assumed to be an SVO language. However, a direct object of a transitive verb can occur between the subject and the verb in certain contexts. I will present three types of preverbal objects in Mandarin Chinese. All of them are focused. They are the contrastive, additive and restrictive types, as in (5) to (7). The words in bold face are focus markers. All (b) sentences have the same meaning as the first reading of (a). In other words, when an object occurs to the left of a transitive verb, it is semantically focused.

- CONTRASTIVE (5) a. ta **shi** kan-le neiben shu.
 he be read-ASP that book
 i. 'He has read **THAT BOOK.**'
 ii. 'He has **READ** that book.' (*kan* is stressed)
 iii. 'He has **READ THAT BOOK.**'
- b. ta neiben shu kan-le.
 'He has read **THAT BOOK.**'
- ADDITIVE (6) a. ta **shenzhi** bei-guo zhepian sanwen.
 he even memorize-ASP this prose
 i. 'He even memorized **THIS PROSE.**'
 ii. 'He even **MEMORIZED** this prose.'
 iii. 'He even **MEMORIZED THIS PROSE.**'
- b. ta (**lian**) zhepian sanwen dou bei-guo.
 he (even) this prose all memorize-ASP
 'He even memorized **THIS PROSE.**'
- RESTRICTIVE (7) a. ta **zhi** he hong-cha.
 he only drink red-tea.
 i. 'He only drinks **BLACK-TEA.**'
 ii. 'He only **DRINKS** black-tea.'
 iii. 'He only **DRINKS BLACK-TEA.**'
- b. ta **zhiyou** hong-cha cai he.
 'He only drinks **BLACK-TEA.**'

I investigate the syntactic properties of the focus markers *shi*, *shenzhi*, *zhi*, *lian*, *dou*, *zhiyou*, and *cai* in section 2.3. The analysis sheds light on the cause of the ambiguity of the (a) sentences above (section 2.3.4). I then turn, in section 2.4, to the syntactic motivation for the SVO/SOV variation shown above. Before I discuss these two questions, I describe an important distribution constraint on focus markers in the next subsection.

2.2.2 The absence of focus markers with O in VO order

One important observation with respect to focus markers and a focused element is that if a focused element which is not an object occurs in its canonical position, it can be preceded by a focus marker. However, a postverbal object cannot be preceded by a focus marker. The occurrence constraint of the contrastive focus marker *shi* is shown in (8).

(8) a. *ta xiu-hao-le zixingche.*

he repair-good-ASP bike

‘He has repaired the bike.’

b. *shi ta xiu-hao-le zixingche.*

‘HE has repaired the bike.’

‘HE HAS REPAIRED THE BIKE.’

- c. *ta shì xiu-hao-le zixingche.*
 'He HAS REPAIRED the bike.' (phonological stress is on *xiu*)
 'He has repaired THE BIKE.'
 'He HAS REPAIRED THE BIKE.'
- d. *ta shì qiaoqiaode xiu-hao-le zixingche.*
 he FM secretly repair-good-ASP bike
 'He repaired the bike WITHOUT BEING NOTICED.'
- e. *ta shì zuotian xiu-hao-le zixingche.*
 he FM yesterday repair-good-ASP bike
 'He REPAIRED THE BIKE YESTERDAY.'
 'He has repaired the bike YESTERDAY'
- f. **ta xiu-hao-le shì zixingche.*

The above observation about focalization is also true of restrictive and additive focalizations.

I will start with additive focalization. The additive focus marker in Chinese is *shenzhi* or *lian* 'even'. If *shenzhi* is used, the XP following *shenzhi* can be one of various categories; and if

lian is used, the XP following *lian* must be nominal.² Thus, if *lian* is used before a nominal, it is changeable with *shenzhi*. Henceforth, I will use *lian*, rather than *shenzhi/lian*, whenever the following phrase is nominal. The focus marker *lian* always co-occurs with another focus marker *dou* or *ye*. In all example sentences in this chapter, *dou* is interchangeable with *ye* (For more discussion of *dou* and *ye* see chapter 7, section 7.6). Therefore I simply use *dou* instead of *dou/ye*.

If a focused element which is not an object occurs in its canonical position, the focus marker *shenzhi/lian* appears to its left. However, postverbal object cannot be preceded by *shenzhi/lian*.

- (9) a. *lian LaoWang dou kan-guo zheben shu.*
 even LaoWang all read-ASP this book
 'Even LAOWANG has read this book.'

² In the following sentence *xie xin* 'write letters' is nominalized, since it does not allow a modal, a negative adverb, or an aspect marker (Tsao 1987, among others).

- (i) *ta lian xie xin dou yao wo pangmang.*
 he even write letter also ask me help
 'He even asks for my help with letter writing.'

Lian can also occur before a preverbal complement CP:

- (ii) a. *wo shenzhi bu zhidao [CP ta qu-le Beijing]*
 I even not know he go-ASP Beijing
 'I even do not know he has gone to Beijing.'
 b. *wo lian [CP ta qu-le Beijing] dou bu zhidao*
 I even he go-ASP Beijing all not know
 'I even do not know he has gone to Beijing.'

- b. *LaoWang lian Xingqitian dou shangban.*
 LaoWang even Sunday also work
 'LaoWang works even on SUNDAYS.'
- c. *ta shenzhi bei-guo zhepian sanwen.*
 he even memorize-ASP this prose
 'He even MEMORIZED this prose.'
 'He even memorized THIS PROSE.'
 'He even MEMORIZED THIS PROSE.'
- d. *LaoWang shenzhi yong gaoya-guo zhu miantiao.*
 LaoWang even with pressure-cooker cook noodle
 'LaoWang cooks noodles even IN A PRESSURE COOKER.'
- e. *tamen shenzhi zai bangongshi-li tiaowu.*
 they even at office-in dance
 'They even dance IN THE OFFICE.'
- f. **LaoWang kan-guo lian zheben shu (dou).*
 LaoWang read-ASP even this book (all)
 'LaoWang has read even THIS BOOK.'

As with the contrastive focus marker *shi*, when the additive focus marker *shenzhi* occurs before a verb, the sentence is ambiguous in that the focused element can be the verb if it is phonologically stressed, the postverbal object or the whole VP, as given in (9c) compared to (8c).

Two kinds of focus markers are used in restrictive focus constructions: *zhiyou* can be used before various categories, while *zhi* is usually used before non-nominal elements. As with *shi* and *lian*, *zhiyou* cannot occur to the left of an object when it occurs in its canonical position.

- (10) a. *zhiyou Zhou Hong mai-le zheiben shu.*
 only Zhou Hong buy-ASP this book
 ‘Only ZHOU HONG bought this book.’
- b. *Zhou Hong zhiyou wanshang zai jia.*
 only evening at home
 ‘Zhou Hong is at home only IN EVENINGS.’
- c. *Zhou Hong zhi mai-le zheiben shu.*
 ‘Zhou Hong only BOUGHT this book.’
 ‘Zhou Hong only bought THIS BOOK.’
 ‘Zhou Hong only BOUGHT THIS BOOK.’
- d. *Zhou Hong zhi yong kuaizi chi fan.*
 Zhou Hong only with chopsticks eat meal
 ‘Zhou Hong eats meals only WITH CHOPSTICKS.’
- e. *Zhou Hong zhi zai gongyuan-li jian-guo xiongmao.*
 Zhou Hong only at park-in see-ASP panda
 ‘Zhou Hong has seen pandas only IN PARKS.’

- f. **Zhou Hong mai-le zhiyou zheiben shu.*
 Zhou Hong buy-ASP only this book
 'Zhou Hong has bought only THIS BOOK.'

One might explain the absence of focus markers with O in VO order by a constraint relating to the adjacency between a verb and its object. However, I will show in section 2..3.2 that a prenominal focus marker can adjoin to the nominal and form a constituent. If a focus marker and a nominal can form a constituent, the adjacency constraint between a verb and its object cannot be used to account for the absence of a focus marker before an in situ object.

2.3 Structural properties of various focus markers

The semantic function of various focus markers is to mark the focus type: *shi* for the contrastive type, *shenzhilian ... douye* for the additive type and *zhi(you) ... cai* for the restrictive type. The focus features on these words are interpretable, and no checking is therefore required according to the Minimalist Program. All of them are base-generated (merged) at their positions with respect to the element they focalize. In this section, I discuss the internal relationship of these focus markers, their syntactic categories and functions.

2.3.1 Archi-forms of focus markers

In this subsection, I will show that all syntactically focalized sentences require a focus marker and various focus markers of the same type can be analyzed as context sensitive realizations of the same archi-form.

In the additive type of focalization, there are four focus markers: *lian*, *shenzhi*, *dou* and *ye*. *Lian* occurs only to the left of a nominal,³ *shenzhi* occurs to the left of various categories, and *dou* and *ye* occur only to the left of non-nominal categories, such as a verb or a preposition.

My first observation regarding to the additive focusing is that the focus marker *dou* can exchange with another focus marker *shenzhi* in some cases, if the focalized element is to its right, and can exchange with another focus marker *ye* if the focalized element is to its left. Reading (ii) of the following sentences is from a syntactic analytic dictionary (Lü et al. 1980: 154).

- (11) a. wo **dou** bu zhīdao nǐ huì lái.
 I all not know you will come
 i. 'Even I did not know you would come.'
 ii. 'I even DID NOT KNOW YOU WOULD COME.'

³ *Lian* 'even' can also occur before a preverbal complement CP. See footnote 2 on page 10. However, *zhiyou* 'only' cannot.

- (i) a. wo zhī zhīdao [CP ta qu-le Beijing]
 I only know he go-ASP Beijing
 'I know only that he has gone to Beijing.'
 b. *wo zhiyou [CP ta qu-le Beijing] (cai) zhīdao
 I only he go-ASP Beijing only know

- b. zhen baoqian, wo **dou** wang-le ni de mingzi le.
 really sorry I all forget-ASP you DE name ASP
 i. 'I am sorry, even I forget your name.'
 ii. 'I am sorry. I even FORGET YOUR NAME.'

If *dous* in (11) are changed into *shenzhi*, reading (i) of both (a) and (b) is lost, while reading (ii) is still kept, though the *dou*-form is more casual than the *shenzhi*-form in style. If *dous* in (11) are changed into *ye*, reading (ii) of both (a) and (b) is lost, while reading (i) is still kept if the subject is preceded by the focus marker *lian*. Thus *dou*, *shenzhi* and *ye* in a focus sentence might be semantically grouped into a more general archi-form. This archi-form is obligatory in a focus sentence. It provides the focus interpretation of the sentence. The realization of this archi-form depends on the position of the focused element after Spell-Out as well as the style.

My second observation regarding the additive focusing is that if the focalized element is to the left of this arch-form of the focus marker, another focus marker *lian*, or *shenzhi*, or *shenzhi lian*, can precede the focalized element.

- (12) a. (shenzhi/lian/shenzhi lian) ta xingqitian dou/ye gongzuo.
 even he Sunday all/also work
 'Even he works on Sundays.'
- b. ta (shenzhi/lian/shenzhi lian) xingqitian dou/ye gongzuo.
 he even Sunday all/also work
 'He even works on Sundays.'

The focus markers *lian*, *shenzhi*, or *shenzhi lian* in the above sentences can be deleted at PF if the focused element bears a stress and thus no ambiguity occurs.

Notice that in the above sentences, *shenzhi* or/and *lian* occurs to the left of the nominal, while *dou* or *ye*, occurs to the left of a VP. It is well established that *dou* and *ye* are adverbs (Lü 1980, among others). I will discuss the categorial status and functions of prenominal *lian* and *shenzhi* in the next subsection.

Thus a syntactically focalized sentence requires a focus marker and various focus markers can be seen as context sensitive realizations of the same archi-form. These facts can also be seen in the restrictive focus markers. In the restrictive type of focalization, there are three focus markers: *zhiyou*, *zhi* and *cai*. *Zhi* and *cai* are interchangeable, if the focalized element is a post-verbal quantified element. The following sentences are from the syntactic analytic dictionary (Lü et al. 1980: 87) mentioned before.

- (13) a. wo cai kan-le yi bian, hai yao zai kan yi bian.
 I only read-ASP one time, yet want again read one time
 ‘I only read it ONCE. I want to read it again.’
- b. ta cai :bi wo zao dao yi tian.
 he only than I early come one day
 ‘He came only ONE DAY earlier than I did.’

The *cai* in (13) can be changed into *zhi* without any change in meaning. Thus *cai* and *zhi* in focus sentences might be semantically grouped into a more general archi-form.

In a restricted focalized sentence, either *zhi/zhiyou*, or *cai*, or both, must show up. When the focalized element occurs to the left of *cai*, *zhi* or *zhiyou* occurs to the left of the focused element, while *cai* occurs to the left of a VP. *Cai* is an adverb. I will discuss the categorial status and functions of prenominal *zhi* and *zhiyou* in the next subsection.

Unlike the additive focus markers, the occurrence of the restrictive focus markers is constrained by aspectual factors. For example, *cai* usually occurs in the absence of an aspect marker. If *cai* does not show up, *zhiyou* must be present to show the focus meaning.

- (14) a. *zhiyou*/**zhi* Xiao Wang (*cai*) *zai jia gongzuo*.
 only Xiao Wang only at home work
 ‘Only Xiao Wang works at home.’
- b. *zhiyou*/?*zhi* Xiao Wang (**cai*) *lai le*.
 only Xiao Wang only come ASP
 ‘Only Xiao Wang came.’
- c. Xiao Wang *zhiyou*/**zhi* *xingqitian (cai) gongzuo*.
 Xiao Wang only Sunday only work
 ‘Xiao Wang works only on Sundays.’
- d. Xiao Wang *xingqitian* *(*cai*) *gongzuo*.
 Xiao Wang Sunday only work
 Intended: ‘Xiao Wang works only on Sundays.’

- e. ta zhiyou hong-cha *(cai) he.
 he only red-tea only drink
 'He only drinks black tea.'

The above discussion shows that various restrictive or additive focus markers can be seen as context sensitive realizations of the same archi-form. Although each focus marker is listed in the lexicon as a single entry, it has a closer relationship to the other focus markers of the same type than to the focus markers of another type, and an abstract archi-form can be abstracted from the focus markers of the same type.

2.3.2 Against adjective status of prenominal focus markers

In this subsection I discuss the syntactic categorial status of focus markers, which have been taken to be adverbs generally. Adverbs have been assumed to be licensed by the head of a verbal projection (the term verbal projection is from Grimshaw 1991 and 1993) such as C, I, and V, since they adjoin to these projections (Travis 1988). Accordingly, the scope of an adverb is the complete XP to which it adjoins (Tang 1990). No adverb should have a scope exclusive to the Spec of XP which it adjoins to.⁴ For example, when an adverb adjoins to IP, its scope is the

⁴ English subject-oriented adverbs, as in (i), may scope over both the subject and the predicate. Such adverbs usually occur with stage-level predicates, rather than individual-level predicates. They are related to an event. A focus marker in Chinese can occur with individual-level predicates, as in (ii). In addition, a prenominal adverb in English can be distinguished from other categories such as an adjective morphologically, while a focus marker in Chinese has no morphological marker to show its category.

- (i) Eagerly, John chewed his nails.
 (ii) lian Lao Wang dou xihuan Jing-ju.
 even Lao Wang all like Beijing-opera
 'Even Lao Wang likes Beijing-operas.'

IP, rather than the Spec of IP, say, the subject. However, when a Chinese focus marker, which is claimed to be an adverb generally, occurs to the left of a subject, the scope of the focus marker can either be the whole IP, i.e. the whole sentence, or the subject only. There is no problem in the former situation: the adverb adjoins to IP and has scope over IP. However, in the latter situation, if the focus marker adjoins to IP, it should not have a scope which is the Spec of the IP. It seems that a presubject focus marker adjoins to Spec of IP, i.e., the subject DP, when the subject is focused, while it adjoins to IP when the whole IP is focused.

Similarly, if a focus marker precedes an adverbial nominal such as *zuotian* 'yesterday' in (8e), its scope can be either the adverbial nominal exclusively or the whole verbal projection to which the adverbial nominal adjoins. In the former case, a focus marker seems to adjoin to the nominal rather than to the verbal projection to which the nominal adjoins.

Furthermore, if a focus marker precedes a preverbal object, as in (6b) and (7b), its scope is the preverbal object only. Thus, again a focus marker seems to adjoin to a nominal rather than to a verbal projection.

Shyu (1995) assumes that a prenominal focus marker is an adjective and a focus marker elsewhere is an adverb. Sybesma (1996: 13) comments on Shyu's treatment of a focus marker, stating that "calling it an adjective is unfortunate, but the idea that it is adjoined to the phrase it forms a constituent with is correct." Sybesma does not explain why the adjective treatment of a prenominal focus marker is unfortunate.

It is true that focus markers which focalize a nominal are different from adjectives. The difference is shown in its position with respect to a demonstrative.

- (15) a. shì zheiwèi lǎo xiānshēng mǎi-le nèiben shū.
 FM this old gentleman buy-ASP that book
 'THIS OLD GENTLEMAN bought that book.'
- b. shì tā mǎi-le nèiben shū.
 FM he buy-ASP that book
 'HE bought that book.'
- c. *lǎo zheiwèi xiānshēng
 old this gentleman
- d. *gāogāode tā
 tall he
- (16) a. *zheiwèi shì xiānshēng mǎi-le nèiben shū.
 this FM gentleman buy-ASP that book
- b. *zheiwèi lǎo shì xiānshēng mǎi-le nèiben shū.
 this old FM gentleman buy-ASP that book
- c. zheiwèi lǎo xiānshēng mǎi-le nèiben shū.
 this old gentleman buy-ASP that book
 'This old gentleman bought that book.'
- d. nèiwèi gāogāode lǎo xiānshēng mǎi-le nèiben shū.
 that tall old gentleman buy-ASP that book
 'That tall old gentleman bought that book.'

(15) shows that adjectives do not occur to the left of a demonstrative, while focus markers do. (16) shows that focus markers do not occur to the right of a demonstrative, while adjectives do. Thus, although both an AP and a focus marker can adjoin to a nominal phrase, they have different structural positions. The former is lower than the latter. In this way, calling focus markers adjectives is indeed “unfortunate”.

The syntactic positions of Chinese demonstratives and functional projections of Chinese nominal expressions are controversial in the literature (Tang 1990, Cheng and Sybesma 1996, Li 1997). It remains undetermined within the analysis so far provided whether a prenominal focus marker occurs in Spec of DP, adjoins to DP, or occurs in some other position of a nominal expression if there is no DP in Chinese. However, it is clear that it cannot be an adjective.

If a focus marker can be merged to a nominal projection, it can be part of a nominal constituent. Thus a presubject focus marker can be part of the subject, a focus marker preceding an adverbial nominal can be part of the adverbial nominal, and finally, a focus marker preceding a preverbal object is part of the object. In section 2.4, I will discuss why a focus marker cannot occur with an in situ object.

2.3.3 M-command of *dou/cai* on focused elements

Recall that when an focused element occurs to the left of the focus marker *dou* or *cai*, another focus marker such as *lian* or *zhiyou* may occur in a sentence and adjoin to the focused element. *Dou* and *cai* are adverbs and occur to the left of a VP. This was shown in section 2.3.1. For example, in the following (17a), *lian* adjoins to the focused nominal *zheiben shu* ‘this book’,

while *dou* occurs to the left of the verb *kan* ‘read’. In (17b) *zhiyou* adjoins to the focused nominal *xingqitian* ‘Sunday’, while *cai* occurs to the left of the verb *xiuxi* ‘rest’.

- (17) a. wo lian zheiben shu *dou* kan le.
 I FM this book FM read ASP
 ‘I have even read THIS BOOK.’
- b. wo zhiyou xingqitian cai xiuxi.
 I only Sunday only rest
 ‘I rest only on Sundays.’

In this section, I show that the adverbs *dou* and *cai* must M-command the focused elements. Specifically, when *lian*, *shenzhi* or *shenzhi lian* adjoins to an element, *dou* must M-command the element, while when *zhi*, or *zhiyou* adjoins to an element, *cai*, if it shows up, must M-command the element.

If an additive or restrictive focus marker adjoins to a subject, which is at Spec of IP, *dou* or *cai* cannot be in vP. In the following sentences, the adjuncts *gei Xiao Wang* ‘for Xiao Wang’ and *yizhi* ‘all the time’ are vP or VP adjuncts, rather than IP adjuncts (Tang 1990, among others). Thus if *dou* or *cai* occurs to the left of these adjuncts, it is possible that *dou* adjoins to a projection of Infl, and M-commands the focused nominal which is adjoined by the focus marker *lian* or *zhiyou*, as in the (a) and (b) sentences below. However, if *dou* or *cai* occurs to the right

of these adjuncts, it adjoins to a projection of \bar{v} , and cannot M-command the focused nominal, which is at the Spec of Infl, as in the (a') and (b') sentences below.⁵

- (18) a. **lian** Lao Wu **dou** [gei Xiao Wang] zuo-le wan-fan.
 even Lao Wu all for Xiao Wang make-ASP evening-meal
 'Even Lao Wu made a supper for Xiao Wang.'
- a'. ***lian** Lao Wu [gei Xiao Wang] **dou** zuo-le wan-fan.
 even Lao Wu for Xiao Wang all make-ASP evening-meal
- b. **lian** Lao Wu **dou** [yizhi] baocun-zhe dianhua-dan.
 even Lao Wu all always keep-ASP phone-bill
 'Even Lao Wu always keeps the phone bills.'
- b'. ***lian** Lao Wu [yizhi] **dou** baocun-zhe dianhua-dan.
 even Lao Wu always all keep-ASP phone-bill
- (19) a. **zhiyou** Lao Wu **cai** [gei Xiao Wang] zuo wan-fan.
 only Lao Wu only for Xiao Wang make-ASP evening-meal
 'Only Lao Wu makes supper for Xiao Wang.'
- a'. ***zhiyou** Lao Wu [gei Xiao Wang] **cai** zuo wan-fan.
 only Lao Wu for Xiao Wang only make-ASP evening-meal
- b. **zhiyou** Lao Wu **cai** [yizhi] baocun-zhe dianhua-dan.
 only Lao Wu only always keep-ASP phone-bill
 'Only Lao Wu always keeps the phone bills.'

⁵ These data are in contrast to the data in which *dou* occurs in an eventuality quantificational sentence. See (285) - (288) of section 6.4.

- b'. ***zhiyou** Lao Wu [yizhi] **cai** baocun-zhe dianhua-dan.
 only : Lao Wu always only keep-ASP phone-bill
- (20) a. The structure of (18a,b) and (19a,b): *doucai* M-commands *lian/zhiyou*
 [_{IP} *lian/zhiyou* ... *doucai* [_{VP} vP-adjunct
- b. The structure of (18a',b') and (19a',b'): *doucai* does not M-command
lian/zhiyou
 *[_{IP} *lian/zhiyou* ... [_{VP} vP-adjunct ... *doucai*

However, if the focused nominal adjoined by the focus marker *lian* or *zhiyou* is a preverbal shifted object, which will be argued to be at Spec of vP in section 2.4, *dou* or *cai* is also in vP. Thus the M-commanding requirement is satisfied.

- (21) a. Lao Wu **lian** wan-fan **dou** [gei Xiao Wang] zuo-le.
 Lao Wu even evening-meal all for Xiao Wang make-ASP
 'Lao Wu even made a supper for Xiao Wang.'
- a'. Lao Wu [gei Xiao Wang] **lian** wan-fan **dou** zuo-le.
 Lao Wu for Xiao Wang even evening-meal all make-ASP
 'Lao Wu even made a supper for Xiao Wang.'
- b. Lao Wu **lian** dianhua-dan **dou** [yizhi] baocun-zhe.
 Lao Wu even phone-bill all always keep-ASP
 'Lao Wu even always keeps the phone bills.'

b'. Lao Wu [yizhi] **lian** dianhua-dan **dou** baocun-zhe.

Lao Wu always even phone-bill all keep-ASP

'Lao Wu even always keeps the phone bills.'

(22) a. The structure of (a, b): *dou/cai* M-commands *lian/zhiyou*

[_{VP} *lian/zhiyou* ... *dou/ca* ... vP-adjunct

b. The structure of (a', b'): *dou/cai* M-commands *lian/zhiyou*

[_{VP} vP-adjunct ... *lian/zhiyou* ... *dou/cai* [_{VP}

In addition, if the focused nominal is a subject, which is at Spec of IP, *dou* or *cai* can be either to the left or the right of an IP-adjunct, since in either case *dou/cai* M-commands the focused nominal. Adverb *jianjiande* 'gradually' has been argued to be an IP adjunct by Tang (1990: 146). (23) shows that *dou* can occur either to the left or the right of *jianjiande* 'gradually'.

(23) a. [*jianjiande*] **lian** Lao Wu **dou** bu chi rou le.

gradually even Lao Wu all not eat meat ASP

'Gradually even Lao Wu does not eat meat.'

b. **lian** Lao Wu [*jianjiande*] **dou** bu chi rou le.

even Lao Wu gradually all not eat meat ASP

'Gradually even Lao Wu does not eat meat.'

- c. **lian** Lao Wu **dou** [jianjiande] bu chi rou le.
 even Lao Wu all gradually not eat meat ASP
 ‘Gradually even Lao Wu does not eat meat.’
- (24) a. The structure of (23a): *dou* M-commands *lian*
 [_{IP} IP-adjunct ... *lian* ... *dou* [_{VP}
- b. The structure of (23b): *dou* M-commands *lian*
 [_{IP} *lian* ... IP-adjunct... *dou* [_{VP}
- c. The structure of (23c): *dou* M-commands *lian*
 [_{IP} *lian* ,... *dou* ... IP-adjunct [_{VP}

This M-command condition suggests that when *dou* or *cai* adjoins to a verbal projection, the focused element cannot occur in a higher different verbal projection. It seems that when *dou* or *cai* adjoins to a verbal projection, the head of the projection has some strong feature, and the focused element checks the strong feature. If the focused element adjoins to a higher projection, the strong feature will not be checked and the derivation will be cancelled. I leave this for further research.

2.3.4 Principle of Lexical Association

In section 2.2.1, we have seen the ambiguity of sentences of the pattern S--focus-marker--VO order, in that the possible focused element can be the verb, the direct object or the

whole predicate VP. Sentences of the pattern S-focus-marker-O-V, in contrast, do not show ambiguity. For example,

- (25) a. *ta shenzhi bei-guo zheipian sanwen.*
 he even memorize-ASP this prose
 i. 'He even memorized THIS PROSE.'
 ii. 'He even MEMORIZED this prose.'
 iii. 'He even MEMORIZED THIS PROSE.'
- b. *ta (lian) zheipian sanwen dou bei-guo.*
 'He even memorized THIS PROSE.'

This phenomenon can be accounted for by Tancredi's (1990) Principle of Lexical Association, which states that an operator like *only* must be associated with a **lexical** constituent in its c-command domain [i.e. not with the trace of an element]. The relevant English examples are:

- (26) a. He *only* likes Mary.
 b. Mary_i he *only* likes t_i
 c. Who_i does Mary *only* like t_i?

The word *only* associates with lexical elements *likes* and *Mary* in (a), with lexical element *likes* in (b), and with lexical element *like* in (c). Thus (a) is ambiguous, but not (b) and (c). Similarly,

in the above Chinese data, the focus marker *shenzi* C-commands the verb, the object and the whole predicate verb phrase in (25a), so any one of them can be focused. In (25b), however, the focus marker *lian*, which adjoins to the preverbal object DP, C-commands the preverbal object only, thus only the object is focused. The focus marker *dou* in this sentence M-commands the focused preverbal nominal, as discussed in the previous subsection.

2.4 Optionality and triggered strong features

2.4.1 Triggering Hypothesis

The SOV order introduced in section 2.2.1 above brings us two questions: whether this order is base-generated or arises from movement, and if it arises from movement, what is the syntactic motivation for the movement.⁶

Modern Chinese is generally taken to be an SVO language. That SVO order is a default order is shown by the fact that all SOV order sentences have a correspondent synonymous form of SVO order, while the other way around is not true: not all SVO sentences can have an SOV variation. Arguments for the moved rather than base-generated status of preverbal objects in the contrastive and the additive types of focusing can be found in Qu (1994) and Shyu (1995). Their arguments can also be applied to the restrictive type of focusing. Based on the default status of SVO order and the studies made by Qu (1994) and Shyu (1995), among others, I adopt the movement analysis for SOV order in Chinese.

⁶ In this chapter, I do not discuss the SOV order of Chinese BA-construction, which has long been studied (See Huang 1982 and Travis 1984, among others).

An assumption of the Minimalist Program is that all overt syntactic movement is driven by strong feature checking. Any movement that is not triggered by a requirement of morphological feature checking is excluded. This is known as Last Resort and Procrastinate. Accordingly, I propose that the preverbal object is moved from a postverbal position to check a strong feature. In other words, the syntactic motivation of object shift in Chinese is strong feature checking.

However, if the formal feature checked by the shifted object were strong in all cases in Chinese, we would expect that Chinese objects should always occur to the left of verbs, contrary to fact. Chinese is generally taken to be an SVO language, not an SOV language. With respect to object raising, Chomsky (1995: 352) claims that “the choice is arbitrary, forced, or unavailable as the language has optional, obligatory, or no overt object raising, respectively.” Obviously, the latter two choices are not applicable in Chinese. Object shift is neither obligatory nor absent in Chinese. Thus object shift in Chinese has been taken to be optional or arbitrary. In fact, this is not true. We have seen that a prenominal focus marker can adjoin to a shifted object, as in (21), but never to an in situ object (section 2.2.2). This fact implies that whenever a focus marker attaches to an object, the object must shift to a preverbal position. Thus, if movement of object in Chinese is driven by a strong formal feature, the strong value of the feature strength should be triggered by a focus marker which adjoins to the object DP. In other words, only when a focus marker is present with the object DP will the formal feature in the relevant functional head be strong. So there is a triggering relationship: a focus marker adjoined to the object DP triggers a strong feature in a functional head, and the object moves to the checking domain of the functional head to check the strong feature. This is different from the strong

feature checking in the current literature. My Triggering Hypothesis on formal feature strength is as follows:⁷

- (27) a. *The default strength of a feature varies across languages.*
 b. *The default state can be changed under certain conditions, e.g., the presence of a certain feature in the complement domain of x can trigger a change of a weak feature of x to strong.*

An example of a default strong feature is the strong [Q] of English interrogative C, satisfied by the movement of a WH phrase to Spec of CP, as in (28a) below, or by the merging of *whether* or *if* in CP, as in (28b). The strength of this feature is not triggered by anything.⁸

- (28) a. (guess) [_{CP} which book [_{IP} John gave to Mary]]
 b. I wonder [_{CP} whether [_{IP} he left yet]]

The idea of triggering is inspired by Marantz's (1991) 'Dependent Case'. His basic idea is that in some languages such as Icelandic the occurrence of a certain Case feature of one

⁷ It is unclear whether a default strong feature can be triggered to be weak.

⁸ One might say that the [Q] of a WH phrase triggers the strong [Q] of English C. However, in (28b), there is no [Q] before the CP is projected.

argument is dependent on the Case feature of another argument.⁹ My Triggering Hypothesis can further be exemplified by WH movement in Iraqi Arabic (data from Wahba 1991 and Simpson 1997). In this language, a WH phrase can remain in situ if it does not merge in a tensed embedded clause. If a WH phrase merges in a tensed embedded clause, it must either move to the Spec of matrix CP or co-occur with a sentence initial question particle (QP).

- (29) a. Mona shaafat meno?
 Mona saw whom
 'Who did Mona see?'
- b. Mona raadat [tijbir Su`ad [tisa`ad meno]]?
 Mona wanted to-force Su`ad to-help who
 'Who did Mona want to force Su`ad to help?'

⁹ In Icelandic, usually the subject is marked with nominative Case. However, the class of subject experiencer verbs exhibits a different distribution of Case marking: The subject is marked with dative Case, and the object is marked with nominative case.

- (i) a. Dagmamman bakaði brauðið.
 the day-mommy_{NOM} baked the bread_{ACC}
 'The day-mommy baked the bread.'
- b. Calvini líki verkið.
 Calvin_{DAT} like job-the_{NOM}
 'Calvin likes the job.'

(ia) exemplifies the unmarked case of Icelandic Case marking. In (ib) the nominative Case assignment to the subject is blocked by quirky Dative case, hence the object gets a chance to receive nominative Case. Marantz (1991) calls the structural, accusative Case in Icelandic a Dependent Case, because it is only assigned if nominative Case is assigned to another argument in the clause (also see Sauerland 1995: 230). This dependent Case feature exemplifies (27b) above: in Icelandic, the Accusative Case feature of the object argument is triggered by the presence of the Nominative Case feature of the subject argument. In (ib), the nominative object can check the [Nominative Case] of Infl by a covert movement to Infl. The dative subject might check the strong D of Infl only. The dative case as a lexical case does not conflict with a structural Case feature of Infl. A structural Case feature clash occurs only between two different structural Cases. For more discussion on case, see Levin and Massam (1985) and Bittner and Hale (1996a, 1996b).

- c. *Mona tsawwarat [_{CP} Ali istara sheno]?
 Mona : thought Ali bought what
 Intended: What did Mona think Ali bought?
- d. Sheno_i Mona tsawwarat [_{CP} Ali istara t_i]?
 what Mona thought Ali bought
 ‘What did Mona think Ali bought?’
- e. sh-tsawwarit Mona [Ali raah weyn]?
 QP-thought Mona Ali went where]
 ‘Where did Mona think Ali went?’
- f. (sh-)raadat Mona Ali ygaabal meno?
 (QP)wanted Mona Ali to-meet whom
 ‘Whom did Mona want Ali to meet?’

I thus assume that in languages such as Iraqi Arabic, in the default case, C does not have a strong formal feature for a WH movement. However, the strong feature of C can be triggered by a tense feature of its embedded INFL. This triggered strong feature must be checked by either a movement of a wh phrase or merging of a question particle. This example shows that a strong feature of a functional category can be triggered by a certain feature in the complement domain of the functional category.

Thus, it seems that language parameters are stated in terms of default strength of formal features, rather than in terms of absolute strength of formal features.

Let us return to Chinese object shift. Since there are both SVO and SOV orders in Chinese, it has been assumed that object shift in Chinese is optional (Qu 1994: 161, among others). The advantage of my Triggering Hypothesis is that it has more explanatory power than other optionality theories do, which also make reference to strong features, for example the arbitrary selection theory proposed by Branigan (1992: 47) in dealing with verb and object movement in English and French.¹⁰ In the view proposed here, an apparent optional movement is in fact explicitly rather than arbitrarily conditioned in the Triggering Hypothesis. If there is no focus marker adjoined to the object, no strong feature is triggered and thus no object shift is allowed.

Notice that the focus marker of a preverbal object is phonologically null in the case of the contrastive type of focusing and sometimes deletable in the cases of the additive and the restrictive types of focusing (See section 2.3.1). I assume that the ellipsis of a prenominal focus marker is a PF process.

- (30) a. Lao Wu (lian) wan-fan *dou* zuo le.
 Lao Wu even evening-meal all make ASP
 'Lao Wu even made the supper.'
- b. Lao Wu (zhiyou) wan-fan cai zuo.
 Lao Wu only evening-meal only make
 'Lao Wu only made the supper.'

¹⁰ Branigan (1992: 47) claims that "I conclude that in English, as in French, there is some optionality in the strength of features at the point at which lexical items are drawn from the lexicon. When an Agr or verb with strong features is chosen, then overt movement will be forced (and allowed by Procrastinate). When an Agr or verb with weak features is chosen, the overt movement will be disallowed by Procrastinate."

- c. Lao Wu (*shi) wan-fan zuo le.
 Lao Wu FM evening-meal make ASP
 'Lao Wu made the supper.'

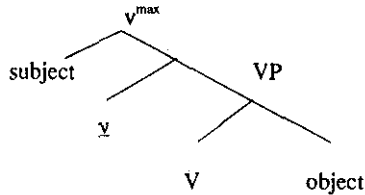
Triggering is a kind of syntactic dependency. It occurs in the computation system rather than in the numeration. It needs certain structural conditions, for example, only when a focus marker adjoins to an object, not other structural categories, will a feature of a certain functional head be strong. The triggering hypothesis departs from the current assumption that in the course of computation nothing is changed apart from rearrangements of lexical properties.

This triggering relation is the motivation of the three types of object shift in Chinese: objects move to check a strong feature of \bar{v} . The question why the strong feature is in \bar{v} is the topic of the next subsection.

2.4.2. Locality constraint on triggering?

According to Chomsky (1995: 232), only functional heads, such as C, I or \bar{v} (light verb, see Chomsky 1995), have strong formal features. Universally, he claims, a transitive verb has the following projections:

(31)



In this tree, Spec of \bar{v} is the base-position of a subject. The Case feature of the functional head I is always compatible with that of a nominative argument, since I or T has the feature [assign nominative Case] (Chomsky 1995: 277). If an argument, whether it is a subject or object, has a structural accusative Case feature, it is not compatible with the [assign nominative Case] feature of I. Thus an element with an unchecked accusative Case cannot check any feature of I. If it did, whatever feature it intended to check (e.g., [D] of I), the Case features would clash.¹¹

Chinese does not have any morphological case marking. In Chinese, the subject of a transitive verb has a structural nominative Case feature, while the direct object of a transitive verb has a structural accusative Case feature.

If an element moves overtly, it checks some strong feature of another element. Since only functional categories such as \bar{v} , I and C can have strong features, the landing site of an overtly moving element must be within the checking domain of a functional head. Since an accusative object is not compatible with I, object shift cannot land in the checking domain of I. However, since a shifted object must land in the checking domain of a functional head, it is

¹¹The [assign accusative Case] feature of V has been checked in the checking domain of \bar{v} before V adjoins to I to get its phi features checked by the subject. Thus by the time V moves to I, V does not contain any Case features. This assumption implies that object raising always precedes V-to-I raising.

assumed that a strong feature of \bar{y} is responsible for object shift (Chomsky 1995: 352).

Preposing of an object means moving of the object to the checking domain of \bar{y} .

Notice that one Spec of \bar{y} is filled by the trace of the subject. A shifted object must move to a different Spec of \bar{y} . The relative order of these two Specs of \bar{y} , according to Chomsky (1995: 358), is that the shifted object is at the inner Spec and the subject is at the outer Spec. This order is also compatible with Travis's (1993) and Koizumi's (1995: 102) Split VP hypothesis, which claims that the base position of a subject is higher than both of the base position and the derived position of an object (AgrOP).¹²

If a focus marker which adjoins to an object in Chinese triggers a strong feature, this strong feature can only be in \bar{y} . This locality restriction on the triggering is imposed by the feature compatibility requirement. We have just discussed why Infl cannot be the host of the strong feature responsible for accusative object shift. Thus, the landing site of a shifted accusative object cannot be a Spec of I. In addition, if a strong feature, say [D], were triggered in I, the subject, rather than the object, would be the closer checker.

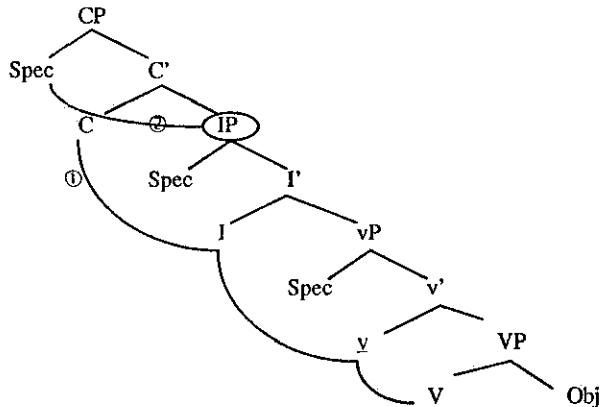
If, on the other hand, there is no potential feature clash between the moved element and the features of the functional head, long distance triggering is possible. In the Iraqi Arabic data shown above, the tense feature of an embedded I triggers a strong [Q] of the matrix C, so a WH phrase moves from an embedded clause to the matrix CP. There is thus no special locality constraint on triggering and the Triggering Hypothesis does not add any stipulations to the computational system.

¹² For more discussion on this issue, see Chomsky (1995 lecture notes) and Hornstein (1997a).

Theoretically, a focus marker which adjoins to an object can also trigger a strong feature in C. We have assumed that Chinese subjects are at Spec of I at PF. Thus if the triggered strong feature is in C, the shifted object should land at CP, which is to the left of IP, and the word order would be OSV, not SOV. Chinese does have OSV order. However, other possible derivations for OSV order are topicalization movement and base-generated dislocation. In this thesis I do not discuss OSV order and its derivations.

One might pursue the possibility of verb movement in the preverbal object constructions. Specifically, the transitive verb might move to C first, and IP, following Kayne (1994), might move to Spec of C later, as shown below:

(32)



However, this derivation is impossible, since we can have post-verbal elements in a construction where the object occurs to the left of the transitive verb:

- (33) a. wo jian-guo xiongmao san ci.
 I see-ASP panda three time
 'I have seen pandas three times.'
- b. wo xiongmao jian-guo san ci.
 I panda see-ASP three times
 'I have seen PANDAS three times.'

If the verb in (33b) is at C, the position of the post-verbal phrase, *san ci* here, is hard to explain.

2.4.3 Triggered [D] and the trigger's [Specificity]

Our next question is what kind of strong feature is checked in Chinese object shift. We have seen that the three types of object shift are focus-related. One might think that the triggered strong feature is [Focus], an uninterpretable feature, and that the focused object moves to the checking domain of \bar{y} to check the strong [Focus] feature of \bar{y} , as in the case that a WH phrase in English moves and checks the strong [Q] of C^0 . Alternatively, one can assume that the triggered strong feature on \bar{y} is a categorial feature [D]. It seems that there is no empirical difference between a [Focus] and a categorial feature hypotheses.¹³ I choose the categorial one unless it is proved to be wrong.

¹³ The strong feature checking in English interrogative sentences cannot be a categorial feature checking, although Chomsky (1995: 289) assumes that the checker feature might be {D}. In Zhang (1997b), I argue that if the strong feature is a categorial one, some undesirable result occurs. On the one hand, the strong feature of interrogative C can be checked by [V], according to Chomsky (1995: 290), thus it seems that either [V] or [D] can check a categorial feature of C; on the other, not all WH phrases have a [D] feature, although they are all able to check the strong feature of C.

The specificity requirement on the contrastive type of object shift has been pointed out by Tsao (1990) and Qu (1994), among others. The following (34b) and (36b) show that contrastive focused and restrictively focused non-specific objects cannot shift. However, nonspecific objects do raise in the additive type of object shift, as shown in (35b).

- (34) a. *ta baocun-le yixie jiu xinfeng.* (non-spe obj)
 he keep-ASP some old envelope
 'He has kept some old envelopes.'
- b. **ta yixie jiu xinfeng baocun (le).*
 he some old envelope keep (ASP)
- (35) a. *ta shenzhi baocun-zhe yixie jiu xinfeng.*
 he even keep-ASP some old envelope
 'He even keeps SOME OLD ENVELOPES.'
- b. *ta lian yixie jiu xin-feng dou baocun-zhe.*
 he even some old envelope all keep-ASP
 'He even keeps SOME OLD ENVELOPES.'
- (36) a. *ta zhi mai-guo yixie lansede yuanzhu-bi.*
 he only buy-ASP some blue ball-pen
 'He only bought SOME BLUE BALL-PENS.'
- b. **ta zhiyou yixie lansede yuanzhu-bi (cai) mai-guo.*

It has been claimed that nonspecific objects cannot be raised in Hindi, Persian, Turkish, Korean, Hungarian, and German (Karimi 1995). However, as shown above, Chinese does allow nonspecific and additively focused objects to shift. Since the present research is on object shift in general, and nonspecific objects can raise in some cases, I claim that the trigger feature is not necessarily [specificity] in Chinese.

2.4.4 Accusative Case and clause bound conditions of object shift

Chinese object shift is an Accusative Case related move. Elements which do not bear structural [Accusative Case] feature cannot shift. The following (37) and (38) are from Qu (1994: 68):

- (37) a. ta dao_{zai}-le di-shang.
 he fall-ASP floor-on
 ‘He fell onto the floor.’
- b. *ta di-shang dao_{zai}-le.
 he floor-on fall-ASP
- (38) a. bianlun chixu-le sange xiaoshi.
 debate last-ASP three hours
 ‘The debate lasted three hours.’
- b. *bianlun sange xiaoshi chixu-le.
 debate three hours last-ASP

- (39) a. ta shenzhi song-le yiben shu gei LaoLi.
 he even send-ASP one book to LaoLi
 'He even sent a book to LAOLI.'
- b. *ta lian LaoLi dou song-le yiben shu.
 he even LaoLi all send-ASP one book

According to the Minimalist program, languages vary with respect to which movements are overt and which ones covert, but all languages are assumed to have subject and object raising at some level for the purposes of morphological checking (Epstein, Thraisson and Zwart 1996: 40). The Accusative Case requirement of Chinese object shift indicates that Case checking is involved. According to Chomsky's (1995: 265) free-rider assumption, when a strong feature of a functional head is checked, all the uninterpretable formal features involved are checked as free-riders. In the case of object shift here, Accusative Case feature is checked along with the triggered strong feature. Thus, we do not need to take object shift to be a movement of an object to Spec of Agr_0 solely for the sake of checking Accusative Case feature, as assumed by Qu (1994). This is a desirable outcome, since objects do not always move overtly, suggesting that the Case feature is not strong in Chinese.

Object shift in Chinese is also sensitive to the clause bound locality condition (Qu 1994, among others). Compare (b) and (c) of the following.

- (40) a. LaoWu renwei [_{CP} LaoLi hen xihuan neiben shu]
 LaoWu think LaoLi very like that book
 ‘LaoWu thinks that LaoLi likes that book very much.’
- b. LaoWu renwei [_{CP} LaoLi neiben shu_i hen xihuan t_i]
 LaoWu think LaoLi that book very like
 ‘LaoWu thinks that LaoLi likes that book very much.’
- c. *LaoWu neiben shu_i renwei [_{CP} LaoLi hen xihuan t_i]
 LaoWu that book think LaoLi very like
- (41) a. LaoWu renwei [_{CP} LaoLi shenzhi hen xihuan neiben shu]
 LaoWu think LaoLi even very like that book
 ‘LaoWu thinks that LaoLi even likes that book very much.’
- b. LaoWu renwei [_{CP} LaoLi lian neiben shu_i dou hen xihuan t_i]
 LaoWu think LaoLi even that book all very like
 ‘LaoWu thinks that LaoLi even likes that book very much.’
- c. *LaoWu lian neiben shu_i dou renwei [_{CP} LaoLi hen xihuan t_i]
 LaoWu even that book all think LaoLi very like
- (42) a. LaoWu renwei [_{CP} LaoLi zhi xihuan neiben shu]
 LaoWu think LaoLi only like that book
 ‘Lao Wu thinks that Lao Li only likes that book.’
- b. LaoWu renwei [_{CP} LaoLi zhiyou neiben shu_i cai xihuan t_i]
 LaoWu think LaoLi only that book only like
 ‘Lao Wu thinks that Lao Li only likes that book.’

- c. *LaoWu zhiyou neiben shu_i cai renwei [_{CP} LaoLi xihuan t_i]
 LaoWu only that book only think LaoLi like

However, restructuring can unify the domains of the embedded nonfinite verb and the matrix control verb into one complex, thus licensing long distance object shift, shown in the following. The embedded object appears to the left of the matrix verb.

- (43) a. LaoLi dasuan [PRO fanyi pengtiao de shu].
 LaoLi plan PRO translate cook DE book
 'LaoLi has planned to translate cookbooks.'
- b. LaoLi pengtiao de shu_i dasuan [PRO fanyi t_i]
 LaoLi cook DE book plan translate
 'LaoLi plans to translate COOKBOOKS.'
- c. LaoLi lian pengtiao de shu_i dou dasuan [PRO (*dou) fanyi t_i]
 LaoLi even cook DE book all plan (all) translate
 'LaoLi even plans to translate COOKBOOKS.'
- d. LaoLi zhiyou pengtiao de shu_i cai dasuan [PRO (*cai) fanyi t_i]
 LaoLi only cook DE book only plan (only) translate
 'LaoLi plans to translate COOKBOOKS only.'

The assumption that restructuring has taken place is supported by the position of the focus markers *dou* and *cai*, which must adjoin to the matrix verbal projection, not the embedded one, as shown in (43c) and (43d).

2.5 Negation and object shift

2.5.1 Chinese sentence negation

A sentence negation marker has scope over a whole sentence and thus gives negative value to the sentence (Haegeman 1995: xi).¹⁴ There are two negation markers in Chinese: *bu* and *mei(you)*. Both of them can be used either as a constituent negation marker or as a sentential negation marker. The following sentences show their role as a constituent negation marker.

- (44) a. zheiben shu zui mei-yisi.
 this book most not-interesting
 ‘This book is the least interesting one.’

¹⁴ In this thesis, I do not distinguish predicate negation from sentence negation. The distinction between predicate negation and sentence negation (metalinguistic negation) is shown by the two readings of (i). The external reading in (i) is metalinguistic negation, which is in the context of (ii).

- (i) The king of France is not bald.
 a. INTERNAL: [The king of France is not-bald]
 b. EXTERNAL: [not (the king of France is bald)]
 (ii) The king of France is not bald -- (because) there is no king of France.

For a study of negation words *bu* and *meiyou* with respect to metalinguistic negation, see Hsieh (1996).

- b. ni de hua tai mei-daoli le.
 you DE word too not-reason ASP
 ‘What you say is without reason.’
- c. bu-deng-hao
 not-equal-symbol
 ‘sign of inequality’ (≠)

When *bu* and *mei(you)* are used as sentence negation markers, they differ in eventuality type. Eventuality is a general term referring to both event processes and states (Bach 1980). Unbounded eventualities consist of permanent states and activities such as habitual actions, while bounded eventualities cover various processes and states which have at least one temporal boundary. The latter has a starting and/or endpoint which constitutes the goal or outcome of the event. In contrast, the former has arbitrarily a starting and/or endpoint and can start and stop at any time. Thus bounded eventualities can be completed or terminated, while unbounded eventualities can only be terminated. Bounded eventualities use *mei(you)*, while unbounded eventualities use *bu*.

- (45) a. ta bu bao-zhe zhentou shuijiao
 he not hold-ASP pillow sleep
 ‘He does not sleep by holding a pillow.’

- b. ta zuotian mei bao-zhe zhentou shuijiao
 he yesterday not hold-ASP pillow sleep
 'He did not sleep by holding a pillow yesterday.'
- (46) a. ta bu qu Meiguo.¹⁵
 he not go States
 'He will not go to the States.'
- b. ta mei qu Meiguo.
 'He did not go to the States.'
- c. ta mei qu-guo Meiguo.
 he not go-ASP States
 'He has not been to the States.'
- d. *ta bu qu-guo Meiguo.
 he not go-ASP States

The contrast between the (a) and (b-c) sentences above is in the boundedness of the eventuality. Sentence (d) shows the conflict, and the sentence is unacceptable. Thus Chinese Neg has aspect features. We will discuss the interactions between negation words and the sentence final aspect particle *le* in section 4.5.2.

¹⁵ *Qu Meiguo* 'go to the States' is a bounded eventuality. However, in this sentence a modality meaning is implied and the negation word *bu* in fact negates the modality rather than the bounded eventuality.

2.5.2 Object raising and NegP

A shifted object occurs to the left of the negation word in a negative sentence. This is true for all the three types of object shift. The (b) sentences of (47) and (48) show object shift of the contrastive focusing, the (b) sentences of (49) and (50) show object shift of the additive focusing, and the (b) sentences of (51) and (52) show object shift of the restrictive focusing. (47), (49) and (51) have the negation word *mei*, while (48), (50) and (52) have the negation word *bu*. The (c) sentences in all of these data are unacceptable, because the shifted object occurs to the right of the negation word.

- (47) a. ta mei kan-guo zheiben shu.
 he not read-ASP this book
 'He has not read this book.'
- b. ta zheiben shu mei kan-guo.
 he this book not read-ASP
 'He has not read THIS BOOK.'
- c. *ta mei zheiben shu kan-guo.
 he not this book read-ASP
- (48) a. ta bu xihuan zheiben shu.
 he not like this book
 'He does not like this book.'

- b. ta zheiben shu bu xihuan.
 he this book not like
 'He does not like THIS BOOK.'
- c. *ta bu zheiben shu xihuan.
 he not this book like
- (49) a. ta shenzhi mei kan-guo zheiben shu.
 he even not read-ASP this book
 'He has even not read this book.'
- b. ta lian zheiben shu dou mei kan-guo.
 he even this book all not read-ASP
 'He has even not read THIS BOOK.'
- c. *ta mei lian zheiben shu dou kan-guo.¹⁶
 he not even this book all read-ASP
- (50) a. ta shenzhi bu xihuan zheiben shu.
 he even not like this book
 'He even does not like this book.'

¹⁶ Lisa Cheng (personal communication) gave me the following sentence, where the shifted object occurs to the right of the negation word:

- (i) ta meiyou lian zhege beizi dou xiang na.
 he not even this cup all want take
 'He did not want to take even THIS CUP away.'

I have no explanation for this.

- b. ta lian zheiben shu dou bu xihuan.
 he even this book all not like
 'He even does not like THIS BOOK.'
- c. *ta bu lian zheiben shu dou xihuan.
 he not even this book all like
- (51) a. ta mei kan-guo zheiben shu.
 he not read-ASP this book
 'He has not read this book.'
- b. ta zhiyou zheiben shu mei kan-guo.
 he only this book not read-ASP
 'Only THIS BOOK He has not read.'
- c. *ta mei zhiyou zheiben shu kan-guo.
 he not only this book read-ASP
- (52) a. ta bu xihuan zheiben shu.
 he not like this book
 'He does not like this book.'
- b. ta zhiyou zheiben shu bu xihuan.
 he only this book not like
 'Only THIS BOOK he does not like.'
- c. *ta bu zhiyou zheiben shu xihuan.
 he not only this book like

Similarly, in German, a shifted object must occur to the left of a sentential negation word (Hauptmann 1994, Santelmann 1994):

- (53) weil Johann das Buch nicht kaufte
 because J. the book not bought
 ‘‘because J. did not buy the book.’’

In Romanian, a preverbal focused object must also occur to the left of a negation word. The following example is from Motapanyane (1997: 18):

- (54) Nimeni [nimic] nu ti-ar face fara pile.
 nobody nothing not to-you would do without connections
 ‘There’s nothing anyone would do for you if you do not have connections.’

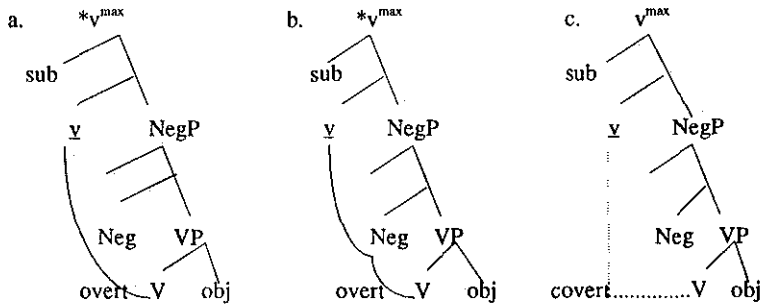
Motapanyane (1997) claims that in this sentence, *nimic* ‘nothing’ is in a focus position, which is to the left of the negation word *nu* ‘not’. In West Flemish, a shifted object also occurs to the left of a negation word (Haegeman 1995).

Following Santelmann (1994), Hauptmann (1994) and Haegeman (1995), who claim that NegP is situated between AgrOP and VP, I assume that NegP in Chinese is beneath v^{max} and above VP, since in the present version of the Minimalist Program (Chomsky 1995) v^{max} takes all the functions of AgrOP of the previous version of the Minimalist Program, as well as hosting the

subject. The above data suggest that the strong feature checking by object shift is carried out in v^{max} , which is to the left of NegP.

According to Chomsky (1995), V has to adjoin overtly to \bar{y} to assign a theta role to the subject, which is merged at Spec of \bar{y} . If NegP is between v^{max} and VP, and if the V-to- \bar{y} adjunction is overt in Chinese, we predict that either a negation word is to the right of a verb, if the negation word remains in situ, as shown in (55a); or a negation word and a verb will be adjacent all the time, if the verb first adjoins to Neg and then [Neg-V] adjoins to \bar{y} , as shown in (55b). The data in (56) and (57) prove both of these predictions to be wrong:

(55)



- (56) a. ta mei zuo wan-fan.
 he not make evening-meal
 'He did not make his supper.'
- b. *ta zuo mei wan-fan.
 he make not evening-meal

- (59) a. ta shi mei chi zaofan.
 he FM not eat breakfast
 'He indeed did not eat breakfast.'
- b. ta shenzhi bu xihuan xiongmao.
 he even not like panda
 'He even does not like pandas.'

Based on this co-occurrence fact, I assume that Chinese focus markers always adjoin to an element, such as a nominal DP, a PP, VP, Σ P, vP, IP, or a verb. In the above two sentences, focus markers *shi* and *shenzhi* adjoin to either Σ P or vP. Focus markers do not have uninterpretable features and they never head a functional category.¹⁷

2.6 Conclusions

In this chapter, based on the investigation of Chinese object shift, I have made one major theoretical claim, namely, that the strength of a feature can be triggered to be strong. This claim implies that languages differ in default strength of a formal feature, rather than in terms of absolute strong/weak parameters. Empirically speaking, I have presented a unified analysis of the three types of object shift. They are all triggered in the same way, having the same locality constraints and landing at the same position with respect to a negation word. I have also described the syntactic properties of various focus markers. Furthermore, an additively or

¹⁷ For a different approach, see Shyu 1995, which claims a FocusP in Chinese.

restrictively focused nominal is M-commanded by another focus marker. Overall, this chapter reveals one checking dependency in Chinese syntax: focus-related object raising.

- (57) a. ta mei [_{PP} gei wo] zuo wan-fan.
 he not for I make evening-meal
 'He did not make a supper for me.'
- b. *ta mei zuo [_{PP} gei wo] wan-fan.
 he not make for I evening-meal
- c. *ta [_{PP} gei wo] mei zuo wan-fan.
 he for I not make evening-meal

To avoid these wrong predictions, I assume that V-to-y movement in Chinese is covert, as shown in (55c). Thus a sentence negation word always occurs to the left of a verb, and it can be separated from the verb by a phrase. Boskovic and Takahashi (1995) claim that theta features are strong in English. Presumably, theta features are weak in Chinese.

Notice that overt object raising in Chinese does not require overt V raising, contrary to Holmberg's Generalization (HG). However, Chinese does not need to follow HG. First, HG is not a syntactic constraint. Holmberg (1996) argues that object shift in Scandinavian languages, which has been assumed to be the evidence for HG, is a PF-movement. He restates HG as *"*Obj Adv X, unless X is phonologically empty."* He also claims that "HG cannot be explained by conditions on derivation, observing cyclicity." Second, object shift in Chinese differs from that in Scandinavian languages in that a shifted object in Scandinavian languages must be [-focus] (Holmberg 1996), while in contrast, a shifted object in Chinese must be [+focus]. Thus the interactions between the focus feature of an object and the movement of an object or a verb

might be different in these two types of languages. Third, in languages such as Finnish HG does not hold (Koskinen 1996). Thus, it is not a flaw in our analysis that Chinese does not follow HG.

2.5.3 Focus markers and ΣP

Laka (1994) argues that the features of functional head Neg can be either [negation] or [emphatic affirmation], and these two features are in complementary distribution. That this is the case for English is shown by the following paradigm:

- (58) a. I didn't, as Bill thought, go to the store
 b. I *did*, as Bill thought, go to the store
 c. *I *did* not, as Bill thought, go to the store

In the above (a), Neg has [negation], while in (b) Neg has [emphatic affirmation]. These two features cannot co-occur, as shown in the unacceptable form of (c). Thus instead of Neg, she terms the relevant functional head Σ , to cover both negation and emphatic affirmation features.

Unlike the English emphatic affirmative word *did* in the above (b) sentence, Chinese preverbal focus markers do not fill the head of Σ independently. They are not in complementary distribution with a negation word, since they can co-occur with a negation word.

3.1 Introduction

According to Chomsky (1995), overt movement of an element can be optional, forced or unavailable in a given language: We have shown in Chapter 2 that the so called optional object shift in Chinese is in fact a triggered obligatory move. An object raises to check a triggered strong feature of \bar{v} . The unavailability of a certain overt movement means lack of the corresponding strong feature. The best relevant example in Chinese is WH movement. Chinese does not have overt WH movement. Thus in Chinese C, there is not a strong feature which needs to be checked by a WH phrase. However, this claim does not mean that there is no strong feature in Chinese C. In this chapter and the next one, I will argue for the strong feature checking of Chinese C. The content of this chapter shows that in Chinese if C is specified with a certain aspect feature, it has a strong [V] feature. The strong [V] of C forces overt raising of an I element which has [V] and compatible aspect features.

Three major issues will be discussed in this chapter. One is Chinese Infl. Is there any evidence for Chinese Infl? (section 3.2.1) What is the relationship between an aspect suffix and the notion of finiteness? (section 3.2.2) The second issue is the relation between a modal and Infl (section 3.2.3). The third issue is the syntactic properties of the sentence particle *le* (section 3.3.1). All of these issues have been discussed at length in the literature. The conclusions made by previous studies are controversial. These issues however are crucial to any approach to Chinese clause structures and functional projections.

This chapter is divided into two parts. Section 3.2 is about Chinese IP and Section 3.3 is on strong feature checking of C. The controversial issues mentioned above are discussed in the subsections of these two sections. Section 3.4 is a summary.

3.2 Chinese IP

In current work on Chinese syntax, there are two conflicting assumptions about Chinese Infl. Huang (1989) claims: “In Chinese, there is a fairly systematic distinction between finite and non-finite clauses which may be made on the basis of the potential occurrence of any element of AUX category (such as an aspect marker or a modal).” On the contrary, Xu (1994) and Y. Huang (1992) argue that since both aspect markers and modals can occur in the complement of control verbs, no distinction between finite and non-finite clauses can be made in Chinese. Thus there might be no IP in Chinese.

In this section, I will address three issues. Is there IP in Chinese? If yes, is an aspect suffix on the verb a finite marker? Finally, where are modals merged? I will leave the sentence final aspect particle *le*, which is not a verbal suffix, to section 3.3.

3.2.1. The feature of [Finite] in Chinese

In Chomsky (1995), I or T (I henceforth) can have [D], [Case] (p. 278) and [+/-Finite] (p. 240) features. These uninterpretable features are checked by the [D] feature of a subject

(including PRO) or an expletive, the [Case] feature of a subject and the [+/-Finite] feature of a verb respectively, either overtly or covertly.

The types of I^0 and their features are summarized by Watanabe (1993) as the following:

- (60) a. Finite T^0 bears a Nominative Case feature.
 b. Infinitival T^0 bears a Null Case feature, which is for PRO only.

According to Chomsky and Lasnik (1993), PRO must bear Case. The Case PRO bears is called Null Case. In addition, only PRO can bear Null Case. Hornstein (1996b, 1997b) argues that PRO of obligatory control (OC) is the residue of movement, i.e. it is equivalent to an NP trace, and PRO is what we call an NP-trace when movement is to a theta position. PRO of Non-obligatory control (NOC), however, is a null pronoun, i.e. *pro*. Instead of the Null Case hypothesis, he proposes that OC PRO is an NP trace of its 'controller'. The controller checks its Case feature in the higher selecting clause. NOC PRO, on the other hand, does not have a Case feature. He claims that both OC PRO and NOC PRO are restricted to the Spec of non-finite I. (p. 19).

Regardless whether or not Hornstein is right on his analysis of PRO, a generally recognized fact is that a special kind of empty category is related to non-finite Infl. This empty category has the following properties. It is merged as an argument to a verbal projection,¹⁸ it is

¹⁸ PRO usually is an external argument. However, in English sentences such as the following, PRO can be an internal argument. Chinese does not have a corresponding form.

- (i) They want PRO_i to be seen _{t_i} by the audience.

assigned a theta role by the verb, and it can never be replaced with a nominative nominal (NP or pronoun). In other words, the subject being obligatorily null is related to the non-finiteness of I.

In Chinese, there is no evidence for temporal tense (see Cheng and Tang 1996, among others). Thus [+/-Finite] features do not relate to tense morpheme of a verb. However, the empty category mentioned above, the obligatorily null subject, does exist in Chinese and contrasts with other kinds of subjects. Sentences like (61) contrast with (62) in that they allow only null subjects.

- (61) a. ta shitu PRO mousha wo.
 he try PRO murder me
 He tried to kill me.
- b. *ta shitu ta mousha wo.
 he try he murder me
- c. *ta shitu Lao Wang mousha wo.
 he try Lao Wang murder me
- (62) a. Xiao Wang_i shuo [pro_i kandao-le Lao Li]
 Xiao Wang say [pro see-ASP Lao Li
 ‘Xiao Wang said that he had seen Lao Li.’
- b. Xiao Wang_i shuo [ta_i kandao-le Lao Li]
 Xiao Wang say [he see-ASP Lao Li
 ‘Xiao Wang said that he had seen Lao Li.’

- b. Xiao Wang shuo [Lao Wang kandao-le Lao Li]
 Xiao Wang say [Lao Wang see-ASP Lao Li]
 'Xiao Wang said that Lao Wang had seen Lao Li.'

In the complement clauses of certain verbs, normally called control verbs, the subject, which bears an independent theta role, cannot be realized phonologically.¹⁹ According to a generally accepted assumption, [-finite] Infl⁰ has a checking relation with an obligatorily null subject, which is PRO. If the contrast between an obligatorily null subject and an overt subject exists in Chinese, the contrast between [+finite] and [-finite] must occur in Chinese, and thus the functional category I is required in Chinese.

3.2.2. Aspect suffixes and Infl

This section argues that aspect suffixes on verbs are not finite markers in Chinese, contrary to Huang (1989) (see the citation on page 62).

Verbs whose subjects must be null do allow aspect markers, as pointed out by Xu (1994) and Y. Huang (1992). Compare (63a) with (63b):

¹⁹ See Chang and Tang (1995) for a detailed classification of Chinese control verbs.

- (63) a. Wo qing ta [PRO chi-guo fan].
 I invite him eat-ASP meal
 'I have invited him to have a dinner.' (And he ate.)
 (The invitation was accepted.)
- b. Wo qing-guo ta [PRO chi fan].
 I invite-ASP him eat meal
 'I have invited him to have a dinner.' (He may or may not have eaten.)
 (The invitation may or may not have been accepted.)

Guo is a stative perfect aspect marker (Smith 1994). It occurs with the embedded infinitival verb *chi* 'eat' in (63a). The scope of this aspect marker is the lower clause, denoting the completion of the eating. The scope of *guo* in (63b) is the matrix clause, denoting the completion of the inviting. The sentence does not specify whether the act of eating is completed or not.

Li (1990) assumes that although an embedded verb such as *chi* 'eat' in (63a) can take an aspect marker, this aspect marker can only be linked to the matrix verb. She claims that aspect suffixes are finite markers, and that infinitivals thus do not allow an aspect marker. But comparing (63a) with (63b), we find that when the aspect marker *guo* is suffixed to a verb in the complement clause it has a meaning different from when it is suffixed to the matrix verb. Infinitivals therefore do allow independent aspect markers.

For control verbs, the event expressed by a control verb and the event expressed by its infinitival complement must be related. Let us call them control event and complement event respectively. There are two possible temporal relations. One is that a control event is before the complement event: a sequential relation. The other is that a control event and the complement event are at the same time: a simultaneous relation.²⁰

For sequential cases, the attachment of the aspect marker to the matrix verb or to the embedded verb makes a difference to the interpretation, as shown in (63) above.

For simultaneous cases, as shown in (64), the attachment of an aspect marker to the matrix verb or to the embedded verb has no effect on the scope of the aspectual viewpoint for the whole sentence (Here the term “view point” is in the sense of Smith (1994). Perfect and imperfect are two major viewpoints.). In either case, *guo* means the completion of both actions. But the contrastive meaning or the scope of the emphasis is different.

- (64) a wo pei Lisi [PRO guang-guo gongyuan].
 I accompany Lisi PRO stroll-ASP park
 I have accompanied Lisi to stroll in a park.
 (this is one of the things we did.)
- b. wo pei-guo Lisi [PRO guang gongyuan].
 I accompany-ASP Lisi PRO stroll park
 I have accompanied Lisi to stroll in a park.
 (this is one of the things I did.)

²⁰ A similar discussion on the temporal relation between a matrix verb and its infinitival complement, and between a gerund and its control verb in English can be found in Stowell (1982: 563). For another study on the temporal semantics of English verbs, see Cowper (1991).

In (64a), the scope of the emphasis is both the control event and the complement event. However, in (64b), the scope of the focus is the control event only. It is narrower than that of (64a).

Since an aspect marker suffixed on a verb in a complement clause gives a different meaning from the one suffixed on the matrix verb, it cannot be the case that an aspect marker on the embedded verb is construed with the matrix verb. There is a contrast between the presence and the absence of an aspect suffix on the embedded verb, as shown in (63). Therefore, aspect suffixes can occur in either finite or non-finite clauses.²¹ They are irrelevant to the distinction between finite and non-finite clauses. Chinese aspect suffix, unlike English tense marker, therefore does not correlate with the distinction between Nominative Case and Null Case.

In Chinese all aspect markers indicate a realis with respect to a reference time. The obligatory absence of an aspect marker contrasts with other cases in that it indicates an irrealis meaning with respect to a reference time. Aspect features indicated by a verbal suffix are interpretable, because they encode certain temporal relation between an eventuality and a reference time. According to Chomsky (1995), interpretable features do not need checking. Unless aspect suffixes have some uninterpretable features, they do not enter into checking relation with features of another element (See Cheng 1989 for a discussion on Chinese aspects and Cowper 1997 for a discussion on realis features).

In section 3.3 I will show that unlike aspect suffixes, the aspect particle *le*, which is an independent word occurring at the end of a sentence, does relate to Infl.

²¹ Further studies are required to explain why aspect suffixes such as *guo* cannot occur with both a control verb and the embedded verb simultaneously.

3.2.3. Chinese modals and Infl

Modality, or mood, is the semantic category through which speakers convey their attitude toward the truth of their assertions (called epistemic modality) or express obligation, permission, or suggestion (called root modality). The sentences in the following pairs differ as to their epistemic modality.

- (65) a. She has **probably** left town by now. (probability)
 b. She has left town by now. (assertion)
- (66) a. Harry **must**'ve been very tall when he was young. (conjecture)
 b. Harry was very tall when he was young. (assertion)
- (67) a. They **may** come to the party. (possibility)
 b. They are coming to the party. (assertion)

And those in the following pairs differ as to their root modality.

- (68) a. He **must** come tomorrow. (command)
 b. He is coming tomorrow. (statement)
- (69) a. They **may** take the dishes away. (permission)
 b. They are taking the dishes away. (statement)

The two types of modality are interrelated, as witnessed by the fact that the same words (*must* and *may*, among others) can denote either type, depending on the context. Modality may be expressed through auxiliary verbs, such as *may*, *should*, or *must*, which are called modal auxiliaries; through modal verbs like *order*, *assume*, and *allow*; through modal adverbs like *possibly* or *certainly*; and in some languages through affixes attached to verbs or nouns. The latter type is common in American Indian languages (Finegan 1994).

From the above introduction, we can see that the syntactic categorial realizations of modality are different across languages, and even within one language.

The distinctions between modal adverbs and other modal words in Chinese can be shown by tests such as VP ellipsis. In the following, those that cannot occur in the VP ellipsis constructions are modal adverbs. Those that can are not adverbs. I will call the latter group “modals”. Modal adverbs appear in (70a) and (70b), while modals appear in (70c) and (70d).

- (70) a. *LaoWang kening mai-le neiben shu, XiaoLi ye kening.
 LaoWang surely buy-ASP that book XiaoLi also surely
- b. *LaoWang dagai mai-guo neiben shu, XiaoLi ye dagai.
 LaoWang possibly buy-ASP that book XiaoLi also possibly
- c. LaoWang keneng mai-guo neiben shu, XiaoLi ye keneng.
 LaoWang might buy-ASP that book XiaoLi also might
 ‘LaoWang might have bought that book, so might XiaoLi.’

- d. LaoWang yinggai mai neiben shu, XiaoLi ye yinggai.
 LaoWang should buy that book XiaoLi also should
 'LaoWang should buy that book, so should XiaoLi.'

Some Chinese modals, such as *yinggai*, *yingdang*, *gai* 'ought to, should', *neng* 'may, be able to, has permission to', *hui* 'be able to, will, know how', *dei* 'must, ought to' have both epistemic and root readings. Others, such as *nenggou* 'be able to', *keyi* 'be able to, has permission to', *gan* 'dare', *ken* 'be willing to', *bixu* 'must, ought to', have only a root reading (Lü 1981, Li and Thompson 1981: 182).

One of the current assumptions about Chinese modals is they are all base-generated at the head of MP (modal phrase, also called IP) (Cheng 1991). An alternative view is that epistemic modals are Infl words and root modals are words in the head of 'predicate', a functional projection lower than IP (Tang 1990). A third assumption is that all modals are verbs and epistemic modals are raising verbs and root modals are generally control verbs (Lin and Tang 1996). This assumption claims that unlike epistemic modals, root modals assign a thematic role to their subject. The suggestion that epistemic modals are raising verbs which do not assign a thematic role to their subject whereas root modals are control verbs which do assign a thematic role to their subject goes back at least to Ross (1969), Kiparsky (1970), and Perlmutter

(1970).²² Huang (1988) made a similar suggestion for Chinese, namely that epistemic modals appear in raising constructions, while root modals head control constructions, since the root modals semantically select their subjects, while epistemic modals do not. I support Huang's (1988) and Lin and Tang's (1996) claim, and will discuss constructions of Chinese modals in control complements and stacked modals, and the interactions of modals with aspect suffixes, with focus markers, and with complement shift. In this discussion I will show why epistemic modals occur only in finite clauses.

Chinese modals have two properties consistently. First, they do not take a nominal complement. If a modal is either a control verb or a raising verb, it does not c-select nominals. Thus modals differ from canonical transitive verbs.

Second, Chinese modals do not take any of the aspect suffixes. In this way they are different from ordinary verbs. Epistemic modals do not bear aspect features, because the speaker's attitude toward the truth of his or her assertions is always contemporaneous with the moment of speech. This temporal notion is not a durational one. Chinese does not have any aspect marker to encode a non-durational moment of speech.²³ If a temporal expression co-occurs with an epistemic modal, it is always construed with the eventuality expressed by the assertion, rather than with the speaker's attitude toward the truth of the assertion. In the

²² Boskovic (1994) argues against a control analysis of English root modals. He claims that since the complement of a modal lacks *to*, it does not have an IP. Thus if PRO appears in a bare VP, as in (i), it will be governed.

(i) John can [_{VP} PRO swim]

This argumentation has no bearing on Chinese, where the presence of an IP does not depend on any overt marker corresponding to English *to*.

²³ The adverb *zhengzai* 'right now' and the aspect suffix *-zhe* are compatible with durational temporal notion.

following sentence, *qu-nian* 'last year' is related to the asserted *qu-guo Meiguo* 'have been to the States,' rather than *yinggai* 'might'.

- (71) ta qu-nian yinggai qu-guo Meiguo.
 he last-year might go-ASP States
 'He might have been to the States last year.'

Root modals, however, bear an intrinsic [-realis] aspect feature, which takes a null form in Chinese. Root modals select [+imperative] CP, and the verb of this imperative CP also bears [-realis] (McGinnis 1993, Cowper 1997).

In subsections 3.2.3.1 through 3.2.3.5 below, I will discuss five issues regarding Chinese modals. These issues have not been explored in the literature.

3.2.3.1. Modals in control complements

Modals in the epistemic reading cannot occur in the complement of a control verb, while modals in the root reading can. Generally, *bixu* can only be a root modal, while *dei* can be either a root modal or an epistemic modal.

- (72) ta bi wo PRO bixu zai liang-tian nei wancheng. (Xu 1994)
 he force me PRO must at 2-day in complete
 'He forced me to complete (the job) within two days.'

- (73) a. ta zhun dei lai.
 he certainly will come
 ‘He will certainly come.’ (epis)
- b. ta dei lai.
 he must come
 ‘He must come.’ (root)
- c. ta bi wo PRO dei zai liang-tian nei wancheng.
 he force me PRO must at 2-day in complete
 ‘He forced me to complete (the job) within two days.’
 (*dei* is an ambiguous modal, but here it has only a root meaning.)

These examples show that epistemic modals cannot occur in the complement of a control verb, while root modals can. As we know, control verbs usually encode an illocutionary force. The eventuality expressed by the control complement clause and the eventuality expressed by the control verb must have a certain kind of temporal, cause-result, or other logical relation. However, a speaker’s attitude toward the truth of his or her assertions is always independent of another eventuality. Not only epistemic modals, but also epistemic adverbs, both of which express a speaker’s attitude, are absent in the complement clause of control verbs.

- (74) *He forced her PRO to have **probably** left town by now.

The above discussion shows that root modals can occur in infinitival clauses, while epistemic modals cannot.

3.2.3.2. Double modals

An epistemic modal in Chinese can immediately be followed by another modal. In (75a) the first modal has an epistemic reading, while the other one has a root reading. In (75b) both modals have an epistemic reading.

- (75) a. ta yingai keyi xie zheyang de wenzhang.
 he should can write such DE article
 'He should be able to write such articles.'
- b. ta yinggai hui lai.
 he should will come
 'He will come.'
- c. *ta keyi yingai xie zheyang de wenzhang.
 he can should write such DE article
- d. *ta keyi neng ...
 he can can

Recall that *yingai* and *hui* can have either an epistemic or a root reading, while *keyi* and *neng* can have only root reading. In (75a) and (75b), the first modal can be read as epistemic, while in

(75c) and (75d), the first modal must be a root modal, which cannot be followed by another modal.

The order of these two kinds of modals demonstrates a structural distinction. Thrainsson and Vikner (1992) show that in Danish and Icelandic, a root modal can be embedded under an epistemic modal, a case similar to (75a), an epistemic modal can be embedded under another epistemic modal, a case similar to (75b), and finally, in Danish, a root modal can be embedded under another root modal, as in the unacceptable Chinese (75d). Thus the impossibility of stacking two root modals is a language particular constraint. However, as in other languages such as Danish and Icelandic, where two modals can be stacked, there is no case when the first one is a root modal and the second one is an epistemic modal. If we follow Huang (1988) and Lin and Tang (1996) in assuming that root modals are control verbs, this stackability constraint is explained. We just discussed in section 3.2.3.1 above that an epistemic modal cannot occur in a control complement.

3.2.3.3. Modals and aspect suffixes

Only epistemic modals allow following verbs to take an aspect suffix. Root modals do not, as mentioned by Tang (1990:88).

- (76) a. ta **hui** zai kan-zhe shu ma? (epistemic)
 he may at read-ASP book Q
 'Might he be reading books?'

- b. ta **hui** qu-guo Meiguo ma? (epistemic)
 he may go-ASP America Q
 'Might he have been to America?'
- (77) a. ta **hui** bao jiaozi ma?
 he can wrap dumpling Q
 'Does he know how to wrap dumpling?' (root)
 'Will he make dumplings?' (epistemic)
- b. ta **hui** bao-zhe jiaozi ma? (epistemic only)
 he may wrap-ASP dumpling Q
 'Might he be wrapping dumplings now?'

In Chinese, an eventuality with an aspect of irrealis with respect to a reference time does not allow an aspect marker. Root modals are universally specified [-realis]. As we mentioned before (p.73), root modals select [+imperative] CP (McGinnis 1993), thus the verb of this imperative CP is also [-realis]. The form of [-realis] aspect is null in Chinese. So neither root modals themselves nor the verbs following them take any aspect suffix. On the other hand, Chinese epistemic modals do not take any aspect suffixes, as discussed on page 72, nor do they place any aspectual restrictions on their complement. Thus epistemic modals can be followed by verbs with an aspect suffix.

In section 3.3.2, I presented the data in which control verbs can have aspect suffixes and the verbs following the control verbs can also have aspect suffixes. If the analysis of root modals as control verbs is on the right track, then root modals differ from ordinary control verbs in not

taking an aspect suffix and not allowing the following verb to take an aspect suffix. Thus root modals can be a subset of control verbs. What makes them different from other control verbs is that both the root modals and their complements are specified as [-realis], which takes a null form.

3.2.3.4. Modals and focus markers

Shi is a focus marker in Chinese. It occurs before a constituent and marks the constituent as 'focused'. (See Chapter 2 for discussion)

- (78) a. wo zuotian xi-le yifu.
 I yesterday wash-ASP clothes
 'I washed clothes yesterday.'
- b. **shi** wo zuotian xi-le yifu.
 FM I yesterday wash-ASP clothes
 '**I** washed clothes yesterday.' (The subject is focused.)
- c. wo **shi** zuotian xi-le yifu.
 I F yesterday wash-ASP clothes
 'I washed clothes **YESTERDAY**.' (adjunct *zuotian* is focused.)
- d. wo zuotian **shi** xi-le yifu.
 I yesterday F wash-ASP clothes
 'I **WASHED CLOTHES** yesterday.' (one of the readings: VP is focused.)

As discussed in section 2.2.2, one of the constraints on the distribution of *shi* is that it cannot occur with an in situ complement of a transitive verb.

- (79) a. *wo zuotian xi-le shi yifu.
 I yesterday wash-ASP FM clothes
- b. *ta bi wo shi PRO mai-le neiben shu
 he force me FM PRO buy-ASP that book

In (79a), *shi* occurs before the in situ direct object *yifu* ‘clothes’. In (79b), *shi* occurs before the infinitival CP complement of the control verb *bi* ‘force’. If we accept Tsai’s (1995) claim that Chinese CPs are Case-marked, then the complement clause of a control verb is directly Case-marked by the control verb. Both (79a) and (79b) are ruled out for the same reason (see section 2.4 for details).

The focus marker *shi* can occur to the right of an epistemic modal, but not to the right of a root modal. This is shown below.

- (80) a. ta yinggai shi qu Niuyue le.
 he should FM go New-York Particle
 ‘He must HAVE GONE TO NEW YORK.’ (epistemic only)
- b. *ta keyi shi qu Niuyue (le).
 he can FM go New-York (Particle). (root)

Sentence (80a) shows that *shi* can occur between an epistemic modal and its complement. Sentence (80b) shows that *shi* cannot occur between a root modal and its complement. If we follow Huang (1988) and Lin and Tang (1996) to assume that epistemic modals are raising verbs and root modals are control verbs, we can explain the parallel between (79b) and (80b). In both cases, *shi* occurs before a Case-marked CP. Both sentences are unacceptable. However, since raising verbs select IP rather than CP, the occurrence of the focus marker *shi* is not blocked in (80a). In other words, like other Chinese control verbs, root modals c-select or Case-mark CP, while epistemic modals do not.

3.2.3.5. Modals and complement shift

Based on our analysis of feature checking in focus sentences in Chapter 2, we can assume that when a Case-marked complement is focused, a strong feature is triggered in \bar{y} , and the strong feature can be checked by the movement of the complement to the checking domain of \bar{y} . Thus the grammaticality of the following sentences is expected:

- (81) a. ta keyi [he yi-bei jiu].
 he can drink one-cup wine
 ‘He can drink a cup of wine.’

- b. ta [he yi-bei jiu] keyi.
 he drink one-cup wine can
 'He can DRINK A CUP OF WINE.'

In section 2.4.4 I showed that elements which do not bear [Accusative Case] cannot shift. In the case of epistemic modals, their complements, which are IPs, are not Case-marked. They do not trigger any strong features in \bar{y} . Thus there is no motivation for moving of the complement to the checking domain of \bar{y} . No epistemic reading of the modals is allowed in the following, as expected.

- (82) a. ta yinggai [he-guo yi-bei jiu].
 he should drink-ASP one-cup wine
 'He might have drunk a cup of wine.'
- b. *ta [he-guo yi-bei jiu] yinggai.
 he drink-ASP one-cup wine should

Notice that restructuring is possible for both control and raising constructions:

- (83) a. ta keyi [he nei-bei jiu].
 he can drink that-cup wine
 'He can drink that cup of wine.'

- b. ta nei-bei jiu keyi he.
 he that-cup wine can drink
 'He can drink a cup of wine.'
- (84) a. ta yinggai kan-guo neiben shu le.
 he should read-ASP that book ASP
 'He might have read that book.'
- b. ta neiben shu yinggai kan-guo le.
 he that book should read-ASP ASP
 'He might have read that book.'

The above discussion shows that epistemic modals and root modals are different types of verbs. The conclusion of this section (3.2) is that Chinese has IP, which is related to the existence of PRO, rather than to the presence of an aspect suffix or a modal in general.

3.3 Chinese I raising

3.3.1 The deictic anchor of the particle *le*

Chinese aspect markers include the verbal suffixes such as *-le*, *-guo*, *-zhe* and the sentence-final particle *le*. The sentence-final particle *le* can co-occur with the suffix *-le*.²⁴

- (85) ta chi-le fan le.
 he eat-ASP meal ASP
 'He has eaten a meal.'

All of these aspect markers express realis aspect with respect to a reference time. Among the realis aspect markers, the verbal suffixes *-le* and *-guo* are specified as [+complete], while *-zhe* is specified as [-complete]. Sentence-final *le*, however, is unspecified for [+/- complete]. It can occur in either [+complete] or [-complete] contexts:

²⁴ In this research, I do not discuss the *le* which is exchangeable with the interjection *la*, as in the following:

- (i) fangzi tai xiao le/la.
 house too-much small INT
 'The house is too small!'
 (ii) zheige banfa zui hao le/a.
 this method most good INT
 'This method is the best!'

This *le* occurs only after an adjective which is modified by a degree adverb. It does not have any aspect meaning.

- (86) a. ta mai cidian le.
 he buy dictionary ASP
 'He has bought a dictionary.' [+ complete]
- b. ta shang daxue le.
 he go university ASP
 'He has been studying in a university.' [-complete]

If the aspect of a predicate is irrealis with respect to a reference time, no aspect marker is allowed. Irrealis aspect, as in (87), cannot be expressed by the particle *le*, or any other aspect markers.²⁵

- (87) a. zanmen ting yinyue ba!
 we listen music IMP
 'Let us listen to some music!'
- b. *zanmen ting yinyue le ba!
 we listen music ASP IMP

The above (86) and (87) show that one of the features of the particle *le* is realis with respect to a reference time ([+realis]), rather than [+complete].

²⁵ In the following sentence, sentence final particle *le* is construed with the matrix CP, where the predicate verb is *yao* 'want', rather than the embedded CP, where the predicate verb is *chi* 'eat'. *Yao* 'want' is realis, while *chi* 'eat' is irrealis.

- (i) wo yao chi fan le.
 I want eat meal ASP
 'I am going to eat a meal now.'

The other feature of the particle *le* is to anchor on a deictic time, which is the moment of speech. As observed by Li and Thompson (1981: 240), “The basic communicative function of *le* is to signal a ‘Currently Relevant State’ (abbreviated as *CRS*). What this means is that *le* claims that a state of affairs has special current relevance with respect to some particular situation.” The particle *le* usually occurs only in eventualities relevant to the time of speaking. In the following (88) and (89), the (a) sentences, which do not have the particle *le*, describe the past eventualities ‘writing a novel’ and ‘buying a dictionary,’ while (b) sentences, where the particle *le* shows up, relate the eventualities to the speech time, emphasizing the change of the situation.

- (88) a. ta xie-guo xiaoshuo.
 he write-ASP novel
 ‘He (once) wrote a novel.’
- b. ta xie-guo xiaoshuo le.
 he wrote-ASP novel
 ‘He has written the novel.’
- (89) a. ta qu-nian mai-le fangzi.
 he last-year buy-ASP house
 ‘I bought a house last year.’
- b. ta qu-nian mai fangzi le.
 he last-year buy house ASP
 ‘He bought a house last year.’

Summarizing, the particle *le* shares with other aspect markers the feature of *realis* with respect to a reference time ([+realis]). However, it differs from them in that it has the feature of *anchoring* on a deictic time ([+deictic]).

3.3.2 The base position of the particle *le*

Usually, sentence final positions are filled by a Complementizer particle such as *ma* for yes-no interrogative, *a* for exclamatory, and *ba* for imperative or interrogative with conjecture. However, the particle *le* does not specify sentence force as a Complementizer does. One argument against Complementizer status for the particle *le* is that it can co-occur with an interrogative Complementizer.

- (90) a. ta chi-guo zao-fan le ma?
 he eat-ASP morning-meal ASP Q
 ‘Has he eaten the breakfast?’
- b. ni he jiu le ba?
 you drink wine ASP Q
 ‘You must have drunk wine, haven’t you?’

If particle *le* specifies illocutionary force, it should not occur in an interrogative sentence, as in (90). Thus, it is unlikely that particle *le* is base-generated in C.

Since it is unlikely that the particle *le* is base-generated at C, I assume that its base-position is I.²⁶ This claim is supported by the fact that the particle *le* licenses subject *pro*.²⁷

In the following I exclude examples with sentence-final *le* appearing immediately after a verb, since *le* in such cases could be either a particle or a verbal suffix. All instances of sentence-final *le* in the following examples are clearly particles, not verbal suffixes. I also exclude echo interpretations and interpretations containing contrastive emphasis under some special contexts.

- (91) a. ta chi-guo zao-fan le.
 he eat-ASP morning-meal ASP
 ‘He has eaten the breakfast.’
- b. ta chi-guo zao-fan.
 he eat-ASP morning-meal
 ‘He ate the breakfast.’
- c. chi-guo zao-fan le.
 eat-ASP morning-meal ASP
 ‘(pro) has eaten the breakfast.’
- d. *chi-guo zao-fan.
 eat-ASP morning-meal

²⁶ Sybesma (1997) also claims that particle *le* heads TP/IP.

²⁷ Cheng (1989) also claims that *pro* is licensed by an aspect marker. However, the data in her section of “The licensing of *pro*” show that her work is on the relation between an object *pro* and a verbal suffix aspect marker. My work here is on the relation between a subject *pro* and a sentence final aspect particle. We are investigating different questions.

- (92) a. wo mai-le neiben shu le.
 I buy-ASP that book ASP
 'I have bought that book.'
- b. wo mai-le neiben shu.
 I buy-ASP that book
 'I bought that book.'
- c. mai-le neiben shu le.
 buy-ASP that book ASP
 '(pro) have bought that book.'
- d. *mai-le neiben shu.
 buy-ASP that book
- (93) Ques: 'Where is Xiao Wang?'
- Ans: a. ta (yijing) qu Niuyue le.
 he (already) go New-York asp
 'He has (already) gone to New York.'
- b. ta (yijing) qu-le Niuyue.
 he (already) go-ASP New-York
 'He has (already) gone to New York.'
- c. qu Niuyue le.
 go New-York ASP
 'He has gone to New York.'

- d. **qu-le Niuyue.*
 go-ASP.New York

In the above data, either an overt subject or a particle *le* is required to make the sentence acceptable. When the subject is null, a pro is assumed to be in the subject position.

It is generally assumed that PRO and pro are in complementary distribution in subject position. PRO occurs in [-finite] IP only, while pro occurs in [+finite] IP only.²⁸ It is thus possible that particle *le*, which is the licenser of pro, is related to [+Finite]. In other words, *le* can enter into a checking relation with pro to check [Nominative Case]. Recall that one syntactic feature of I which licenses PRO is [-Finite]. I thus claim that particle *le* is a finite marker. It never appears with subject PRO. It is base-generated at I and has the features [+Finite] and [Nominative Case].

Notice that in the above discussion I do not intend that [+Finite] I must always be encoded by *le*. In fact, the occurrence of the particle *le* is rather restricted. For example, if there is a numeral expression in the sentence, the particle *le* needs another element such as the verbal suffix *-le* or adverb *jiu* 'then' to co-occur for an unclear reason:

²⁸ See Hornstein (1996b) for a different classification. His pro includes Non-obligatory Control PRO, which is licensed by [-finite] IP/CP. Chinese particle *le* does not occur with Non-obligatory Control PRO, as shown below:

- (i) [PRO xue wai-yu] hen youyong.
 PRO learn foreign-language very useful
 'Learning a foreign language is useful.'
- (ii) *[PRO xue wai-yu le] hen youyong.
 intended: 'Having learned a foreign language is useful.'

Thus particle *le* is never related to a non-finite Infl and Hornstein's (1996b, 1997b) classification does not affect the conclusion made in this thesis.

- (94) a. ta mai-le sanben shu.
 he buy-ASP three book
 'He bought three books.'
- b. *ta mai sanben shu le.
 he buy three book ASP
- c. ta mai-le sanben shu le.
 he buy-ASP three book ASP
 'He has bought three books.'
- (95) a. shisan nian qian ta (jiu) mai-le fangzi.
 thirteen year before he then buy-ASP house
 'He bought a house (as early as) thirteen years ago.'
- b. *shisan nian qian ta mai fangzi le.
 thirteen year before he buy house ASP
- c. shisan nian qian ta jiu mai fangzi le.
 thirteen year before he then buy house ASP
 'He bought a house as early as thirteen years ago.'

The unacceptability of the (b) sentences above is due to the interactions between the particle *le* and a numeral expression, and is not related to the finiteness of the sentence. Discussion of the interactions is beyond the scope of the present thesis. What is relevant here is that sentences without particle *le* can also be finite. This can also be shown by the fact that subject *pro* can also

be licensed by pronominal binding. In the following sentences, *pro* in (a) and the overt pronoun *ta* 'he' in (b) are both bound by the matrix subject (Huang 1984, Cheng 1989: 35).

- (96) a. Xiao Wang_i shuo [*pro*_i kandao-le Lao Li]
 Xiao Wang say [*pro* see-ASP Lao Li]
 'Xiao Wang said that he had seen Lao Li.'
- b. Xiao Wang_i shuo [*ta*_i kandao-le Lao Li]
 Xiao Wang say [he see-ASP Lao Li]
 'Xiao Wang said that he had seen Lao Li.'

The above discussion shows that sentences without particle *le* can also be finite. However, when the particle *le* is present, the relevant INFL must be [+Finite]. Thus neither of the two facts, that some finite clauses do not have particle *le* and that some subject *pros* are licensed by elements other than particle *le*, affects the claim that *le* can license a subject *pro* and can indicate that the clause is [+Finite].

The particle *le* can co-occur with either epistemic or root modals, which are in V, not in I, as argued by Lin and Tang (1996). The modal *yinggai* 'should' in the following (a) and (c) is an epistemic modal, while the modal *neng* 'can' in the following (b) and (c) is a root modal.

- (97) a. *ta yinggai kan-guo zheiben shu le.*
 he might read-ASP this book ASP
 'He might have read this book.'

- b. ta neng kai che le.
 he can drive car ASP
 ‘He is able to drive a car (now).’
- c. ta yinggai neng kai che le.
 he might can drive car ASP
 ‘He might be able to drive a car (now).’

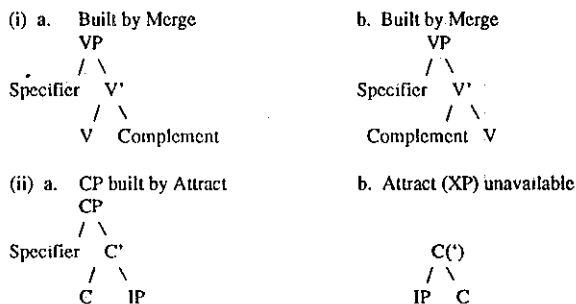
If the base position of particle *le* is I, which is between CP and vP, and the base position of a modal is V, the co-occurrence of a modal and particle *le* is expected.

3.3.3 Particle *le* raising

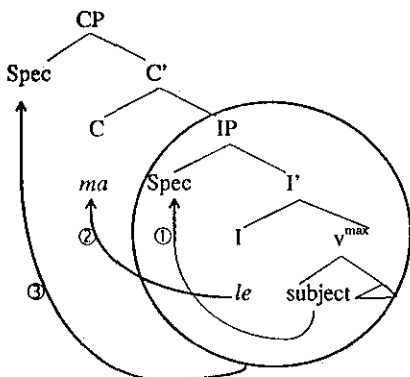
I argued on page 86 that the particle *le* cannot be base-generated in C. How does the particle *le* come to be at the end of a sentence? One possible explanation is that it adjoins to C

before the whole IP raises to Spec of CP.²⁹ This is a *le* raising assumption. Alternatively, the complement of I might move to Spec of I before the whole IP raises to Spec of CP (Sybesma 1997). This is a VP raising assumption. Both assumptions can derive the S-V-O-*le*(-*ma*) order, as in (90). They are illustrated by the following diagrams:

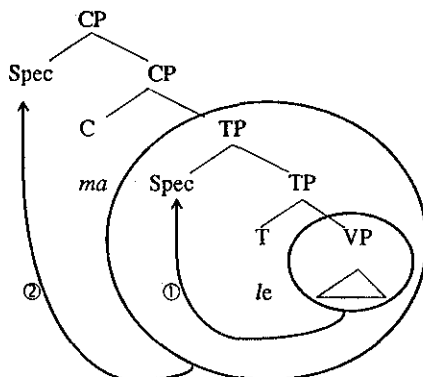
²⁹ C-final order can also be accounted for by a non-movement approach. Whitman (1997) argues that right-headed structure can be built only by Merge, not Attract. Thus, it is possible that C is base-generated to the right of IP. According to him, since items in a checking relation must be adjacent, if head-final structure is base-generated, overt attract XP to the Spec of the head is unavailable. He illustrates his proposal in the following trees:



Takano (1996) argues against Kayne's complement movement analysis on head-final languages. However, Takano's universal head-final hypothesis and the assumed overt verb movement in SVO language are not convincing either. First, if both English and Japanese have C to the right of TP, the contrast between Japanese *to* and English *if* is not clear (Takano 1996: 99). In both cases, an element merges to C, regardless whether it checks a strong feature or not. Japanese *to* is clause-final while English *if* is clause-initial, after his Linearization mechanism. Secondly, in SVO language Chinese, although verbs may move overtly in some constructions such as gapping construction (Paul 1996), there is no evidence to show the similar overt movement elsewhere.

(98) a. *le* raising assumption

b. VP raising assumption



Step ① of (98b) needs some explanation. Can this movement satisfy EPP, if EPP is universal (Chomsky 1995 lecture notes)? If it can, which implies that there is no feature clash between the unchecked Case feature in VP (v^{max}) and the Case feature of I, why do other languages such as English not have this movement? If it cannot, how is EPP satisfied? Since Sybesma (1997) does not talk about these issues, I will not use his assumption.

In (98a), step ① satisfies EPP, as it does in other languages. As for step ②: why does C attract *le*, which is base-generated in I?

We have seen that the particle *le* is sentence-final and is adjacent to an element in C, such as *ma* or *ba*, if there is one, as in (90). Thus it is possible that the particle *le* adjoins to C. According to Stowell (1982: 563), the C position may simply be required at the level of LF, so that the tense operator of English may appear in this position to take scope over its clausal operand. He argues that both infinitival clauses and finite tensed clauses in English contain a C position in which either complementizers or WH-phrases may appear. Similarly, the [+deictic] of

le also needs to appear to C to take scope over its clausal operand. If C is required at LF universally, and element in T or I must move to C eventually, the move of *le* from I to C in Chinese is expected. In the terms of feature attraction, I assume that Chinese root C has aspect features as well as mood features.³⁰ Specifically, a root C can be either [+deictic] or [-deictic]. If a root C has [+deictic], it also has a strong [V] feature. Particle *le*, which is the only element with both [V] and [+deictic] features and is base-generated in I, can check the strong [V] of C by head adjunction.³¹

In section 2.5.1 we saw that Chinese Neg also has aspect features. It seems that functional categories Neg, INFL and C all have aspect features in Chinese. However, as pointed out by Lasnik, the aspect features of a functional head and a verb cannot be all interpretable. Presumably, only those with a verb are interpretable and they are attracted covertly to each of the functional head to check the uninterpretable counterpart features.

One argument for the I to C raising of the particle *le* is that it never occurs in the Verb Gapping construction. Paul (1996) shows the existence of verb gapping in Chinese. My (99b) is an example of Verb Gapping construction. (99c) shows the impossibility for the particle *le* to occur in such a construction.

- (99) a. ta chi-le san wan miantiao le. wo chi-le liang wan mifan le.
 he eat-ASP three bowl noodle ASP. I eat-ASP two bowl rice ASP
 'He has eaten three bowls of noodle. I have eaten two bowls of rice.'

³⁰ A relation between aspect and C can also be found in other languages such as Slavic languages (Alana Johns, personal communication).

³¹ If the [V] feature of the particle *le* is [-interpretable], it can be checked covertly by the [V] feature of a verb. The covert checking operation is similar to that of [D] feature of an expletive: an interpretable categorial feature of a lexical element checks the corresponding uninterpretable categorial feature of a functional element.

- b. ta chi-le san wan miantiao, wo liang wan mifan.
 he eat-ASP three bowl noodle, I two bowl rice
 'He has eaten three bowls of noodle, I two bowls of rice.'
- c. *ta chi-le san wan miantiao (le), wo liang wan mifan le.
 he eat-ASP three bowl noodle (ASP), I two bowl rice ASP

According to Johnson (1996), Verb Gapping involves an across-the-board movement of verbs to Infl. If particle *le* is base-generated in I, verbs will adjoin to *le* in the Verb Gapping construction. After the adjunction, it is impossible for *le* to move alone to C. Thus the unacceptability of (99c) is explained.

If a verb in the Gapping construction moves with the particle *le*, the expected sentence is the following:³²

- (i) *ta san wan miantiao wo liang wan mifan chi-le le.
 he three bowl noodle I two bowl rice eat-ASP ASP

However, this sentence is unacceptable. The possible reason is that the adjacency of the two *les* violates some constraint at PF.

Notice that it is not possible for the particle *le* to move to C first and for the verbs to adjoin to I later. This is because if both move overtly, the strong feature of the lower head must be checked before the higher category projects (Chomsky 1995: 233).

³² If the object contains a numeral expression, which is required in Chinese gapping construction (Paul 1996), the particle *le* needs a verbal suffix *-le* to co-occur, for an unclear reason. See the discussions in section 3.3.2.

As pointed out by Lisa Cheng and Xiaoguang Li (personal communication), the assumption of overt raising of a verb in Verb Gapping construction might not be compatible with the claim that Chinese does not have overt verb movement (see (55) on page 56). However, it is possible that verb movement is not a default situation in Chinese. As in the case of object shift, verb movement in Chinese can be triggered. An important property of Verb Gapping construction is that both the subject and the object are focused. I leave the issue of how overt verb movement is carried out for future research.

3.4 Conclusions

There is a distinction between finite clauses and infinitivals in Chinese. This distinction is shown by the obligatory null subject of complement clauses of control verbs. The presence or absence of an aspect suffix cannot distinguish finite from non-finite clauses. Modals can have an epistemic or a root reading. Epistemic modals are raising verbs, while root modals are control verbs. This conclusion is supported by the behaviors of modals in a control complement and in double modal constructions, by the interactions of modals with verb aspect suffixes, focus marker and complement shift. In the beginning of section 3.2, I introduced two different opinions on Chinese Infl. According to one, Chinese has Infl, because the distribution of modals and aspect suffixes is restricted. According to the other view, the distribution restrictions are spurious, and thus there is no contrast between finiteness and nonfiniteness in Chinese. Consequently, it is assumed that there is no Infl in Chinese. My analysis here demonstrates that both approaches are partially true. Only the epistemic modals are absent from the complements

of control verbs. Thus there are distribution differences between root modals and epistemic modals. Neither the presence of a root modal nor the presence of an aspect suffix determines the finiteness of a sentence, or blurs the distinction between [+Finite] and [-Finite].

Unlike the aspect suffixes, the aspect particle *le* does indicate the finiteness of a clause. It can license a subject *pro*. I showed in this chapter that the base position of the particle *le* is I. This particle raises overtly to C to check the strong [V] of C which is specified with the feature of [+deictic]. The contents of this chapter on the one hand, capture the base-positions of various elements such as modals and the aspect particle in connection with the functional projections, and on the other hand, elucidate the checking dependency in Chinese declarative C.

4.1 Introduction

A Chinese yes-no question can be asked in five ways: *S-ma*, *S-not-V*, *S-not*, *A-not-A*, and *shi-bu-shi*.

- (100) a. Laoli xihuan naben shu ma? (S-*ma* question)
Laoli like that book Q
Does Laoli like that book?
- b. Laoli xihuan naben shu bu-xihuan? (S-not-V question)
Laoli like that book not-like
- c. Laoli xihuan naben shu bu? (S-not question)
Laoli like that book not
- d. Laoli xihuan-bu-xihuan naben shu? (A-not-A question)
Laoli like-not-like that book
- e. Laoli shi-bu-shi xihuan naben shu? (shi-bu-shi question)
Laoli be-not-be like that book

S-ma questions are formed by attaching a Complementizer *ma* at the end of a declarative sentence. *S-not-V* questions are formed by attaching a word *bu* 'not' or *mei* 'not' plus a copy of

the matrix verb at the end of a declarative sentence. S-not questions are formed by attaching a word *bu* 'not' or *mei* 'not' at the end of a declarative sentence.

A-not-A questions are formed by reduplication of the first syllable or the complete form of the questioned element and an infixation of negative *bu* or *mei* between the reduplicant and the base.³³ A-*bu*-A occurs with unbounded eventualities while A-*mei*-A occurs with bounded eventualities. (See section 2.5.1 for the definitions of the two types of eventualities.) (101) denotes an unbounded eventuality, while (102) denotes a bounded eventuality. A-not-A forms are shown in (101b) and (102b). Thus *bu* is used in (101b) and *mei* is used in (102b).

- (101) a. ta xihuan neiben shu ma?
 he like that book Q
 'Does he like that book?'
 b. ta xi(huan)-bu-xihuan neiben shu?
 'Does he like that book?'
- (102) a. ta kanjian neiben shu le ma?
 he see that book ASP Q
 'Did he see that book?'
 b. ta kan(jian)-mei-kanjian neiben shu?
 'Did he see that book?'

³³ As pointed out by Huang (1991), A-not-A forms of a single verb predicate, such as (i), are taken as either A-not-A or S-not-V (AB-not-A, where B is null, in his terms).

(i) ni lai bu lai?
 you come not come
 Will you come?

The element A in A-not-A can be an Adjective, a Preposition, or a Verb (including deontic and epistemic modals).

- (103) a. ta cong-mei-cong Beijing lai? (Prep)
 he from-not-from Beijing come
 'Did he come from Beijing?'³⁴
- b. ta gen-bu-gen ni shuohua?
 he to-not-to you speak
 'Does he speak to you?'
- (104) a. ta xi-bu-xihuan ni? (Verb)
 he like you
 'Does he like you?'
- b. ta xihuan-bu-xihuan ni?
 Does he like you?

³⁴ Both my informant, who is from Beijing, and I feel that the following two sentences differ as to their meaning. (i) inquires about the starting place of a journey, while (ii) inquires about the origin of the person. The former has a stage level predicate, while the latter has an individual level predicate.

- (i) ta cong-mei-cong Beijing lai? (A-not-A)
 he from-not-from Beijing come
 'Did he come from Beijing?'
- (ii) ta shi-bu-shi cong Beijing lai? (shi-bu-shi)
 he FM-not-FM from Beijing come
 'Is he from Beijing?'

- (105) a. ta zhu-mei-zhuyi ni? ³⁵ (Verb)
 he notice you
 'Has he noticed you?'
 b. ta zhuyi-mei-zhuyi ni?
 'Has he noticed you?'
- (106) a. ta pao de kuai-bu-kuai? (Adj.)
 he run DE fast-not-fast
 'Does he run fast?'
- (107) a. ta ying-bu-yinggai lai? (deontic modal)
 he should-not-should come
 'Should he come?'
 b. ta yinggai-bu-yinggai lai?
 'Should he come?'
- (108) a. ta hui-bu-hui qu-guo Niuyue le? (epistemic modal)
 he might-not-might go-ASP New-York ASP
 'Might he have been to New York?'

³⁵ In some southern variants of Mandarin, *you-mei-you* is also possible. The following is an equivalent of either (105a) or (105b).

- (i) ta you-mei-you zhuyi ni?
 he have-not-have notice you
 'Has he noticed you?'

Recall that *shi* can be a contrastive focus marker in Chinese (Chapter 2). *Shi-bu-shi*, as in (100e), is an interrogative form of the focus marker *shi*. The focused part of a *shi-bu-shi* question is always an element following *shi-bu-shi*. If *shi-bu-shi* occurs to the left of a transitive verb or a preposition, the focused part can be the verb/preposition, the whole VP/PP, or the in situ direct object of the transitive verb or preposition.

- (109) Laoli shi-bu-shi xihuan naben shu?
 Laoli be-not-be like that book
 ‘Does Laoli LIKE that book?’
 ‘Does Laoli LIKE THAT BOOK?’
 ‘Does Laoli like THAT BOOK?’

Although *shi-bu-shi* can be taken to be A-not-A form of *shi* theoretically, I separate *shi-bu-shi* questions from A-not-A questions in my description because the former allows matrix sentence negation while the latter does not. See section 4.5 for details.

Among the five types of questions, only the S-*ma* type allows interrogative particle *ma*.

- (110) a. ta chi fan le ma?
 he eat meal ASP Q
 ‘Has he eaten the meal?’
 b. ta bu chi fan le ma?

- (111) a. ta hai chi-bu-chi fan le (ne/*ma)? (A-not-A)
 he yet eat-not-eat meal ASP (EMPH/Q)
 'Will he eat the meal?'
- b. ta shi-bu-shi zai chi fan (ne/*ma)? (shi-bu-shi)
 he be-not-be at eat meal (EMPH/*Q)
 'Is he eating the meal?'
- c. ta hai chi fan bu-chi (ne/*ma)? (S-not-V)
 he yet eat meal not-eat (EMPH/*Q)
 'Will he eat the meal?'
- d. ta chi fan le meiyou (ne/*ma)? (S-not)
 he eat meal ASP not (EMPH/*Q)
 'Has he eaten the meal?'

Notice that instead of *ma*, the sentence final particle *ne* is allowed in (111). However, the meaning of *ne* in such cases is not related to a question. Rather, it is an emphasis marker (Shi and Zhang 1995). Thus *ne* is not an interrogative Complementizer.³⁶

The aim of this chapter is to give a unified treatment to these five types of yes-no questions and further explore the conditions under which a choice is made between overt and covert checking. I will argue that the yes-no interrogative C has an uninterpretable feature [Q], which can be checked by the merged Complementizer *ma*, by overt raising of *bulmei(you)-(V)*,

³⁶ Shi and Zhang (1995) show that *ne* can occur in both declarative and interrogative sentences. In WH questions, *ne* sometimes cannot show up. In addition, the interpretation of a WH question differs between the one with *ne* and the one without *ne*.

Following Tsai (1994), I will assume that Chinese WH phrases are related to a merged null operator rather than to *ne*.

or by covert moving of [Q] feature of A-not-A or shi-bu-shi. I will show that S-not-V and S-not are PF variants of the same type of question. The interactions between question types and sentence negation show that movement checking of C can be blocked by a negation word if the interpretable [Q] occurs lower than the negation word. S-not-(V) questions do not have sentence negation because the uninterpretable [Q] in Σ and [Neg] are incompatible. I will show that the sentence-final *bu/mei(you)* of S-not-(V) questions does not have [Neg] feature, and will explain this fact. The choices between overt and covert checking of [Q] of C depends on the presence of the interrogative Σ . Thus some feature in the interrogative Σ may trigger the strong [Q] in C. Finally, I will discuss the relationship between yes-no questions and VO-not-VO questions. The latter is argued to be an alternative question. I will discuss S-*ma* questions in section 4.2, S-not-V and S-not questions in section 4.3, and A-not-A and shi-bu-shi questions in section 4.4. The interactions between question types and sentence negation will be discussed in section 4.5. Based on the empirical work on Chinese yes-no questions, in section 4.6, I will address the theoretical issue of checking variations: the choice between overt and covert checking. Section 4.7 is on VO-not-VO questions. Section 4.8 summarizes the chapter.

4.2 Overt checking of C in S-*ma* questions

4.2.1 Checking by merge of *ma*

The difference between an S-*ma* question and its declarative counterpart is the presence of the particle *ma* in C. As assumed in the current literature (Cheng et al. 1996: 63, among

others) *ma* in *S-ma* questions checks a strong feature of interrogative C. The function of *ma* is the same as that of *whether* or *if* in an English yes-no question in the sense that *ma* is base-generated in the checking domain of C and checks the strong [Q] of C.

- (112) a. ta chi yu.
 he eat fish
 ‘He eats fish.’
- b. ta chi yu ma?
 he eat fish Comp
 ‘Does he eat fish?’
- (113) a. ta chang jing-ju le.
 he sing Beijing-Opera ASP
 ‘He has sung Beijing-Opera.’
- b. ta chang jing-ju le ma?
 he sing Beijing-Opera ASP Comp
 ‘Has he sung Beijing-Opera?’

In (113b), sentence final *le* and *ma* check different strong features: *le* checks the strong [V] of deictic C (section 3.3.2) and *ma* checks the strong [Q] feature of the yes-no interrogative C. That is why they can co-occur.

In contrast to Chomsky (1995: 289), I argued in Chapter 1 (see also Zhang 1997b) that [Q] of English C, which needs checking, is not interpretable. Similarly, the [Q] of Chinese yes-

no interrogative C is not interpretable either. I assume that the [Q] of *ma* is interpretable and provides the interrogative meaning to an *S-ma* sentence. The uninterpretable [Q] of C can be checked by the interpretable [Q] feature of *ma*.

4.2.2 Properties of *S-ma* questions

S-ma questions differ from other types of yes-no questions in the following respects. The first three are noted in Cheng, Huang and Tang (1996) (Cheng et al. hence).

First, *S-ma* sentences contrast with other yes-no questions in the occurrences of adverbs *nandao* 'really' and *daodi* 'on earth.' *Nandao* only appears in *S-ma* questions, not in other yes-no questions. However, *daodi* can occur in all questions except *S-ma* questions.

- (114) a. *nandao ta chi fei-rou ma?* (S-*ma*)
 really he eat fat-meat Q
 'Does he really eat fat meat?'
- a'. *nandao ta chi-le fan le ma?*
 really he eat-ASP meal ASP Q
 'Has he really eaten a meal?'
- b. **nandao ta chi-bu-chi fei-rou?* (A-not-A)
 really he eat-not-eat fat-meat
- b'. **nandao ta chi-mei-chi-guo fan?*
 really he eat-not-eat-ASP meal

- c. *nandao ta shi-bu-shi chi fei-rou? (shi-bu-shi)
really he be-not-be eat fat-meat
- c'. *nandao ta shi-bu-shi chi-le fan le?
really he be-not-be eat-ASP meal ASP
- d. *nandao ta chi fei-rou bu? (S-not)
really he eat fat-meat not
- d'. *nandao ta chi-le fan meiyou?
really he eat-ASP meal not
- e. *nandao ta chi fei-rou bu-chi? (S-not-V)
really he eat fat-meat not-eat
- e'. *nandao ta chi-le fan mei-chi?
really he eat-ASP meal not-eat
- (115) a. *ta daodi chi fei-rou ma? (S-ma)
he really eat fat-meat Q
- a'. *ta daodi chi-le fan le ma?
he really eat-ASP meal ASP Q
- b. ta daodi chi-bu-chi fei-rou? (A-not-A)
he really eat-not-eat fat-meat
'Does he really eat fat meat?'
- b'. ta daodi chi-mei-chi-guo fan?
he really eat-not-eat-ASP meal
'Has he really eaten a meal?'

- c. ta daodi shi-bu-shi chi fei-rou? (shi-bu-shi)
 he really be-not-be eat fat-meat
 'Does he really eat fat meat?'
- c'. ta daodi shi-bu-shi chi-guo fan le?
 he really be-not-be eat-ASP meal ASP
 'Has he really eaten a meal?'
- d. ta daodi chi fei-rou bu? (S-not)
 he really eat fat-meat not
 'Does he really eat fat meat?'
- d'. ta daodi chi-le fan meiyou?
 he really eat-ASP meal not
 'Has he really eaten a meal?'
- e. ta daodi chi fei-rou bu-chi? (S-not-V)
 he really eat fat-meat not-eat
 'Does he really eat fat meat?'
- e'. ta daodi chi-le fan mei-chi?
 he really eat-ASP meal not-eat
 'Has he really eaten a meal?'

Second, as noted by Li & Thompson (1981), the presupposition of an *S-ma* sentence is different from that of other yes-no questions. *S-ma* questions can serve to question the validity of a statement, while other types of yes-no questions are used only in a neutral context.

- (116) Speaker A: ta haoxiang jiao-guo qian le.
 he seem pay-ASP money ASP
 'He seems to have paid.'
- Speaker B: a. ta jiao-guo qian le ma? wo ji bu-qilai le. (S-ma)
 he pay-ASP money ASP Q I remember not-ASP ASP
 'Has he paid? I can not recall.'
- b. !ta jiao-mei-jiao-guo qian? wo ji bu-qilai le. (A-not-A)
 he pay-not-pay-ASP money I remember not-ASP ASP
 'Has he paid? I can not recall.'
- c. !ta shi-bu-shi jiao-guo qian? wo ji bu-qilai le. (sh-bu-shi)
 he be-not-be pay-ASP money I remember not-ASP ASP
 'Has he paid? I can not recall.'
- d. !ta jiao-guo qian meiyou? wo ji bu-qilai le. (S-not)
 he pay-ASP money not I remember not-ASP ASP
 'Has he paid? I can not recall.'
- e. !ta jiao-guo qian mei-jiao-guo? wo ji bu-qilai le. (S-not-V)
 he pay-ASP money not-pay-ASP I remember not-ASP ASP
 'Has he paid? I can not recall.'

A third difference between *S-ma* questions and other questions is that *S-ma* questions can never be embedded while other types of yes-no questions can be embedded in a complement clause.

- (117) a. *wo bu zhidao ta qu-guo Beijing le ma.
 I not know he go-ASP Beijing ASP Q
- b. wo bu zhidao ta qu-mei-qu-guo Beijing.
 I not know he go-not-go-ASP Beijing
 'I do not know whether he has been to Beijing.'
- c. wo bu zhidao ta shi-bu-shi qu-guo Beijing.
 I not know he be-not-be go-ASP Beijing
 'I do not know whether he has been to Beijing.'
- d. wo bu zhidao ta qu-guo Beijing meiyou.
 I not know he go-ASP Beijing not
 'I do not know whether he has been to Beijing.'
- e. wo bu zhidao ta qu-guo Beijing mei-qu-guo.
 I not know he go-ASP Beijing not-go-ASP
 'I do not know whether he has been to Beijing.'

A fourth difference between *S-ma* questions and other questions is that the question scope of *S-ma* sentences can be the whole sentence, while the question scope of *S-not-(V)* questions is the verb and its following elements, the question scope of *A-not-A* questions is the

A-not-A word and its following elements, and the question scope of *shi-bu-shi* questions consists of the elements following the word *shi-bu-shi*. The ambiguity of A-not-A, S-not, and S-not-V questions is limited. If *shi-bu-shi* does not occur before a subject, the question scope does not cover the subject. A-not-A never applies to a nominal thus it never scopes over a subject. In section 4.3.2 I will argue that the interpretable [Q] of S-not-(V) questions is in Σ , which is lower than the position of a subject. Thus S-not-(V) questions never scope over a subject. S-*ma* questions, on the contrary, are completely ambiguous, needing sentence stress or communication context to clarify the question point. This is illustrated in the following:

(118) a. Lisi gangcai zheng-mei-zheng jidan?

Lisi just steam-not-steam egg

'Did Lisi STEAM eggs just now?'

'Did Lisi steam EGGS just now?'

'Did Lisi STEAM EGGS just now?'

*'Did LISI steam eggs just now?'

*'Did Lisi steam eggs JUST NOW?'

- b. Lisi gangcai shi-bu-shi zheng-le jidan?
 Lisi just be-not-be steam-ASP egg
 'Did Lisi STEAM eggs just now?'
 'Did Lisi steam EGGS just now?'
 'Did Lisi STEAM EGGS just now?'
 *'Did LISI steam eggs just now?'
 *'Did Lisi steam eggs JUST NOW?'
- c. Lisi gangcai zheng jidan meiyou?
 Lisi just steam egg not
 'Did Lisi STEAM eggs just now?'
 'Did Lisi steam EGGS just now?'
 'Did Lisi STEAM EGGS just now?'
 *'Did LISI steam eggs just now?'
 *'Did Lisi steam eggs JUST NOW?'
- d. Lisi gangcai zheng jidan mei-zheng?
 Lisi just steam egg not-steam
 'Did Lisi STEAM eggs just now?'
 'Did Lisi steam EGGS just now?'
 'Did Lisi STEAM EGGS just now?'
 *'Did LISI steam eggs just now?'
 *'Did Lisi steam eggs JUST NOW?'

- e. Lisi gangcai zheng jidan le ma?
 'Did Lisi STEAM eggs just now?'
 'Did Lisi steam EGGS just now?'
 'Did Lisi STEAM EGGS just now?'
 'Did LISI steam eggs just now?'
 'Did Lisi steam eggs JUST NOW?'

A fifth difference between *S-ma* questions and other questions is that *S-ma* questions allow a contrastive focus marker *shi*, while other yes-no questions do not.

- (119) a. shi Lao Wu mai-le neiben shu ma?
 FM Lao Wu buy-ASP that book Q
 'Did LAO WU buy that book?'
- b. *shi Lao Wu mai-mei-mai neiben shu?
 FM Lao Wu buy-not-buy that book
- c. *shi Lao Wu shi-bu-shi mai-le neiben shu?
 FM Lao Wu be-not-be buy-ASP that book
- d. *shi Lao Wu mai-le neiben shu meiyou?
 FM Lao Wu buy-ASP that book not
- e. *shi Lao Wu mai-le neiben shu mei-mai?
 FM Lao Wu buy-ASP that book not-buy

- (120) a. Lao Wu shi zuotian mai-le neiben shu ma?
 Lao Wu FM yesterday buy-ASP that book Q
 'Did Lao Wu buy that book YESTERDAY?'
- b. *Lao Wu shi zuotian mai-mei-mai neiben shu?
 Lao Wu FM yesterday buy-not-buy that book
- c. *Lao Wu shi zuotian shi-bu-shi mai-le neiben shu?
 Lao Wu FM yesterday be-not-be buy-ASP that book
- d. *Lao Wu shi zuotian mai-le neiben shu meiyou?
 Lao Wu FM yesterday buy-ASP that book not
- e. *Lao Wu shi zuotian mai-le neiben shu mei-mai?
 Lao Wu FM yesterday buy-ASP that book not-buy

This fact suggests that S-not-V, S-not, A-not-A and *shi-bu-shi* questions share some property which blocks a contrastive focus marker. For instance, they are intrinsic contrastive focus questions and do not accept another focus marker of the same type. Then A-not-A, *shi-bu-shi* and not-V of S-not-V can be taken to be focus markers. As in a declarative sentence shown below, two focus markers of the same type cannot co-occur in a clause. Thus an intrinsic contrastive focus question does not allow a contrastive focus marker.

- (121) *shi ta shi xingqitian shangban.
 be he be Sunday work
 'HE works on SUNDAYS.'

However, two focus markers of different types can co-occur, provided that the contrastive one precedes the other one. This is true of both declarative and interrogative sentences:

- (122) a. shi ta lian xinqitian dou shangban.
 be he even Sunday all work
 'HE even works on SUNDAYS.'
- b. *lian ta shi xinqitian dou shangban.
 be he even Sunday all work
 'Even HE works on SUNDAYS.'
- (123) a. shi-bu-shi Lao Wang lian neiben shu dou mai-le?
 be-not-be Lao Wang even that book all buy-ASP
 'Did Lao Wang buy even that book?'
- b. shi-bu-shi lian Lao Wang dou mai-le neiben shu?
 be-not-be even Lao Wang all buy-ASP that book
 'Did even Lao Wang buy that book?'
- c. Lao Wang shi-bu-shi lian xinqitian dou shangban?
 Lao Wang be-not-be even Sunday all work
 'Does Lao Wang work even on Sundays?'
- d. *Lian Lao Wang shi-bu-shi dou mai-le neiben shu?
 even Lao Wang be-not-be all buy-ASP that book
 'Did even Lao Wang buy that book?'

- e. *Lao Wang *lian xingqitian shi-bu-shi dou shangben?*
 Lao Wang even Sunday be-not-be all work
 'Does Lao Wang work even on Sundays?'
- (124) a. *shi-bu-shi Lao Wang zhi kan neiben shu?*
 be-not-be Lao Wang only read that book
 'Does Lao Wang read only that book?'
- b. *shi-bu-shi zhiyou Lao Wang cai kan neiben shu?*
 be-not-be only Lao Wang only read that book
 'Does only Lao Wang read that book?'
- c. **zhiyou Lao Wang shi-bu-shi cai kan neiben shu?*
 only Lao Wang be-not-be only read that book
 'Does only Lao Wang read that book?'

These data show that non-S-*ma* questions behave like focus sentences.

All of these syntactic and semantic distinctions described above show that checking of C by merge of *ma* and checking by other means are applied to two completely different types of yes-no questions.

4.3 Overt checking of C in S-not-V questions

Merge of *ma* is one way to overtly check [Q] of C. Another type of overt checking of [Q] of C is movement. In this section, I will show that in S-not-V questions, not-V moves from Σ to C to check the strong [Q] of C.

4.3.1 Properties of S-not-V

Huang (1988:254; 1991:318) claims that S-not-V is derived by an anaphoric ellipsis. Specifically, in a base-generated coordinate VP, i.e. VX-not-VX, the second X part is deleted. One difficulty with this deletion theory is that X is sometimes not a syntactic constituent, as seen below.

- (125) a. ni qu shangdian mai dongxi bu qu?
 you go shop buy things not go?
 'Do you go to a shop to buy things?'
 b. ni quan ta PRO chi yao mei quan?
 you persuade he PRO eat medicine not persuade
 'Did you persuade him to take the medicine?'

In these sentences, the double underlined part is X, which covers part of the matrix clause and the whole embedded clause. Thus it is not a syntactic constituent. Syntactic operations such as

deletion can only apply to a syntactic constituent. A deletion theory cannot explain why X can be deleted even though it is not a syntactic constituent.

McCawley (1994) also argues against Huang's deletion approach. He has shown that there are more similarities between S-not-V and A-not-A than between S-not-V and a VP coordination form. Instead of deletion, I will propose a movement approach in sections 4.3.2 and 4.3.3.

The not-V part of S-not-V must be in COMP. This is shown by the fact that not-V in S-not-V must be at the end of a sentence. COMP in Chinese is sentence-final (See Chapter 3).³⁷

- (126) a. nǐ qù shàngdiàn mǎi dōngxì bù-qù?
 you go shop buy things not-go?
 'Do you go to a shop to buy things?'
 b. *nǐ qù shàngdiàn bù-qù mǎi dōngxì?
 you go shop not-go buy things
 c. nǐ qù shàngdiàn bù-qù?
 you go shop not-go
 Do you go to a shop?

The not-V form of S-not-V occurs to the right of the particle *le*, if there is one, which is argued to land at C in section 3.3.2. Therefore, not-V must be out of IP.

³⁷ See footnote 29 on page 93 for a general discussion on C-final order. VO-not-VO questions will be discussed in section 4.6.

- (127) ta chi fan le mei chi?
 he eat meal ASP not eat
 ‘Has he eaten the meal?’

Sentence final *bu* and *mei(you)* in S-not questions cannot be base-generated in C in Mandarin. This has also been claimed in Cheng and Tang (1995), and Cheng et al (1996). In section 4.3.4 I will show that S-not and S-not-V are the PF variants of the same syntactic yes-no question type. They differ in that the copied V is deleted in S-not questions. Cheng et al’s observation on the aspect agreement in S-not questions is also true of S-not-V questions.

The choice between *bu* and *mei* in S-not-V questions depends on the predicate: if it encodes a bounded eventuality, not-V is *mei-V*; and if it encodes an unbounded eventuality, not-V is *bu-V*. In other words, the aspect features of *bu* and *mei(you)* are kept in a S-not-V question as well as in a negative sentence. In Chinese, the functional head Neg/ Σ , as well as I and C (Chapter 3), has aspect features. As I mentioned before, the aspect features of a functional head and a verb cannot be all interpretable. Presumably, only those with a verb are interpretable and they are attracted covertly to each of the functional head to check the uninterpretable counterpart features.

The following sentences show that if the sentence-final *bu* or *mei(you)* is not compatible with the boundedness of the eventuality expressed by the predicate, the sentence is unacceptable.

- (128) a. ta qu-guo Meiguo mei-qu-guo?
 he go-ASP States not-go-ASP
 'Has he been to the States?'
 b. *ta qu-guo Meiguo bu-qu?
 he go-ASP States not-go
- (129) a. ta xihuan neige dianying bu-xihuan?
 he like that movie not-like
 'Does he like that movie?'
 b. *ta xihuan neige dianying mei-xihuan?
 he like that movie not-like

Qu Meiguo 'go to the States' is a bounded eventuality, thus negation word *bu* is excluded. In contrast, *xihuan neige dianying* 'like that movie' is an unbounded eventuality thus *meiyou* is ruled out.

S-not-V cannot be derived from A-not-A. This can be shown in the following three distinctions between A-not-A and S-not-V.

First, the element after the negation word in S-not-V must be a verb, while an A-not-A word can also be another category such as a preposition.

- (130) a. ni gen-bu-gen ta shuohua? (A-not-A)
 you to-not-to him speak
 'Do you speak to him?'

- b. *ni gen ta shuohua bu-gen? (S-not-V)
 you to him speak not-to

In (130a), the A-not-A word is a Preposition. In (130b) a preposition cannot occur after the negation word in S-not-V.³⁸

Second, partial reduplication is allowed in A-not-A. The reduplicant of A-not-A can be a bound morpheme or the first syllable of a word. However, the copy of the verb must be a full word form in S-not-V.

- (131) a. ta xi-bu-xihuan zheiben shu?
 he like-not-like this book
 'Does he like this book?'
 b. *ta xi-zheiben shu bu xi-(huan)?
 he like-this book not like
 c. *ta xi(huan) zheiben shu bu xi-?
 he like this book not like

³⁸ The following (i-a) is another example of prepositional A-not-A form. Huang (1991:321) explains (i-b) as violating the Lexical Integrity Hypothesis of Chinese, since it strands a preposition.

- (i) a. ni cong-bu-cong zheli chu-qu? A-not-A
 you from-not-from here go-out
 Will you go out FROM HERE?
 b. *ni cong zheli chu-qu bu-cong? S-not-V

Unlike English, Chinese does not allow preposition stranding.

In the following sentence, *zai* 'at' or 'be-at' may be analyzed as a verb rather than a preposition. This word can be used as predicate and to answer questions independently. It can also form a serial verb construction.

- (ii) ta zai jia xi yifu bu-zai?
 he be+at home wash clothes not-be+at
 Is he at home and wash (his) clothes?

Third, the negation word in S-not allows *meiyou*, while the negation word in A-not-A can only be either *bu* or *mei*, not *meiyou*. In other words, the infix of the reduplication in A-not-A is required to be consistently monosyllabic.

- (132) a. ta chi-**mei**-chi zaofan?
 he eat-not-eat breakfast
 'Has he eaten a breakfast?'
 b. *ta chi-**meiyou**-chi zaofan?
 he eat-not-eat breakfast
 c. ta chi zaofan **meiyou**?
 he eat breakfast meal not
 'Has he eaten a breakfast?'
- (133) a. ta zhu-**mei**-zhuyi ni?
 he notice-not-notice you
 'Has he noticed you?'
 b. *ta zhu-**meiyou**-zhuyi ni?
 he notice-not-notice you
 c. *ta zhuyi-**meiyou**-zhuyi ni?
 he notice-not-notice you

- d. ta zhuyi ni meiyou?
 he notice you not
 'Has he noticed you?'

There are additional distinctions between S-not-V and A-not-A questions. For example, the latter can occur in a subject clause, an appositive clause and an adverbial clause, while the former cannot. I will discuss these distinctions in detail on the pages 135-138 in section 4.3.4.

The above distinctions between A-not-A and S-not-V suggest that A-not-A formation is different from S-not-V formation. Like the formation of English WH words, which usually begin with the phoneme /w/, Chinese A-not-A appears to be a morphological process. A-not-A words, which contain a reduplicant and an infix *bu/mei*, are yes-no question words. They have an interpretable [Q]. However the two kinds of question word formation have different morphological constraints. For example, there is no WH verb in English, while there are no A-not-A nominals, degree or manner adverbs in Chinese.

- (134) a. *shijian-bu-shijian gou?
 time-not-time enough
 'Is the time enough?'
 b. *ta ming-bu-ming-tian lai?
 he next-not-next-day come
 'Will he come tomorrow?'

- c. *ni hen-bu-hen xihuan ta?
 you very-not-very like he
 'Do you like him very much?'
- d. *ta gu-mei-guyi piping XiaoWang?
 he intentionally-not-intentionally criticize XiaoWang
 'Did he intentionally criticize XiaoWang?'

So far, we have seen five properties of S-not-V questions: they do not allow an interrogative particle *ma* (section 4.1), they neither arise from a deletion nor from A-not-A, the not-V part is in C, but it is not base-generated in C.

4.3.2 Strong features in interrogative Σ

To account for the properties of S-not-V questions listed at the end of the last subsection, I assume that the strong feature of C checked by *ma* in S-*ma* questions can also be checked by the raising of *bulmei(you)-(V)* in S-not-V questions. This assumption extends Cheng et al.'s (1996) treatment of S-not to both S-not and S-not-V questions.

Cheng et al (1996: 64) claim that C has the formal features [Q, Neg] in Mandarin S-not questions, and the strong feature [Neg] attracts the negation word to C.³⁹ In my approach, I unify both S-not questions and other types of yes-no questions, assuming that there is a general uninterpretable [Q] in yes-no interrogative C. A unified treatment of yes-no questions prefers the

³⁹ See Cheng et al. (1996) for a discussion on S-not questions in other Chinese dialects.

general strong [Q] to a general strong [Neg] or [Q, Neg] assumption. This is because firstly, the merged element *ma* does not have a [Neg] feature. *Ma* is in complementary distribution with a sentence final *bu* or *mei(you)*, and either *ma* or *bu/mei(you)* can check the strong feature of C. [Q] feature is compatible with *ma*. Secondly, the words *bu* and *mei(you)* in S-not and S-not-V questions do not mean negation, and the uninterpretable [Q] and [Neg] are not compatible. I will discuss this issue in detail in section 4.5. For these reasons, I do not assume a [Neg] feature for C of any types of questions. In this subsection I discuss the features of Σ in connection with yes-no questions and the motivation for merging not-V in S-not-V questions.

In this thesis, I follow Laka (1994) is assuming that both sentential [Neg] and other propositional features can be hosted by a general functional head Σ . Chinese Σ can be either interrogative or negative,⁴⁰ and that interrogative Σ in Chinese has two strong features: [Q] and [V]. The strong [Q] is checked by merging of *bu* or (*mei*)*you*. The words *bu* and *mei(you)* in interrogative Σ have the similar function as that of the *do* of do-support in English matrix yes-no questions. They can have an interpretable [Q], which provides the question interpretation. This interpretable [Q] can further move to C to check the strong [Q] of C.

The strong [V] of the interrogative Σ is checked by copying the nearest verb. The verb adjunction to Σ is pure copying, without tail deletion even at PF. The copying obeys the Shortest Move Principle, which should be called the Shortest Copy Principle. This means that copying an embedded verb is not possible.

⁴⁰ Notice that negative Σ P can still projected in an interrogative sentence. An interpretable [Q] feature, which provides a question reading to a sentence, can occur in various elements, for example, in an A-not-A word. Section 4.5 will show the interactions between sentence negation and question types.

- (135) a. ni qu shangdian mai dongxi bu-qu?
 you go shop buy things not-go?
 'Do you go to a shop to buy things?'
- b. *ni qu shangdian mai dongxi bu-mai?
 you go shop buy things not-buy?

Since verbs have aspect features, the copied verb in Σ must be compatible with the merged *bu* or *mei(you)* in aspect features. This has been shown in (128) and (129) above.

Notice that in the Minimalist approach, moving or attracting an element in fact involves copying the element. In the usual cases, the original element is deleted and the copied one is kept at PF. However, there is no reason to rule out the case where both the original and the copy are kept at PF. In Chinese focused yes-no questions, when Σ has a strong [V] a verb is copied. The original verb is not deleted. It remains within VP. That is why two identical verbs occur in S-not-V questions.

Summarizing, Chinese interrogative Σ has two strong features, [Q] and [V]. They are checked by the word *bu* or *mei(you)* 'not' and a copy of verb respectively. Thus Chinese yes-no questions can have 'not-V-support', which is similar to do-support in English matrix yes-no questions. This explains the presence of not-V in S-not-V questions.

4.3.3 Σ -to-C raising in S-not-V

The head of Σ P in S-not-V questions contains two elements: *bu* or *mei(you)* and a copy of \bar{V} . After checking the strong features [Q] and [V] of Σ , *bu* or *mei* and the adjoined \bar{V} move to C to check the strong feature of yes-no interrogative C. Recall that the [Q] feature of *bu* or *mei(you)* is interpretable. Thus it is able to first check the strong [Q] of Σ , and then to check the strong [Q] of C. After the move of IP to Spec of C (Kayne 1994), the S-not-V form is derived.⁴¹

In the adjunction of Σ -to-C, if no particle *le* has adjoined to C from I, not-V is the only element in C at PF.

- (136) a. ta chang jing-ju bu-chang?
 he sing Beijing-Opera not-sing
 'Does he sing Beijing-Operas?'
 b. ta chi-le fan mei-chi?
 he eat-ASP meal not-eat
 'Has he eaten the meal?'

If I is filled by the particle *le*, both the *le* in I and *mei(you)*-V in Σ move to C. The former checks the strong [V] of [RRRT] C (Chapter 3, section 3.3.2), while the latter checks the strong [Q] of C. After the I-to-C and Σ -to-C raising, [*le*-*mei*-V]] will show up in C.⁴²

⁴¹ See footnote 29 on page 93.

⁴² I have not studied why [*le*-*mei*-V] is the only acceptable order. Other orders, for example, *[*mei*-V-*le*], or *[V-*mei*-*le*], are not acceptable.

- (137) ta chi fan le mei-chi?
 he eat meal ASP not-eat
 'Has he eaten the meal?'

If the particle *le* is merged in I and moves to C, *bu-V* cannot move to C, because of the aspect feature clash. Particle *le* indicates a bounded eventuality while *bu* can only occur in unbounded eventualities. Thus there is no *le-bu-V* form of S-not-V question. The derivation is canceled if both *le* and *bu-V* adjoin to C.

- (138) a. *ta chang jing-ju le bu-chang?
 he sing Beijing-Opera ASP not-sing
 b. *ta chang jing-ju bu-chang le?
 he sing Beijing-Opera not-sing ASP

The above feature clash analysis on the adjunction to C is supported by the fact that if a negative Σ P rather than an interrogative Σ P is projected, the negation word in the Σ does not move to C and then *bu* and the particle *le* can co-occur:

- (139) ta bu chang jing-ju le.
 he not sing Beijing-Operas ASP
 'He has stopped singing Beijing Operas.'

In this sentence the in situ negation word *bu* and the particle *le* in C have different scopes. *le* has scope over the negation word. They do not adjoin to each other. There is no aspect conflict. See section 4.5 for a discussion.

4.3.4 S-not-V and S-not

Cheng et al. (1996) claim that S-not questions are different from S-not-V questions in three respects. However there might be some dialect distinctions between Beijing Mandarin and other variations of Mandarin. The data of this thesis are from Beijing Mandarin. I will show that none of the three respects can distinguish these two types of questions in Beijing Mandarin. On the contrary, I claim that there are no syntactic or semantic distinctions between S-not-V and S-not constructions in Beijing Mandarin. They share some properties which distinguish them from other types of yes-no questions. The S-not is the shortened form of S-not-V. The final V can show up under certain phonological conditions.

The first assumed distinction between S-not-V and S-not is that non-temporal and locative preverbal adjuncts such as *chang* ‘often’ and *yijing* ‘already’ can appear in S-not but not in S-not-V. Cheng et al.’s examples are the following (Adverbs are underlined):

- (140) a. ta chang qu bu?
 he often go not
 ‘Does he go often?’

- b. ta yijing kan-wan-(le) shu meiyou? [My judgment: *]
 he already read-finish-(ASP) book not
 'Did he already finish reading the book?'
- (141) a. *ta chang pian ni bu-pian?
 he often cheat-you-not-cheat
 'Does he often cheat you?'
- b. *ta yijing kan-wan shu mei-kan-wan?
 he already read-finish book not-read-finish
 'Did he already finish reading the book?'

In Beijing dialect, (140b) is unacceptable. If we change the monosyllabic adverb *chang* 'often' into its disyllabic synonym *jingchang* 'often', (140a) becomes unacceptable. However, if *jingchang* occurs in a longer sentence, it is fine.

- (142) a. *ta jingchang qu bu?
 he often go not
 'Does he go often?'
- b. ta jingchang qu Shanghai bu?
 he often go Shanghai not
 'Does he go to Shanghai often?'

It seems that some phonological factor plays a role in the acceptability of these sentences.

On the other hand, both (141a) and (141b) are unacceptable even without the adverbs.

Thus the adverb test is invalid.

- (143) a. *ta pian ni bu-pian?
 he cheat you not-cheat
- b. *ta kan-wan shu mei-kan-wan?
 he read-finish book not-read-finish

The following examples show that non-temporal and locative preverbal adjuncts indeed cannot occur in S-not-V, as Cheng et al. claim.

- (144) a. ta chang jingju bu-chang?
 he sing Beijing-Opera not-sing
 'Does he often sing Beijing-Operas?'
- b. *ta chang chang jingju bu-chang?
 he often sing Beijing-Opera not-sing
- (145) a. ta chi fan le mei-chi?
 he eat meal ASP not-eat
 'Has he eaten the meal?'
- b. *ta yijing chi fan le mei-chi?
 he already eat meal ASP not-eat.

Considering the unacceptability of both the S-not forms (140b) and (142a), and the S-not-V forms (144b) and (145b), one can hardly see any systematic distinction between these two types of questions regarding the occurrence of the adverbs. All of these forms are unacceptable. I incline to a phonological approach to the relevant data.

The second assumed distinction between S-not-V and S-not is that *ne* is allowed in S-not-V, but not in S-not. Cheng et al.'s examples are the following:

- (146) a. ta xihuan ni bu-xihuan ne? (S-not-V)
 he like you not-like Comp
 'Does he like you?'
 b. *ta qu bu ne? (S-not)
 he go not Comp
 c. *ta you qian meiyou ne? (S-not)
 he have money not Comp

However, we do find examples which show that *ne* is allowed in S-not, in Beijing Mandarin:

- (147) a. ta chi-guo fan meiyou ne?
 he eat-ASP meal not Comp
 'Did he eat a meal?'

- b. ta xi-guo shou meiyou ne?
 he wash-ASP hands not Comp
 ‘Has he washed the hands?’
- c. ta jiao-le zuoye meiyou ne?
 he hand-in-ASP homework not Comp
 ‘Has he handed in the homework?’
- d. ta kan-le neiben shu meiyou ne?
 he read-ASP that book not Comp
 ‘Has he read that book?’

Again the assumed distinction does not hold in Beijing Mandarin.

Shi and Zhang (1995) argue that *ne* is an emphasis marker, which can occur in both declarative and interrogative sentences. They also discuss the constraints on the occurrence of *ne*. The constraints are irrelevant to question types.

The third purported distinction between S-not-V and S-not is that aspect markers can appear in S-not, but not in S-not-V (Cheng et al. p. 70). Cheng et al only give the following S-not example. No example of S-not-V (VP-not-V in their terms) is given.

- (148) a. ta qu-le meiyou?
 he go-ASP not
 ‘Has he gone?’

The following Beijing Mandarin examples of S-not-V show that an aspect marker is allowed in this type of question.

- (149) a. ni chi-guo mangguo mei chi-guo?
 you eat-ASP mango not eat-ASP
 ‘Have you eaten a mango?’
- b. ta chi-le fan mei-chi?
 he eat-ASP meal not-eat
 ‘Has he eaten the meal?’

Once again, the distinction between S-not and S-not-V is not clear in Beijing Mandarin. Based on the above observation, I would not claim any syntactic or semantic distinctions between these two types of questions.

In fact, S-not and S-not-V share many syntactic properties. For example, neither allows sentential negation (section 4.5). They share at least five other properties, which distinguish them from *S-ma* questions. These properties were presented in section 4.2.2: they both allow adverb *daodi* ‘on earth’ but not *nandao* ‘really’; they both occur in neutral contexts, having narrow question scope; they both occur in an embedded complement clause; and finally they both exclude the focus marker *shi*.

S-not and S-not-V also share some properties which distinguish them from the other two types of focus yes-no questions, namely, A-not-A and *shi-bu-shi* questions. First, they cannot appear in appositive clauses, while A-not-A and *shi-bu-shi* questions can:

- (150) a. wo zai kaolu [ta mai-bu-mai shu] de wenti. (A-not-A)
 I at consider [he buy-not-buy book] COMP question
 'I am considering the question whether he will buy the books.'
- b. wo zai kaolu [ta shi-bu-shi yinggai mai shu] de wenti. (shi-bu-shi)
 I at consider [he be-not-be should buy book] COMP question
 'I am considering the question whether he should buy the books.'
- c. *wo zai kaolu [ta mai shu bu-mai] de wenti. (S-not-V)
 I at consider [he buy book not-buy] COMP question
- d. *wo zai kaolu [ta mai shu bu] de wenti. (S-not)
 I at consider [he buy book not] COMP question
- (151) a. wo zai wen LaoLi [ta mai-mei-mai shu] de wenti. (A-not-A)
 I at ask LaoLi [he buy-not-buy book] COMP question
 'I was asking LaoLi the question whether he had bought the book.'
- b. wo zai wen LaoLi [ta shi-bu-shi mai-le shu] de wenti. (shi-bu-shi)
 I at ask LaoLi [he be-not-be buy-ASP book] COMP question
 'I was asking LaoLi the question whether he had bought the book.'
- c. *wo zai wen LaoLi [ta mai-(le) shu mei-mai] de wenti. (S-not-V)
 I at ask LaoLi [he buy-(ASP) book not-buy] COMP question
- d. *wo zai wen LaoLi [ta mai-(le) shu meiyou] de wenti. (S-not)
 I at ask LaoLi [he buy-(ASP) book not] COMP question

Second, neither S-not nor S-not-V can appear in a subject clause, while A-not-A and shi-bu-shi questions can:

- (152) a. ta qu-mei-qu-guo Beijing gen wo wuguan. (A-not-A)
 he go-not-go-ASP Beijing to me irrelevant
 'Whether he has been to Beijing is irrelevant to me.'
- b. ta shi-bu-shi qu-guo Beijing gen wo wuguan.. (shi-bu-shi)
 he be-not-be go-ASP Beijing to me irrelevant
 'Whether he has been to Beijing is irrelevant to me.'
- c. *ta qu-guo Beijing meiyou gen wo wuguan. (S-not)
 he go-ASP Beijing not to me irrelevant
 'Whether he has been to Beijing is irrelevant to me.'
- d. *ta qu-guo Beijing mei-qu-guo gen wo wuguan. (S-not-V)
 he go-ASP Beijing not-go-ASP to me irrelevant
 'Whether he has been to Beijing is irrelevant to me.'

Third, neither S-not nor S-not-V can appear in adverbial *wulun* 'no-matter' or *buguan* 'regardless' clause, while A-not-A and shi-bu-shi questions can.

- (153) a. wulun/buguan ni xi-bu-xihuan ta, wo dou yao jia ta. (A-not-A)
 no-matter/regardless you like-not-like he, I all want marry he
 'Regardless whether you like him or not, I want to marry him.'

- b. wulun/buguan ni shi-bu-shi xihuan ta, wo *dou yao* jia ta. (shi-bu-shi)
 no-matter/regardless you be-not-be like he, I all want marry he
 'Regardless whether you like him or not, I want to marry him.'
- c. *wulun/buguan ni xihuan ta bu, wo *dou yao* jia ta. (S-not)
 no-matter/regardless you like he not, I all want marry he
- d. *wulun/buguan ni xihuan ta bu-xihuan, wo *dou yao* jia ta. (S-not-V)
 no-matter/regardless you like he not-like, I all want marry he

There are some phonological constraints on form of not-V. For example, the negation word is preferably monosyllabic. The forms of *bu*-V and *mei*-V sound more natural than *meiyou*-V.

- (154) a. ta chang jing-ju bu-(chang)?
 he sing Beijing-Opera not-(sing)
 'Does he sing Beijing-Opera?'
- (155) a. ta jiujiing xihuan ni bu-(xihuan)?
 he actually like you not-(like)
 'Actually does he like you?'
- (156) a. ni jian-guo ta mei-jian-guo?
 you see-ASP he not-see-ASP
 'Have you seen him?'

- b. *ni jian-guo ta meiyou-jian-guo?
 you see-ASP he not-see-ASP
- (157) a. ta chi fan le mei(you)?
 he eat:meal ASP not
 'Has he eaten the meal?'
- b. ta chi fan le mei-chi?
 he eat:meal ASP not-eat
 'Has he eaten the meal?'
- c. ? ta chi fan le meiyou-chi?
 he eat meal ASP not-eat

However, in many cases, if *mei* or *bu* is followed by a disyllabic verb, the not-V form still sounds unnatural.

- (158) a. *ta bangzhu lingju bu-bangzhu?
 he help neighbour not-help
- (159) a. ta zhuyi XiaoWang meiyou?
 he notice XiaoWang not
 'Did he notice XiaoWang?'
- b. ? ta zhuyi XiaoWang mei-zhuyi?
 he notice XiaoWang not-notice

- c. * ta zhuyi XiaoWang meiy_{you}-zhuyi?
 he notice XiaoWang not-notice
- (160) a. ta ganxie ta de laoshi meiy_{you}?
 he thank he MOD teacher not
 'Has he thanked his teacher?'
- b. *ta ganxie ta de laoshi mei-ganxie?
 he thank he MOD teacher not-thank
- c. *ta ganxie ta de laoshi meiy_{you}-ganxie?
 he thank he MOD teacher not-thank

It seems that S-not-V forms are rather restricted. Usually, both the negation word and the verb are monosyllabic.

Thus, from a syntactic viewpoint, S-not is in fact S-not-V. The presence of the sentence-final V is decided at PF.

4.4. Covert checking of C in A-not-A and shi-bu-shi questions

Unlike A-not-A, which can only apply to a lexical head, shi-bu-shi is a free word form and can adjoin to any lexical X^0 or X^{\max} .

- (161) a. ta shi-bu-shi zai Beijing bu gongzuo?
 he be-not-be at Beijing not work
 'Does he not work in Beijing?'
- b. ta shi-bu-shi hai mei chi-guo miantiao?
 he be-not-be yet not eat-ASP noodle
 'Has he not yet eaten noodles?'
- c. shi-bu-shi ta zai Beijing bu gongzuo?
 be-not-be he at Beijing not work
 'Does he not work in Beijing?'

Shi-bu-shi does not adjoin to the functional category I^0 . Recall that I argued in Chapter 3 that the particle *le* is base-generated at Infl. The following data show that the particle *le* can co-occur with shi-bu-shi.

- (162) a. ta shi-bu-shi xie-guo xin le?
 he be-not-be write-ASP letter ASP
 'Did he write a letter?'
- b. ta xie-guo xin le shi-bu-shi?
 he write-ASP letter ASP be-not-be
 'He wrote a letter, didn't he?'

If *shi-bu-shi* were adjoined to I^0 , it should move together with *le* to C, and the sentence (a) above should be ungrammatical, contrary to the fact. Thus, *shi-bu-shi* does not adjoin to Infl. The (b) sentence above is a tag question, which is marked by a phonological pause before *shi-bu-shi*. Tag questions are a different type of questions. They are irrelevant to the issue here.

A-not-A and *shi-bu-shi* questions share some properties. First, both the A-not-A word and the word *shi-bu-shi* are morphologically formed: both are derived via reduplication and an infix (*bu* or *mei*) which must be monosyllabic (*meiyou* is ruled out). Secondly, both can occur in appositive sentences. Other types of yes-no questions cannot. Third, both can occur in a *wulun* or *buguan* adverbial clause, while other types of yes-no questions cannot. Fourth, both can occur in a subject clause, while other types of yes-no questions cannot. The last three properties were discussed in section 4.3.4.

However, the most important characteristic shared by these two types of questions is that they show no overt checking of the [Q] feature of C. *Ma* is not allowed and no movement to CP is required in these two types of questions.

There are two possible explanations for this absence of overt checking of C. One is that the relation between the Q-operator and A-not-A/*shi-bu-shi* is LF binding, rather than syntactic checking. The other is that there is syntactic checking, but it is covert.

Tsai's (1994) analysis argues that Chinese WH nominals such as *shei* 'who' and *shenme* 'what' do not have covert movement. Their relation to the null operator is binding rather than checking. In contrast, Chinese WH adverbs such as *weishenme* 'why' are in a covert checking relation to the null operator. The major distinction between these two kinds of WH phrases is that WH nominals do not obey the complex nominal island constraint while WH adverbs do.

- (163) a. OP_j Akiu kan-bu-qi [_{DP} [_{CP} OP_i [_{IP} e_i zuo shenme_j]] de ren_i]?
 Akiu despise do what DE people
 ‘What is the thing/job x such that Akiu despises [people [who do x]]?’
- b. *OP_j Akiu xihuan [_{DP} [_{CP} OP_i [_{IP} Luxun weishenme_j xie e_i]] de shu_i]?
 Akiu like Luxun why write DE book
 ‘What is the reason x such that A likes [books [that Luxun wrote for x]]?’

The complex nominal island constraint is a Relativized Minimality effect on the relation between two operators in the above WH questions.

Huang (1982: 532) notes that A-not-A behaves like *weishenme* ‘why’ in that it obeys the complex nominal island constraint. Here in (164b) I show that shi-bu-shi patterns with A-not-A.

- (164) a. *OP_j [_{DP} [_{CP} OP_i [_{IP} ni xi-bu-xihuan_j e_i]] de shu_i] bijiao hao?
 you-like-not-like DE book comparatively good
 ‘Is the book [whether you like it or not] comparatively good?’
- b. *OP_j [_{DP} [_{CP} OP_i [_{IP} ni shi-bu-shi_j xihuan] de shu_i] bijiao hao?
 you be-not-be like DE book comparatively good
 ‘Is the book [whether you like it or not] comparatively good?’

Thus both A-not-A and shi-bu-shi pattern with WH adverbs rather than with WH nominals.

The following data indicate the syntactic contrast between a yes-no question and an alternative question. Unlike a yes-no question, an alternative question as in (a) below, does not obey the complex nominal island constraint.

- (165) a. ni xihuan [he kafei haishi bu he kafei] de ren?
 you like [drink coffee or not drink coffee] DE person
 'Do you like people who drink coffee or who do not drink coffee?'
- b. *ni xihuan [he-bu-he kafei] de ren?
 you like [drink-not-drink coffee] DE person
- c. *ni xihuan [shi-bu-shi he kafei] de ren?
 you like [be-not-be drink coffee] DE person

Huang (1982) suggests that A-not-A undergoes LF movement to CP. Since shi-bu-shi and A-not-A share many properties, I extend Huang's claim to shi-bu-shi and conclude that both A-not-A and shi-bu-shi check the [Q] feature of C covertly. That is why neither *ma* is merged nor any other element is required to move to C overtly. This claim will be further supported by the interactions between question types and sentential negation. See the next section.

4.5 Interactions between question types and sentential negation

An observation made by Cheng et al. (1996: 69) is that the verb has to be affirmative in S-not, S-not-V and A-not-A questions, while no such constraint is applied to *S-ma* questions. The data in (166) show that negative *S-ma* questions are grammatical.

- (166) a. ta bu chang jing-ju ma?
 he not sing Beijing-Opera Comp.
 'Does he not sing Beijing-Opera?'
- b. ta meiyou chang jing-ju ma?
 he not sing Beijing-Opera Comp.
 'Did he not sing Beijing-Opera?'

My investigation of the interactions of sentential negation and the types of yes-no questions are summarized in (167) below:

(167)

yes-no question types	A-not-A	shi-bu-shi	S-not-(V)	<i>S-ma</i>
allow negation	[Q]-Neg only *neg-[Q]	[Q]-Neg only *neg-[Q]	*	OK

In section 4.5.1, I will present the Relativized Minimality effect in A-not-A and shi-bu-shi questions, and in section 4.5.2 I will demonstrate the feature compatibility in S-not-(V) questions.

4.5.1 Relativized Minimality in A-not-A and shi-bu-shi

My following observation shows that A-not-A and shi-bu-shi questions can allow a following negation word in some cases, but never allow a preceding negation word. In the following, (168) is in the form of A-not-A, and (169) is in the form of shi-bu-shi. Since A-not-A and shi-bu-shi contain interpretable [Q] feature, I show the relative order of the negation word and the feature [Q] in the brackets.

- | | | |
|----------|---------------------------------------|-----------|
| (168) a. | *ta bu chang-bu-chang jing-ju? | (Neg-[Q]) |
| | he not sing-not-sing Beijing-Opera | |
| a'. | *ta chang-bu-chang bu jing-ju? | ([Q]-Neg) |
| | he sing-not-sing not Beijing-Opera | |
| b. | *ta mei(you) chang-mei-chang jing-ju? | (Neg-[Q]) |
| | he not sing-not-sing Beijing-Opera | |
| b'. | *ta chang-mei-chang mei(you) jing-ju? | ([Q]-Neg) |
| | he sing-not-sing not Beijing-Opera | |
| c. | *ni bu neng-bu-neng qing ta lai? | (Neg-[Q]) |
| | you not can-not-can invite he come | |

- c'. ni neng-bu-neng bu qing ta lai? (IQ]-Neg)
 you can-not-can not invite he come
 'Can you not invite him to come?'
- d. *ta (hai) meiyou hui-bu-hui chi-guo fan? (Neg-[Q])
 he (yet) not might-not-might eat-ASP meal
- d' ta hui-bu-hui hai meiyou chi-guo fan? ([Q]-Neg)
 he might-not-might yet not eat-ASP meal
 'Might he not have eaten a meal yet?'
- (169) a. *ta bu shi-bu-shi chang jing-ju? (Neg-[Q])
 he not be-not-be sing Beijing-Opera
- a'. ta shi-bu-shi bu chang jing-ju? ([Q]-Neg)
 he be-not-be not sing Beijing-Opera
 'Does he not sing Beijing-Opera?'
- b. *ta meiyou shi-bu-shi chang jing-ju? (Neg-[Q])
 he not be-not-be sing Beijing-Opera
- b'. ta shi-bu-shi meiyou chang jing-ju? ([Q]-Neg)
 he be-not-be not sing Beijing-Opera
 'Did he not sing Beijing-Opera?'

The above data show that negative *shi-bu-shi* and A-not-A questions are never acceptable if the negation word occurs to the left of the A-not-A word or the word *shi-bu-shi*.

Recall that in section 2.5.2 on page 55 I argued that Neg^0 is beneath \underline{y}^0 and above V^0 and that Chinese verbs in V usually do not overtly move to \underline{y} . If A-not-A word is a verb (modals are also base-generated in V , see section 3.2.3), [Q]-Neg order of A-not-A questions suggests that an embedded VP, rather than a matrix VP, is negated. The unacceptability of Neg-[Q] order of A-not-A questions indicates that negation of a matrix A-not-A verb is never allowed.

To account for the interactions between these question types and sentence negation, I assume that the relation between [Neg] and [Q] is similar to the relation between an operator feature of a relative clause and [Q] discussed in the last section. Syntactically, they are all operator features. Attracting one operator feature can be blocked by another nearer operator feature, and Relativized Minimality is respected. [Q] of C can only be checked by an interpretable [Q], not [Neg]. [Neg] and the uninterpretable [Q] are incompatible with each other in C . The interpretable [Q] of A-not-A and shi-bu-shi is assumed to be attracted covertly to [Q] of C (section 4.4). If a negation word occurs higher than A-not-A and shi-bu-shi, the attraction is blocked. Thus, only when a negation word occurs to the right of an A-not-A word or shi-bu-shi, which contains [Q], the sentence is acceptable, as in (c') and (d') of (168), and (a') and (b') of (169). In this case, A-not-A or shi-bu-shi occurs in a higher position than Σ , and [Neg] of a negation word in Σ is unable to block the [Q] attraction. If a negation word occurs to the left of shi-bu-shi or A-not-A, the [Neg] of the negation word would be attracted to C . Since [Q] of C and [Neg] are not compatible, the sentence is unacceptable, as shown in (a), (b), (c) and (d) of (168) and (a) and (b) of (169). The unacceptability of (a') and (b') of (168), where A-not-A

occurs to the left of a negation word, may have other reasons. For example, the adjacency constraint between a transitive verb and its object, however it might be explained, is violated.⁴³

The interactions between [Q] and [Neg] can also be found in the [Q] of a WH phrase and a negation word in Italian and French (Rowlett 1997). In the absence of n-words, Italian marks sentential negation by *non* alone. A WH-operator cannot be extracted from a position below Neg⁰ to, say, a higher SpecCP position. In French, *ne* is not usually able to mark sentential negation on its own. In some contexts, however, it can, e.g., with pseudo-modal verbs such as *oser*, *pouvoir*. In such contexts, the same blocking effects are also produced. According to Rowlett (1997), these facts suggest the presence of a non-overt operator in SpecNegP, and the operator counts as a closer element to be attracted and prevents the moves of a WH-constituent from a lower position.

4.5.2 Feature Compatibility in S-not-(V)

The following data indicate that negative S-not-(V) is always unacceptable. (170) is in the form of S-not-V and (171) is in the form of S-not.

⁴³ Further research is required to explain why a negation word cannot follow an A-not-A word which is not a verb.

- (j)
- | | |
|----|---|
| a. | ta gen Xiao Wang bu shuohua.
he to Xiao Wang not speak
'He does not speak to Xiao Wang.' |
| b. | ta gen-bu-gen Xiao Wang shuohua?
he to-not-to Xiao Wang speak
'Does he speak to Xiao Wang?' |
| c. | *ta gen-bu-gen Xiao Wang bu shuohua?
he to-not-to Xiao Wang not speak |

- (170) a. *ta bu chang jing-ju bu-chang?
 he not sing Beijing-Opera not-sing
- b. *ta mei(you) chang jing-ju mei(you)-chang?
 he not sing Beijing-Opera not-sing
- (171) a. *ta bu chang jing-ju bu?
 he not sing Beijing-Opera not
- b. *ta mei(you) chang jing-ju mei(you)?
 he not sing Beijing-Opera not
- c. *ta mei(you) chang jing-ju bu?
 he not sing Beijing-Opera not
- d. *ta bu chang jing-ju mei(you)?
 he not sing Beijing-Opera not

Since double negation is allowed, as shown in (172), the unacceptability of the above S-not-(V) forms cannot be accounted for by a prohibition against the co-occurrence of two *bu* or *mei(you)* forms.

- (172) a. wo bu neng bu chang jing-ju.
 I not can not sing Beijing-Opera
 'I cannot not sing Beijing-Opera.' (I have to)

- b. ni bu neng bu qu ma?
 you.not can not go Q
 ‘Is it not possible for you not to go?’

In a double negation sentence such as (172), each of the two verbs heads its own VP. Recall that root modals are control verbs (Chapter 3). In (172a) the root modal *neng* ‘can’ heads a VP and the verb *chang* ‘sing’ heads another VP. Each VP can be under its own Σ P.

In this subsection I present evidence showing the words *bu* and *mei(you)* in an S-not-(V) question do not have [Neg] feature. Then I explain why *bu* and *mei(you)* in an S-not-(V) question do not mean negation and why S-not-(V) questions do not have sentential negation.

In section 2.5.2 I claimed that NegP or Σ P is between v^{\max} and VP. The head of Σ P is filled by a negation word if the sentence is a negative sentence. Recall that there are two negative markers in Chinese: *bu* and *mei(you)*. The choice between them is determined by eventuality type: bounded eventualities, where *mei(you)* is used, and unbounded eventualities, where *bu* is used. These distinctions were introduced in section 2.5.1.

There are two generalizations with respect to Chinese aspect compatibility. First, an unbounded feature does not C-command a bounded feature in the same clause. *Bu* is an unbounded negation word, while aspect suffixes *-le*, *-zhe*, and *-guo* are bounded aspect markers. Thus *bu* never directly negates a verb with any of these aspect suffixes.

- (173) a. * $[_{IP} \dots (le) [_{VP} [_{XP} bu \dots [_{VP} V-le/zhe/guo]$
 unbounded bounded
- b. $[_{IP} \dots le [_{XP} [_{VP} bu]$
 bounded unbounded
- (174) a. ta bu chang jing-ju.
 he not sing Beijing Opera
 ‘He does not sing Beijing Operas.’
- b. ta bu chang jing-ju le.
 he not sing Beijing-opera ASP
 ‘He has stopped singing Beijing Operas.’
- c. *ta bu chang-guo jing-ju.
 he not sing-ASP Beijing Opera
- d. *ta chang-guo jing-ju bu.
 he sing-ASP Beijing Opera not

In (174b), *le* moves from I to C (Chapter 3). The interpretation of the sentence shows the scope differences between *bu* and particle *le*. *Bu* has a narrower scope. It negates the state of *chang jing-ju* ‘singing Beijing Operas.’ In contrast, the particle *le* has a wider scope. It switches the unbounded state ‘not singing Beijing Operas’ into a bounded state: from now on, a new state that he does not sing Beijing Operas has just started. The particle *le* changes an individual-level predicate into a stage-level predicate. Thus the particle *le* can scope over an unbounded eventuality. However, the unbounded negation word *bu* cannot scope over a bounded

eventuality as in (174c) and (174d), where *bu* is base-generated at ΣP , a position higher than VP.

Second, an eventive [Neg] neither C-commands nor is C-commanded by another eventive feature in the same clause. According to Smith (1994), *-le* is eventive, *-zhe* and *-guo* are stative. I assume that the bounded negation word *meiyou* and the bounded particle *le* are also eventive. In other words, two eventive elements cannot co-occur if one of them has [Neg].

- (175) a. * $[_{TP} \dots le [_{VP} [_{\Sigma P} meiyou$
 b. * $[_{TP} \dots [_{VP} [_{\Sigma P} meiyou \dots [_{VP} V-le$
 c. $[_{TP} \dots le [_{VP} [_{\Sigma P} [_{VP} V-le/-zhe/guo$
 d. $[_{TP} \dots [_{VP} [_{\Sigma P} meiyou \dots [_{VP} V-zhe/guo$

- (176) a. ta mai zheiben shu le.
 he buy this book ASP
 'He has bought this book.'
- b. ta meiyou mai zheiben shu.
 he not buy this book
 'He has not bought this book.'
- c. *ta meiyou mai zheiben shu le.
 he not buy this book ASP
- (177) a. *ta meiyou mai-le zheiben shu.
 he not buy-ASP this book

- b. ta meiyou mai-guo zheiben shu.
 he not buy-ASP this book
 'He did not buy this book.'

The complementary distribution of *le* and *meiyou* in a declarative sentence is discussed in Wáng (1965). However, these two elements can co-occur in S-not questions.

- (178) a. ta mai zheiben shu le meiyou?
 he buy this book ASP not
 'Has he bought this book?'
 b. ta mai-le zheiben shu meiyou?
 he buy-ASP this book not
 'Has he bought this book?'

My explanation for the contrast between (176c)/(177a) and (178) is that in negative sentences such as (176), *meiyou* is a real negation marker. Thus the second generalization above is respected. The negative meaning of the negation word plays a crucial role in the conflict between *le* and *meiyou* in (176). That is why *meiyou* and *le* do not co-occur in negative sentences. However, in interrogative sentences, such as (178), sentence final *meiyou* does not mean negation. Thus the second generalization does not apply.⁴⁴

⁴⁴ Cheng et al. (1996) deal with the issue in a different way. In their footnote 7 they point out: "There are different proposals which address the question of why *-le* cannot appear with *mei(you)* in regular negation contexts. We assume here that whatever the constraint is, it is not a semantic incompatibility and that the structural description that leads to the non-co-occurrence in this case is no longer met when the negation is in the C⁰ position."

If sentence final *meiyou* in S-not-(V) questions occurs in an unbounded eventuality, as in the following sentences, there is an aspect clash, and thus the sentence is unacceptable. In other words, even if *meiyou* does not have the [Neg] feature, it still has its aspect features.

- (179) a. *ta xihuan neige dianying meiyou?
 he like that movie not
- b. *ta xihuan neige dianying mei(you)-xihuan?
 he like that movie not-like

The above data show that *bu* and *mei(you)* in a declarative sentence are real negation words and have interpretable [Neg] feature. However, when these words occur in S-not-(V) questions, although they still require an aspect compatibility with the predicate in boundedness, they do not mean negation and thus do not have interpretable [Neg] feature. Based on this observation, I conclude that when *bu* and *mei(you)* are merged to the interrogative Σ to check the strong [Q], they do not have [Neg] feature.

Why do *bu* and *mei(you)* in S-not-(V) not have [Neg]? In the last subsection I showed that the covert movement of [Q] of A-not-A and *shi-bu-shi* to C is blocked by [Neg]. When [Neg] is closer to C than [Q] of A-not-A or *shi-bu-shi*, the sentence is always unacceptable. This indicates that [Neg] is attracted to [Q] of C, and the incompatibility between [Q] and [Neg] in C causes the ungrammaticality. Thus the uninterpretable [Q] of C is not compatible with the interpretable [Neg]. If a feature is not compatible with another feature in one case, it should be so all the time. Thus, like the [Q] of C, the [Q] of Σ is not compatible with [Neg] either. When

bu and *mei(you)* are merged to the interrogative Σ to check the uninterpretable strong [Q] of Σ , they are not allowed to have [Neg] feature. This analysis accounts for why *bu* and *mei(you)* in S-not-(V) are not allowed to have [Neg].

Since the [Q] of Σ is incompatible with [Neg], Σ can be either interrogative or negative, but not both. Since S-not-(V) questions have the interrogative Σ P, they cannot have a negative Σ P. Furthermore, since a sentence negation can only be encoded in Σ P, when Σ P excludes [Neg], the sentence must be affirmative. Thus there is no negative S-not-(V) questions.

The discussion in this section explains the interactions between question types and negation in a feature checking approach. S-not-(V) questions do not have sentence negation because the uninterpretable [Q] is not compatible with [Neg] in either Σ or C. A-not-A words and *shi-bu-shi* do not allow a preceding [Neg] because [Neg] can block the covert movement of [Q] to C. *S-ma* questions, however, do not involve checking of [Q] by movement. They do not project interrogative Σ P either. Thus there is no [Neg] blocking effect. Negative *S-ma* questions are always acceptable, as expected.

4.6 Choosing between overt and covert checking

In the previous sections of this chapter, I argued that [Q] of C on the one hand is overtly checked by merging of *ma* in *S-ma* questions (section 4.2), and on the other hand, it is checked by overt movement of not-(V) in S-not-(V) questions (section 4.3), and covert movement of A-not-A and *shi-bu-shi* in A-not-A and *shi-bu-shi* questions (section 4.4). These are two different major types of questions. They have different syntactic and semantic properties, as shown in

section 4.2. Checking by merge and checking by move may have different numeration involved. It is possible that S-*ma* questions have a non-focused [Q] (see section 4.2), which is strong all the time and is checked by merging of *ma*. Other yes-no questions may have a focused [Q] in C.

However, within non-*ma* yes-no questions, it seems that the same uninterpretable feature [Q] of C can be either strong or weak: it is strong in S-not-(V) questions and weak in A-not-A and *shi-bu-shi* questions. Recall that in Chapter 2 I proposed a triggering hypothesis, which states that a default weak feature of a functional head can be triggered to be strong by the presence of certain feature in the complement domain of the functional head. The strength variations of [Q] in C discussed in this chapter present us with a similar case. S-not-(V) questions differ from A-not-A and *shi-bu-shi* questions in that they have an interrogative Σ . It is possible that some feature in the interrogative Σ , for instance, the strong [Q] or [V], or both, triggers the strong [Q] of C.

Once more I claim that parameters across languages are not best stated in terms of absolute distinctions between strength and weakness of a certain feature. Rather, languages differ in the default strength of a certain feature. The default state, however, can be overridden if the appropriate condition is satisfied. Saying this, I hope the research presented here can add to our understanding of the choice between overt and covert movement in a single languages.

4.7 VO-not-VO questions

In this section I will argue that VO-not-VO questions such as the following are alternative questions, not yes-no questions.

- (180) ta xihuan ni bu xihuan ni?
 he like you not like you
 'Does he like you or not like you?'

In Huang (1991), this type of question is taken to be either A-not-A or S-not-V, (AB-not-A, assuming B is null, in his terms). In McCawley (1994), this type of question is excluded from alternative questions.

An alternative question in Chinese can be asked in different ways, as shown in (181a) and (181b).

- (181) a. ta chi fan haishi chi mian?
 he eat rice or eat noodle
 'Does he eat rice or noodle?'
 b. ta chi fan chi mian?
 he eat rice eat noodle
 'Does he eat rice or noodle?'
 c. ta chi fan bu chi fan?
 he eat rice not eat rice
 'Does he eat rice or not eat rice?'

(181a) is in the form of A-*haishi*-B 'A or B', while (181b) is in the form of VO₁-VO₂. It is generally assumed that *haishi* 'or' is implied between the two VOs in (181b).

In McCawley's (1994) theory, sentences such as (181c), which is in the form of VO-not-VO, as well as typical S-not-V sentences, are not considered as alternative questions because they show different properties from typical alternative questions, while sharing some common properties with A-not-A questions.⁴⁵ For example, an alternative question can occur in a relative clause, while neither an A-not-A question nor a VO-not-VO question can.⁴⁶

- (182) a. ni xihuan [he kafei haishi bu he kafei] de ren?
 you like [drink coffee or not drink coffee] Comp person
 'Does he like people who drink coffee or who do not drink coffee?'
 b. *ni xihuan [he-bu-he kafei] de ren?
 you like [drink-not-drink coffee] Comp person
 c. *ni xihuan [he kafei bu he kafei] de ren?
 you like [drink coffee not drink coffee] Comp person

However, while alternative questions containing *haishi* 'or' as in (181a) can occur in a relative clause, alternative questions in the form of VO₁-VO₂, as in (181b), cannot. (183a) and (183b) show the contrast.

⁴⁵ Although McCawley does not specifically talk about VO-not-VO questions, in his discussion of S-not-V, he includes VO-not-VO examples.

⁴⁶ Another common property of A-not-A and alternative questions is that both can occur in a *wulun* 'no-matter' or *buguan* 'regardless' clause, while other non-WH questions cannot. (see (153) above).

- (183) a. ni xihuan [chi fan haishi chi mian] de ren?
 you like [eat rice or eat noodle] Comp person
 'Do you like people who eat rice or who eat noodle?'
- b. *ni xihuan [chi fan chi mian] de ren?
 you like [eat rice eat noodle] Comp person

In fact, no alternative clause with a null *haishi* 'or' can occur in a relative clause.

- (184) a. ni kan baozhi kan xiaoshuo?
 you read newspaper read novel
 'Do you (want to) read newspaper or a novel?'
- b. ni yao jian [kan baozhi haishi kan xiaoshuo] de ren?
 you want meet [read newspaper or read novel] Comp person
 'Do you want to meet people who read newspaper or who read novels?'
- c. *ni yao jian [kan baozhi kan xiaoshuo] de ren?
 you want meet [read newspaper read novel] Comp person

These data show that VO-not-VO patterns with VO₁-VO₂. If the latter is analyzed as an alternative question, the former can also be an alternative question. Both of them have a null form of the conjunction *haishi* 'or'. It seems that alternative questions with a null conjunction have common properties and have a more restricted distribution than those with an overt conjunction. As in the case that Case-drop and Comp-drop must satisfy certain syntactic

requirements (Travis and Lamontagne 1992), conjunction-drop here must also meet certain conditions.

McCawley's other test is that in an alternative question, the negative part can precede the affirmative part, while in a S-not-V and a VO-not-VO question the negative part must follow the affirmative part. This is shown in (185).

- (185) a. ni bu xihuan ta haishi xihuan ta?
 you not like he or like he
 'Do you not like him or like him?'
 b. *ni bu xihuan ta xihuan ta?
 you not like he like he

I argued in sections 4.3.2 and 4.3.3 that not-V in S-not-V is moved from Σ to C, which is in a sentence final position. Thus, it is impossible for not-V to precede any element. This positional constraint on S-not-V is irrelevant to the internal order of an alternative question. As in the relative clause constraint discussed above, the affirmative-negative order might be another constraint on alternative questions which have a null conjunction.

In fact, we do find further constraints on alternative questions without *haishi*. I list some of them below.

First, the two verbs must be identical.

- (186) a. ni chi fan haishi he zhou?
 you eat rice or drink porridge
 ‘Do you eat rice or drink porridge?’
- b. *ni chi fan he zhou?
 you eat rice drink porridge
- (187) a. ni xie xin haishi kan xin?
 you write letter or read letter
 ‘Do you write letter or read letter?’
- b. *ni xie xin kan xin?
 you write letter read letter
- c. *ni xie xin bu kan xin?
 you write letter not read letter

Second, any postverbal elements cannot be temporal expressions.

- (188) a. ni qu Beijing (haishi) qu Shanghai?
 you go Beijing (or) go Shanghai
 ‘Are you going to Beijing or to Shanghai?’
- b. ni qu Beijing bu qu Beijing?
 you go Beijing not go Beijing
 ‘Are you going to Beijing or not?’

- (189) a. ta shui-le liangge xiaoshi haishi sange xiaoshi?
 he sleep-ASP two hour or three hour
 'Did he sleep for two hours or three hours.'
- b. *ta shui-le liangge xiaoshi sange xiaoshi?
 he sleep-ASP two hour three hour
- c. *ta shui-le liangge xiaoshi mei shui liangge xiaoshi?
 he sleep-ASP two hour not sleep two hour
- (190) a. ta chi-le liang ci haishi san ci?
 he eat-ASP two time or three time
 'Did he eat twice or three times?'
- b. *ta chi-le liang ci san ci?
 he eat-ASP two time or three time
- c. *ta chi-le liang ci mei chi liang ci?
 he eat-ASP two time not eat two time

Third, if the postverbal elements encode themes, the two themes must have the same number of syllables. The following (191) and (192) contrast with (193), where the postverbal element is not a theme.

- (191) a. ta ma ren haishi ma dongwu?
 he abuse people or abuse animal
 'Does he abuse people or animals?'

- b. *ta ma ren ma dongwu?
he abuse people abuse animal
- (192) a. tamen kan Balei-wu haishi kan geju?
they watch Ballet-dance or watch opera
'Do they watch ballet or operas?'
- b. *tamen kan Balei-wu kan geju?
they watch ballet watch opera
- (193) a. ni qu Meiguo haishi qu Jianada?
you go States or go Canada
'Do you go to the States or Canada?'
- b. ni qu Meiguo qu Jianada?
you go States go Canada
'Do you go to the States or Canada?'

VO-not-VO questions obey all of these constraints. They should be typical alternative questions with a null conjunction. They are not yes-no questions. Alternative questions never allow a yes-no question Complementizer *ma*. The feature checking of yes-no questions discussed in the rest of this chapter does not apply to VO-not-VO questions.

4.8 Conclusions

The empirical contribution of this chapter lies in the discovery of the syntactic relationships among the five types of Chinese yes-no questions: S-*ma*, S-not-V, S-not, A-not-A and shi-bu-shi questions. I showed that the S-not type shares many syntactic properties with S-not-V type and it may be a PF variant of S-not-V. I have also related these five question types to the VO-not-VO alternative questions. Furthermore I have described the syntactic properties of each of these question types. Based on these descriptions, I claim that a strong [Q] of C is overtly checked by a merged *ma* in S-*ma* questions, and by Σ -to-C raising in S-not-(V) questions. Interrogative Σ in Chinese has two strong features, [Q] and [V], which are checked by a merged word *bulmei(you)* and the copy of a verb respectively. Thus Σ -to-C raising in S-not-(V) questions adjoins the word *bulmei(you)* and the copy of the verb to C. In addition, A-not-A and shi-bu-shi questions check the uninterpretable [Q] of C by a covert movement. Thus in these various yes-no questions, both overt and covert, and both merge and move operations of checking are involved. Furthermore, the interactions between a yes-no question and sentence negation show the Relativized Minimality and feature compatibility. Finally, I explored the theoretical relations among these checking operations. I assume that the strength variations of [Q] in C across A-not-A, shi-bu-shi and S-not-(V) questions can be related to the presence of a certain feature in Σ .

Yes-no questions reveal another case of checking dependency in Chinese syntax, in addition to that of triggered object shift (Chapter 2) and forced aspect particle *le* raising from I to C (Chapter 3). These various cases of checking dependencies enable us to look into the

details of apparent choices in the language computation, and help us to find the laws which govern checking dependency in general.

Part A of this thesis has investigated the syntactic checking dependencies of clause level functional categories vP, IP and CP. Part B of this thesis (Chapter 5 to Chapter 7) investigates another kind of dependency in Chinese: the binding dependency.

Chapter 5 A Binding Approach to *Dou* Sentences

5.1 Introduction

The Chinese adverb *dou* is usually translated into English as ‘all’. It can occur in either the additive type of focus construction, or the non-focus construction, as in (194a) and (194b) respectively.

- (194) a. lian tamen *dou* mai-le zheiben shu.
 even they all buy-ASP this book
 ‘Even they bought this book.’ (collectively or distributively)
- b. tamen *dou* mai-le zheiben shu.
 ‘They all bought this book.’ (distributively only)

In Chapter 2, I argued that in additive focus constructions such as (194a) both *dou* and *lian* are focus markers and that the focused phrase must be M-commanded by *dou*. In this chapter and the next two chapters, I will discuss properties of *dou* as it appears in non-focus constructions such as (194b). In section 7.5 of Chapter 7, I will compare *dou* in the additive focus construction with *dou* elsewhere.

This chapter has two main goals. First, I will make explicit what kind of elements can license *dou*. Neither the notion of plurality, as generally assumed, nor other notions such as part-whole, collectivity, specificity, and delimitedness, are directly related to the grammaticality of a *dou* sentence. I will propose a notion of Measurable to the Eventuality (M element) to deal with the problem. Second, I will explain, on the one hand, why licensors of *dou*, including operators in interrogative WH phrases, must C-command *dou*; and on the other, why linkers of *dou* can be multiple, a fact noticed by Lee (1986), Sung (1996), and Jiang (1996), among others. I will argue that a checking or movement analysis such as that of Cheng (1995) has difficulty accounting for multiple linking, as pointed out by Sung (1996). However, an unselective binding approach such as that of Sung (1996) fails to account for the C-command requirement between *dou* and its licensor(s). Instead, a pronominal binding approach will be proposed to solve the dilemma.

The chapter is organized as follows. In section 5.2, we will see that *dou* always requires a licensor. To explain the dependency of *dou* on its licensors and the structural constraints on *dou* sentences, in section 5.3, I will propose a linking hypothesis based on Higginbotham's (1983) version of binding theory. In section 5.4 and 5.5 I will show that this binding hypothesis avoids difficulties originating from both the unselective binding approach of Sung (1996) and various checking approaches (Li 1992, Chiu 1993, Hsieh 1994, Shyu 1995, Cheng 1995).

5.2 Licensers of *Dou*

The presence of *dou* requires a preceding element 'Measurable to the eventuality expressed by the predicate' (to be defined directly), such as *zhexie shu* 'these books' in (195a), or a certain quantifier (a universal quantifier or the quantifier *dabufen* 'most'), such as *meiyiben shu* 'each of the books' in (195b), an element which has the word *wulun* 'no matter' adjoined to it, as in (195c), or an interrogative operator of a WH variable, as in (195d). I will call all of these elements licensers of *dou*.

- (195) a. zhexie shu wo **dou** kan-le.
 these book I all read-ASP
 'I have read all of these books.'
- b. meiyiben shu wo **dou** kan-le.
 each book I all read-ASP
 'I have read each of the books'
- c. (wulun) shei **dou** kan-le zheiben shu.
 no-matter who all read-ASP this book
 'Everyone has read this book,'
- d. **dou** shei kan-le zheiben shu?
 'Who all have read this book?'

If none of these elements co-occurs with *dou*, *dou* sentences are either unacceptable, or receive an additive focus meaning (Chapter 2).

5.2.1 The requirement of an M element to the left of *Dou*

A licenser of *dou* must be semantically measurable to the eventuality expressed by the predicate. In other words, it must be capable of measuring the eventuality. Eventuality is a general term referring to both event processes and states (Bach 1980). ‘Measurable to the eventuality’ means that when an element is related to a certain eventuality, whatever thematic role the element carries, it can imply [+measurable] of the eventuality, i.e. whether the eventuality is total or partial. In other words, if an eventuality still holds when it applies to a subset of an element, then the element is called measurable to the eventuality element (M element hence). Non-M elements, on the contrary, imply [-measurable] of the eventuality, i.e. they cannot distinguish totality from nontotality of the eventuality. In the following sentences, *zheiben shu* ‘this book’ is an M element in (197a), but not in (197b).

- (196) a. zheiben shu wo kan-le. (+measurable)
 this book I read-ASP
 ‘This book I have read.’
- b. zheiben shu wo jie-le. (-measurable)
 this book I borrow-ASP
 ‘This book I have borrowed.’

In (197a), the entity of a book is measurable to the event of reading. Both reading of the whole book or reading of part of the book can be called ‘reading’. However, in (197b), the entity of a single book is not measurable to the event of borrowing.

If *dou* occurs in a sentence, an M element is obligatory (if no universal quantifiers or WH phrases occur, to be discussed in the following two subsections), suggesting that only M elements, not non-M elements, can license *dou*.

- (197) a. zheiben shu wo **dou** kan-le. (+measurable, singular)
 this book I all read-ASP
 ‘This book I have read.’
- b. *zheiben shu wo **dou** jie-le. (-measurable, singular)
 this book I all borrow-ASP

Example (198) tells us that the plural entity *neixie xuesheng* ‘those students’ is not measurable to the eventuality of being the most hard-working person. So it cannot license *dou*.

- (198) a. neixie xuesheng Hufei zui yonggong. (-measurable, plural)
 those student Hufei most hard-working
 ‘Those students, Hufei is the most hard-working one.’
- b. *neixie xuesheng Hufei **dou** zui yonggong
 those student Hufei all most hard-working

From the above discussion we can see that the notion of M elements differs from the notion of number. On the one hand, it is not true that a single entity cannot license *dou*. On the other, it is not true that all plural entities license *dou*. Thus, the first property of an M element is that it is not related to the notion of plurality.

The second property of an M element is that it is not related to the part-whole structure of an entity. Based on the following sentences, Lin (1996: 15) noticed that plurality is not a relevant notion to *dou*, since neither *naben shu* ‘that book’ nor *na pen shui* ‘that basin of water’ is plural, and claims that “*dou* may distribute over anything which has a part-whole structure.”

- (199) a. naben shu, wo dou kan wan-le.
 that book I all read finish-ASP
 ‘I finished reading all parts of that book.’
- b. na pen shui dou liu-guang le.
 that basin water all flow-out ASP
 ‘That basin of water all ran out.’

In fact, very few objects in this world do not have a part-whole structure. But the occurrence of *dou* is restricted. We have seen in (197b) that although *neiben shu* ‘that book’ has a part-whole structure, it cannot license *dou* if the predicate verb is *jie* ‘borrow.’ One might propose that instead of a part-whole structure of a thing, it is a part-whole structure of an event that license *dou*. However, it is unclear how to define ‘part’ of an event. Taking a book out of library stacks

might be considered as a necessary ‘part’ of a book borrowing event. However this kind of part-whole structure of event cannot license *dou*. Thus the licensing of *dou* is not captured by the part-whole structure of an entity.

The third property of an M element is that it is not directly related to the collectivity of a predicate.

- (200) a. women liang shangliang-le neijian shi. (-measurable, plural)
 we two discuss-ASP that matter
 ‘We two have discussed that matter.’
- b. *women liang dou shangliang-le neijian shi.
- (201) a. women liang gen pengyou shangliang-le neijian shi..(+measurable, plural)
 we two with friend discuss-ASP that matter
 ‘We discussed the matter with our friends.’
- b. women liang dou gen pengyou shangliang-le neijian shi.
 ‘Both of us discussed the matter with our friends.’

In (200), the subset of *women liang* ‘we two’ is an individual. An individual cannot carry out the event of a discussion, which is encoded by a collective predicate. The entity of two persons is a necessary condition on the event of a discussion, but not a measurable element to the event. Since it is not an M element in (200b), it does not license *dou*. However, a single person can carry out the event of discussion with friends, so the entity of two persons is measurable to the event of discussion with friends. *Women liang* is an M element in (201a) and it licenses *dou* in

(201b). Verbs or VPs like *zhengchao* ‘quarrel’, *jianmian* ‘meet’, *he-mai* ‘together buy’, *baowei* ‘surround’ and *zhang de hen xiang* ‘look a lot alike’ have the same properties as *shangliang* ‘discuss’.

- (202) a. tamen liar he-mai-le dianshiji.
 they two together-buy-ASP TV
 ‘They two bought a TV together.’
- b. *tamen liar *dou* he-mai-le dianshiji.
 they two all together-buy-ASP TV
- c. tamen liar *dou* gen bieren he-mai-le dianshiji.
 they two all with other together-buy-ASP TV
 ‘Both of them bought a TV together with others.’
- d. na liangge ban de xuesheng *dou* he-mai-le dianshiji.
 that two class DE student all together-buy-ASP TV
 ‘The students of both classes bought a TV together.’
 (At least two TV sets were bought totally.)
- (203) a. tamen liar zhang de hen xiang.
 they two grow DE very alike
 ‘They two look alike.’
- b. *tamen liar *dou* zhang de hen xiang.
 they two all grow DE very alike

- c. *tamen sange ren dou zhang de hen xiang.*
 they three person all grow DE very alike
 ‘They three persons all look alike.’

In (202), the subset of *tamen liangr* ‘they two’ is an individual. An individual cannot carry out the event of *he-mai* ‘together-buy’, which is encoded by a collective predicate. The entity of two persons is a necessary condition on the event of buying something together, but not a measurable element to the event. Since it is not an M element in (202b), it does not license *dou*. However, a single person can carry out the event of buying something together with others, so the entity of two persons is measurable to the event of buying something together with others. *Tamen liangr* is an M element in (202c) and it licenses *dou*. In (202d), the subset of *na liangge ban de xuesheng* ‘the students of those two classes’ is the students of one class, a group. A group can carry out the event of *he-mai* ‘together-buy’, so the entity of the students of the two classes is measurable to the event of buying something together. Since it is an M element in (202d), it licenses *dou*. In (203), the subset of *tamen liangr* ‘they two’ is an individual. An individual cannot carry out the eventuality of *zhang de hen xiang* ‘look a lot alike’, which is encoded by a collective or reciprocal predicate. The entity of two persons is a necessary condition on the eventuality of looking alike, but not a measurable element to the eventuality. Thus *dou* is not licensed in (203b). However, *dou* is licensed in (203c), because three persons are more than the necessary two persons for the eventuality of looking alike. The entity of three persons is an M element and thus licenses *dou* in (203c). Thus it is not true that a collective predicate cannot have *dou*, as claimed by Huang (1994).

The fourth property of an M element is that it is independent of the specificity of an event. Lin (1996: 43) compares the following two sentences and claims that the reason for the unacceptability of (204a) is its specificity, encoded by the perfective aspect marker *-le* plus the BA-construction.

- (204) a. **dabufen-de jingcha dou ba shudian baowei-le.*
 most policeman all BA bookstore surround-ASP
 ‘Most of the policemen surrounded the bookstore.’
- b. *dabufen-de minjindang yuan dou baowei-guo zongtongfu.*
 most M.J.T. member all surround-ASP president-house
 ‘Most members of the M.J.T. party have surrounded the House of the President.’

I disagree with this specificity assumption. First, the interpretation of *baowei* in (b) is not ‘surround’. The implied meaning of the verb here is to participate in the event of surrounding, rather than to accomplish the action of surrounding. However, the subject of a BA-construction must not only participate in but also accomplish the event (Cheng 1988). A plural entity is always measurable to the eventuality of participation, but not always measurable to the eventuality of accomplishing the action of surrounding. Only several groups of people, each group composed of more than one person, can be measurable to the eventuality of accomplishing the action of surrounding. Thus *dou* in (204b), but not in (204a), is licensed and the sentence is acceptable. Second, unlike *shangliang* ‘discuss’, *zhengchao* ‘quarrel’, *jianmian*

'meet', *he-mai* 'together buy', and *zhang de hen xiang* 'look a lot alike', which can be accomplished by two persons and in which any entity containing more than two persons would be measurable to the eventuality, *baowei* 'surround' requires a group of people to accomplish. Thus a single group is a necessary condition on the event of surrounding, but not a measurable entity to the event of surrounding. This is similar to the example of borrowing a book. A single book is a necessary condition on an event of borrowing, but is not a measurable entity to an event of borrowing. *Dou* in (204a) is not licensed because *dabufen-de jingcha* 'most policemen' is a single group, which is not a measurable entity to the eventuality of surrounding. Two or more groups can be measurable to an event of surrounding and license *dou*. This is shown in (205) below:

- (205) a. di-san pai he di-si pai *dou*:ba shudian baowei-le.
 3rd platoon and 4th platoon all BA bookstore surround-ASP
 'Both of the third and the fourth platoons surrounded the bookstore.'

Third, a nonspecific event, which might contain an aspect marker *-guo* and exclude BA, as assumed by Lin for (204b) above, cannot remedy a *dou* sentence if there is no M element:

- (206) *zheiben shu wo *dou* jie-guo.
 this book I all borrow-ASP

Thus, the licensing of *dou* is unrelated to the specificity of an event.

The sixth property of an M element is that the notion of measurable to the eventuality is different from the notion of measuring out an event in the sense of Tenny (1992). According to Tenny, “all direct internal arguments undergoing change are constrained to measure out the event, whether or not it is a delimited event.” (Tenny 1992: 6) “A delimited event is one that the language encodes as having an endpoint in time.” (Tenny 1992: 5) I use her two typical examples *destroy the city* and *push the car* and my own example *push the two cars* to show the differences between the relevant notions:

	measure out the event	delimit the event	measurable to the event
<u>the city</u> in <i>destroy the city (in an hour)</i>	+	+	+
<u>the car</u> in <i>push the car (for an hour)</i>	+	-	-
<u>the two cars</u> in <i>push the two cars (for an hour)</i>	+	-	+

Being measurable to an eventuality depends on being able to be partially involved in the eventuality. Notice that having a part-whole structure does not ensure being able to be partially involved in a certain eventuality. The entity of a city can be partially involved in the event of destroying the city, since it is possible to destroy only half of the city. Thus this entity in this event is an M element. The entity of a car cannot be partially involved in the event of pushing

the car, since it is impossible to push only part of the car and let the other part remain still. So the entity of a car in this event is not an M element. Finally, the entity of two cars can be partially involved in an event of car-pushing, since it is logically possible to push one car first and then the other later (at a specific time only one of them is pushed and the other one remains still). Therefore, the entity of two cars in the event of car-pushing is an M element. The following Chinese data show that only when an entity is an M element, can *dou* occur.

- (207) a. ta ba zheige chengshi hui le.
 he BA this city destroy ASP
 'He destroyed the city.'
- b. ta ba zheige chengshi **dou** hui le.
 he BA this city all destroy ASP
 'He destroyed the city completely.'
- (208) a. neiliang che ta tui-guo.
 that car he push-ASP
 'He pushed that car.'
- b. *neiliang che ta **dou** tui-guo.
 that car he all push-ASP
- (209) a. nei liangliang che ta tui-guo.
 that two car he push-ASP
 'He pushed those two cars.'

- b. *nei liangliang che ta dou tui-guo.*
 that two car he all push-ASP
 ‘He pushed both of those two cars.’

The above discussion distinguishes the notion of M element from other syntactic or semantic notions used in the literature.

A structural constraint on a licenser of *dou* is that it must be to the left of *dou*.

- (210) a. *zheiben shu* *wo dou kan-le.*
 this book I all read-ASP
 ‘I have read the whole book.’
- b. **wo dou kan-le zheiben shu.*
 I all read-ASP this book

In (210b), the only element to the left of *dou* is *wo* ‘I’, which is not a measurable entity to the eventuality *kan* ‘read’, while the object *zheiben shu* ‘this book’, which is an M element, is not to the left of *dou*. Thus the sentence is unacceptable.

So far, it can be seen that the grammaticality of *dou*-sentences depends on the relation between an NP to the left of *dou* and an eventuality. In previous studies of *dou* the eventuality property of *dou* licensers has fallen outside the central attention. Thus, many puzzles such as backward quantification and the exceptions to the apparent plurality requirement have remained unsolved. Below, I will propose a linking hypothesis to solve these problems.

We have seen in the above data that elements licensing *dou* must first, be measurable to the eventuality expressed by the predicate, and second, be to the left of *dou*. In all cases, an eventuality expressed by a *dou* sentence requires an M element, while an M element can stand alone in a sentence without *dou*, as in (197a). So there is an asymmetric dependency between *dou* eventuality and M elements. In the next section, we will introduce a symmetric dependency between *dou* and universal quantifiers.

5.2.2 The mutual dependency of *Dou* and preverbal universally quantified arguments

In Chinese all preverbal \forall quantified arguments need either *dou*-support or a nonspecific nominal in the clause. Specifically, \forall quantifiers such as *suoyoude* ‘all’, *zhengge* ‘the whole’, and *quanbu* ‘complete’ must be licensed by *dou*, while \forall quantifiers such as *meiyi* ‘every’, nominal reduplication such as *ren-ren* (person-person) ‘each person’, etc., are licensed either by *dou* or by a nonspecific nominal in the clause.⁴⁷

⁴⁷ A polarity item such as *renhe* ‘any’ must also be licensed by *dou* if it occurs in a subject position, or by a negation marker if it occurs in an object position.

- (i) *renhe ren *(dou) chi-guo miantiao.*
any person (all) eat-ASP noodle
‘Everyone has eaten noodle.’
- (ii) *renhe ren *(dou) mei lai.*
any person-(all) not come.
‘None has come.’
- (iii) *ta mei chi-guo renhe nailao.*
he not eat-ASP any cheese
‘He has never eaten any cheese.’

This issue is unexplored in this thesis and must await further research.

- (211) a. *meiyiben shu wo *(dou) jie-le.*
 every book I (all) borrow-ASP
 'I have borrowed all of the books.'
- b. *suoyoude ren *(dou) lai-le.*
 all person (all) come-ASP
 'All of the persons have come.'
- c. *zhengge fangzi *(dou) ta-le.*
 whole house (all) collapse-ASP
 'The whole house collapsed.'
- d. *ta quanbu lunwen *(dou) xie-hao-le.*
 he entire thesis (all) write-good-ASP
 'He has completed writing his thesis.'
- e. *ren-ren *(dou) kan-le zheibu dianying.*
 person-person (all) watch-ASP this movie
 'Everyone has watched this movie.'
- (212) a. *ta gei meige keren (dou) chang-le yishou ge.*
 he for each guest (all) sing-ASP one song
 'He sang a song for each guest.'
- b. *ta gei meige keren *(dou) chang-le neishou ge.*
 he for each guest (all) sing-ASP that song
 'He sang that song for each guest.'

- (213) a. *ruguo meige ren (dou) chang sanshou ge, biao yan hui hen chang*
 if each man (all) sing three song, show will very long
 'If each person sings three songs, the show will be very long.'
- b. *ruguo meige ren *(dou) chang neishou ge, biao yan kending mei-yisi.*
 if each man (all) sing that song, show surely not-interesting
 'If each person sings that song, the show will surely be boring.'

The following examples show that post-verbal universal quantifiers do not need *dou* or nonspecific nominals to support them.

- (214) a. *wo renzhende kan-le meiyizhang hua.*
 I carefully watch-ASP each picture
 'I watched each picture carefully.'
- a'. *meiyizhang hua wo *(dou) renzhende kan-le.*
 each picture I all carefully watch-ASP
- b. *ta xunsude jiancha-le meiyige fangjian.*
 he quickly examine-ASP each room
 'He examined each room quickly.'
- b'. *meiyige fangjian ta *(dou) xunsude jiancha-le.*
 each room he all quickly examine-ASP

The data in (215) show that elements which are universally quantified but are not arguments do not require *dou*.

- (215) a. ta meitian (dou) kan neizhang zhaopian.
 he everyday (all) look-at that photo
 'He looks at that photo everyday.'
- b. ta daochu (dou) chui-niu.
 he everywhere (all) brag
 'He brags everywhere.'

Chinese preverbal \forall quantified arguments thus behave like polarity items in that they must be "in construction with" a trigger (Klima 1964). Since they cannot stand alone without a licenser such as *dou*, and since *dou*, if it occurs, cannot stand alone either, I claim that *dou* and preverbal \forall quantifiers license each other.

The preverbal quantifier *dabufen* 'most' is another polarity item. It can be an M element in a sentence. However, unlike other M elements, which license *dou* but do not depend on *dou*, preverbal *dabufen* 'most' must co-occur with *dou*. It cannot stand alone. Like *suoyoude* 'all' and unlike *meiyi* 'each', which can be licensed either by *dou* or by nonspecific nominal, preverbal *dabufen* can only be licensed by *dou*.

- (216) a. dabufen ren *(*dou*) lai-le.
 most: person all come-ASP
 ‘Most people came.’
- b. ta gei dabufen ren *(*dou*) zhishao xie-guo yifeng xin.
 he to most person all at-least write-ASP one letter
 ‘He wrote at least one letter each to most of the people.’
- c. ta dabufen xin *(*dou*) kan-le.
 he most letter all read-ASP
 ‘He has read most of the letters.’

The following examples show that postverbal *dabufen* is not a polarity item:

- (217) a. wo kan-guo dabufen Aosika huojiang yingpian.
 I read-ASP most Oscar win-prize movie
 ‘I watched most Oscar-winning movies.’
- b. dabufen Aosika huojiang yingpian wo *(*dou*) kan-guo.
 most Oscar win-prize movie I all watch-ASP
 ‘I watched most Oscar-winning movies.’

Notice that only when *dabufen*-NP is an M element can it license *dou*. This was discussed in the last subsection above.

The data in (218) show that when *dabufen*-NP is not an argument, it does not require *dou*, even if it appears before the verb.

- (218) a. ta dabufen shijian (dou) kan xiaoshuo.
 he most time (all) read novel
 'He reads novels most of the time.'
- b. ta dabufen shijian (dou) bu zai jia.
 he most time (all) not at home
 'He is not at home most of the time.'

The above data present a contrast between two kinds of elements which are universally quantified or quantified by *dabufen* 'most': on the one hand, in situ objects and non-argument elements do not require *dou*; on the other hand, moved arguments, which occur to the left of a verb, must appear with *dou*.

In this subsection, I presented a mutual dependency between *dou* and another element. This kind of mutual dependency is typical of the relation between a quantifier or operator and its variable. Each variable must be bound by an operator and each operator must bind a variable. In Section 5.3.1.2 I will discuss more about the mutual and nonmutual dependencies in *dou* sentences.

5.2.3 The requirement for WH phrases in *Dou* sentences

If to the left of *dou* there is neither an M element nor a universal quantifier, the occurrence of a WH phrase, preceding or following *dou*, can ensure the acceptability of a *dou* sentence, as shown in (195c, d) on page 169. When a WH phrase occurs to the right of *dou* as in (195d), it is interpreted as an interrogative element. However, when a unique WH phrase occurs to the left of *dou* as in (195c), it is interpreted as a universal quantifier, and a deletable *wulun* ‘no-matter’ can always precede the WH phrase (the more complicated cases where multiple WH phrases occur to the left of *dou* and where a WH phrase co-occurs with an M element will be discussed in Chapter 6).

A WH phrase occurring to the right of *dou* always has a list reading. Since in such cases questioned entities are presupposed to be plural in the discourse (Li 1995), interrogative WH phrases are in fact M elements.

- (219) a. *dou shēi lai-le?*
 all who come-ASP
 ‘Who all have come?’
- b. *ta dou mai-le shenme?*
 he all buy-ASP what
 ‘What all has he bought?’

- c. *ta dou zai nar xuexi?*
 he all at where study
 'Where all does he study?'
- d. *ta dou zai nar mai-le shenme?*
 he all at where buy-ASP what
 'Where all and what (all) did he buy?'

One property of interrogative WH M elements is that they appear to the right of *dou*. This is not possible for other kinds of M elements. We have seen this in (210) above.

One approach to the variation between the rightward and leftward linking of *dou* can be found in Tsai's (1994) study of WH questions. He argues that Chinese interrogative WH elements are bound by a sentence initial null operator. Adopting his claim, I propose that for interrogative WH M elements, *dou* is licensed by the operator, which is to the left of *dou*.⁴⁸

- (220) \downarrow
 Op_{lQ} ... *dou* ... wh_i?

If a null interrogative operator can be a licenser of *dou*, one might wonder why a raised quantifier cannot license *dou*, as pointed out by one reviewer of Zhang (1997a). In the

⁴⁸ Adverb *dou* must occur to the right of a shifted object. The ungrammaticality of the following (i) and (iii) is related to the position of *dou*, not to *dou* licensing.

- (i) *Op_{lQ} *ta dou, shenme, chi-guo* t_i?
 he all what eat-ASP
- (ii) *tamen* zheiben shu, dou jic-guo t_i.
 they this book all borrow-ASP
 'They all (once) borrowed this book.'
- (iii) **tamen* dou zheiben shu, jic-guo t_i.

following, (221b) is assumed to be the LF representation of (221a). In (221b), the universal quantifier does C-command *dou*.

- (221) a. **ta dou kanjian-le meige ren.*
 he all see-ASP each person
 ‘He saw all persons.’
- b. [*meige ren_i [ta dou kandao t_i.]*]

To answer this question, I will show that the licensing of *dou* is similar to the licensing of an English parasitic gap (PG). A PG is licensed by a trace of an A'-movement (Chomsky 1986:111). While a PG can be licensed by a WH trace after WH movement, it cannot be licensed by a trace after Quantifier Raising.

- (222) a. *Which book did John read t without reviewing pg*
- b. **John read every book without reviewing pg*

These two sentences are supposed to be structurally analogous at LF:

- (223) a. [*Which book_i [John read t_i [without reviewing pg_i]]]*
- b. [*every book_i [John read t_i without reviewing pg_i]]]*

Since Chomsky (1986), it has been generally assumed that a PG must be licensed at SS, i.e. before Quantifier Raising. In (222b), since there is no variable or A'-operator trace, the PG is not licensed. Thus the sentence is unacceptable. Similarly, in (221a), the universal quantifier does not C-command *dou* before Quantifier Raising, thus *dou* is not licensed and the sentence is unacceptable. It seems that both an English PG and Chinese *dou* must be licensed before Quantifier Raising.

The level of SS is incompatible with the Minimalist approach. Whether Quantifier Raising can be an independent operation is controversial in the current literatures. Hornstein (1996a) discusses the relationship between subject/object raising and quantifier scoping and argues against Quantifier Raising. If Quantifier Raising is eliminated, then (222a) and (222b) are no more structurally similar at LF than they are prior to Spell Out. Similarly, there is no covertly raised universal quantifier to license *dou* in (221).

Now let us turn to the case where a single WH phrase occurs to the left of *dou*, and the WH phrase must be interpreted as a universal quantifier. Lin (1996) argues that the universal quantification force of pre-*dou* WH phrases as in (224) comes from the PF-deletable *wulun* 'no-matter' (see section 5.2.4 for a discussion of *wulun*). In Cheng's (1995) analysis, WH-elements with universal quantificational meaning such as *shei* 'who' and *shenme* 'what', which occur to the left of *dou*, are taken to be polarity items. This is consistent with our observation that all Chinese preverbal universal quantifiers behave like polarity items, shown in section 5.2.2.

- (224) (wulun) *shei* *(*dou*) *chi-le miantiao*.
 no-matter who (all) eat-ASP noodle
 ‘Everyone has eaten noodle.’

5.2.4 The syntactic properties of *wulun*

If *wulun* ‘no-matter’ is followed by a clause, either an alternative question or an A-not-A yes-no question, or a clause containing a WH phrase, as shown below, it is generally taken to be a subordinate conjunction. It always needs *dou*.⁴⁹

- (225) a. *wulun* [ni lai haishi ta lai], *wo* *(*dou*) *huanying*.
 no-matter you come or he come, I all welcome
 ‘Whether you or he comes, I all welcome.’

⁴⁹ When a sentence contains an alternative conjunction *haishi* ‘or’ or an A-not-A word, it cannot receive an additive focus reading. Thus the other interpretation of *dou* in (225) cannot ensure the acceptability of the sentences.

- b. wulun [ni xi-bu-xihuan ta], wo *(*dou*) yao qing ta.
 no-matter you like-not-like he, I all want invite he
 ‘Whether you like him or not, I will invite him.’
- c. wulun [ta mai-bu-mai shu] dou gen wo wuguan.
 no-matter he buy-not-buy book all to me irrelevant
 ‘I don’t care whether he buys books or not.’
- d. wulun [ni xihuan shei], wo *(*dou*) bu zaihu.
 no-matter you like who, I all not care
 ‘Whoever you like, I do not care.’

However, when *wulun* and a WH phrase form a constituent, or an argument of a predicate, as discussed in Lin (1996), its syntactic status is unclear.

- (226) ta [wulun shenme shu] (**dou*) kan.
 he no-matter what book all read
 ‘He reads all kinds of books.’

In this sentence, *wulun* and the WH phrase *shenme shu* ‘what book’ form a nominal phrase. *Wulun* can be an adjunct of the WH nominal. It shares some properties with focus marker *lian* ‘even’, discussed in Chapter 2. For example, it cannot occur to the right of a demonstrative:

- (227) a. *zhe wulun
 this no-matter
- b. *zhe lian
 this even

In addition, neither *lian* nor *wulun* occurs with a post-verbal object or complement of a preposition:

- (228) a. *[ta chi wulun shenme] dou xiang.
 he eat no-matter what all enjoy
 ‘He enjoys eating all kinds of stuff.’
- b. *ta gei wulun shei dou xie-le xin.
 he to no-matter who all write-ASP letter
 ‘He wrote letters to everyone.’
- c. *ta dui wulun shei dou hen hao.
 he to no-matter who all very good
 ‘He is nice to everyone.’
- d. *ta gen wulun shei dou chaojia.
 he with no-matter who all quarrel
 ‘He quarrels with everyone.’

- (229) a. *ta chi lian hua (dou)
 he eat even flower (all)
- b. *ta gei lian zongtong dou xie-le xin.
 he to even president all write-ASP letter
 'He even wrote a letter to the president.'
- c. *ta gei zhiyou fu-mu cai xie xin.
 he to only father-mother only write letter
 'He only writes to his parents.'

The inability of a nominal *wulun*-construction to appear after a preposition is also observed in Lin (1996: 66). However, he leaves the issue as an open question.

Furthermore, both *lian* and *wulun* need *dou*. I presented the *lian* data in Chapter 2 and the *wulun* data above.

Finally, both *lian* and *wulun* are deletable at PF.

The above facts show that *wulun* shares four properties with the focus marker *lian*: a) not following a demonstrative; b) not occurring with an in situ complement of a verb or a preposition; c) requiring *dou*, and d) being deletable at PF. I discussed in Chapter 2 that *lian* and the focused element must be M-commanded by *dou*. Notice that if *wulun*, like *lian*, adjoins to a nominal, as in (226) above, it does not C-command *dou*. I will show in section 5.3.2.1 that the licenser of *dou* must C-command *dou*. Thus it seems that *wulun* is not a licenser of *dou*. On the contrary, *dou* is a licenser of *wulun*.

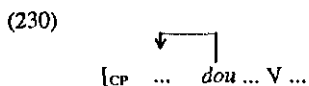
However, as assumed by Lin (1996), when *wulun* adjoins to a WH phrase it provides universal quantificational force to the WH phrase. I extend his assumption and claim that when *wulun* adjoins to an XP, it provides universal quantificational force to the XP. I discussed in section 5.2.2 that a preverbal universal quantified argument has a mutual dependent relation with *dou*. Thus *dou* has two kinds of relations with respect to a *wulun*-XP argument: it licenses the word *wulun* and has a mutual dependent relation with the whole *wulun*-XP. Notice that *dou* is related to either the word *wulun* or to the whole *wulun*-XP, not to the internal element of the XP to which *wulun* attached. For example, the A-not-A word in (225c) does not have a direct relation with *dou*.

In this section, I have shown that *dou* can be licensed by an M element, a WH-interrogative operator, which is also a kind of M element, a universal quantifier, and the quantifier *dabufen* 'most'. In addition, it has been shown that licensors of *dou* are uniformly to the left of *dou*. Finally, I discussed the syntactic properties of the word *wulun* 'no-matter.'

5.3 A binding approach

5.3.1 Linking dependency in *Dou* sentences

To account for the dependency of *dou* on its licensors, I propose a linking hypothesis, based on Higginbotham's (1983, 1985) linking version of binding theory: *dou* must be bound by linking to at least one of its licensors, which asymmetrically C-commands *dou* within the same clause.



In subsections 5.3.1.1 and 5.3.1.2, I will discuss *dou* quantification and (a)symmetrical binding. The locality constraints on this binding will be discussed in Chapter 6.

5.3.1.1 *Dou* quantification

Since Partee, Bach and Kratzer (1987), quantification is divided into two types: D-type and A-type. The former refers to quantification within a nominal, while the latter refers to quantification beyond a nominal, such as adverb and auxiliary quantification.⁵⁰

Dou is an adverb and an A-type quantification bindee. It has a dependent feature of distributivity. The distributivity feature can relate to agents, themes, locations, temporals, and so on. Without a specification, the distributivity feature of *dou* cannot be interpreted. As an anaphor needs an antecedent to get its reference interpreted, the distributive feature of *dou* needs an antecedent which is compatible to a distributive eventuality to have the domain of the distributivity specified. So semantically, the distributivity feature of *dou* must be construed with another element, its licensor, in order for the distributivity to be interpreted. Syntactically, *dou* needs to be bound. (See Ouhalla (1996:684) for a discussion of binding and interpretation of features)

⁵⁰ See Matthewson (1996) for a revision of this division.

5.3.1.2 Symmetrical binding and asymmetrical binding

In natural languages, we see two kinds of dependencies, asymmetrical and symmetrical. Anaphor binding and pronominal binding are asymmetrical dependencies, while cases of quantifier/operator-variable binding are symmetrical dependencies. *Dou* linking can be either one, but not both at the same time.

Like antecedents of anaphors and unlike operators of WH-variables, M elements including WH-interrogative operators are not intrinsic binders of *dou*. Their binder function with respect to *dou* is to satisfy the distributivity feature of *dou*, which needs to be interpreted by binding. However, a non-operator M element does not need to link to *dou* and a sentence without *dou* can be perfectly grammatical. Similarly, a WH-operator, which binds an in-situ WH-phrase, does not need to link to *dou* either and a WH interrogative sentence without *dou* can also be perfectly grammatical. In other words, the dependency relation between *dou* and an M element is not mutual: *dou* needs an M element while an M element does not require *dou*. So an M element is an asymmetrical binder of *dou*.

Preverbal universally quantified arguments and the quantifier *dabufen* 'most' in Chinese must be supported by either *dou* or a nonspecific nominal (section 2.2). A preverbal WH-phrase is interpreted as a universal quantifier only when *dou* shows up. Suppose such a universal quantifier has an intrinsic dependency feature which needs to link to something else. Since *dou* also has a dependency feature, the dependency relation between *dou* and a preverbal universal quantifier is mutual: each of them needs to be licensed by another and they can license each other. So a preverbal universal quantifier is a symmetrical binder of *dou*.

Following Higginbotham (1983:401), I will indicate the asymmetrical binding of two positions in a syntactic structure by linking those positions with an arrow, the head of which points to the binder. In addition, I will indicate symmetrical binding (linking) between two positions in a syntactic structure by linking those positions with a line without an arrow.



(231) a. tamen *dou mai-le neiben shu.*

they all buy-ASP that book

'They all bought that book.'



b. meige ren *dou mai-le neiben shu.*

each person all buy-ASP that book

'Everybody bought that book.'

So far we have distinguished two kinds of *dou* binders. Asymmetrical binders are M elements and Q-operators (interrogative M elements). Symmetrical binders are the pre-verbal quantifier *dabufen* 'most' and pre-verbal universal quantifiers including pre-*dou* WH phrases which are not bound by interrogative operators. Pre-*dou* WH phrases get their universal quantification force from a deletable *wulun* 'no-matter.'

In subsections 5.3.2 and 5.3.3, I will discuss two implications of this binding approach to *dou* sentences: C-command and multiple linking.

5.3.2 Universal C-command binding

5.3.2.1 Against backward binding

In the previous studies of *dou*, *dou* has generally been assumed to be a quantifier and its licenser a variable (Lee 1986). However, *dou* must be C-commanded by its variable. This backward quantification is obviously inconsistent with any form of binding theory. A universal principle, as suggested by Higginbotham (1983:402) is:

(232) If X C-commands Y, then Y is not an antecedent of X.

The following examples show that if *dou* asymmetrically C-commands an M element or a universal quantifier, the sentence is ungrammatical:

- (233) a. *neixie shu* [_{IP} *ta dou jie-le*].
 those book he all borrow-ASP
 'He has borrowed all of those books.'
- b. **ta dou* [_{VP} *jie-le neixie shu*].
- (234) a. *meiben shu* [_{IP} *ta dou jie-le*].
 each book he all borrow-ASP
 'He has borrowed every book.'
- b. **ta dou* [_{VP} *jie-le meiben shu*].

- (235) a. *_{[IP}[tamen chi miantiao] dou gen wo wuguan].
 they eat noodle all to I irrelevant
- b. *_{[IP}[tamen mai neixie shu] dou gen wo wuguan].
 they buy those book all to I irrelevant
- (236) a. *_{[IP}[meige ren mai-le neiben shu] dou gen wo wuguan].
 each person buy-ASP that book all to me irrelevant
- b. *_{[IP}[ta jian-le meige ren] dou gen wo wuguan].
 he see-ASP each person all to me irrelevant
- (237) a. *_{[IP}[[tamen renshi _] de neige ren] dou mai-le neiben shu].
 they know MOD that person all buy-ASP that book
- b. *_{[IP}[[meige ren renshi _] de neige ren] dou mai-le neiben shu].
 each person know MOD that person all buy-ASP that book

In all the unacceptable sentences above, the underlined elements, which should be licensers of *dou*, do not C-command *dou*. Chiu (1993:192) correctly points out that “it is not that *dou* must m-command its antecedent, as Lee [(1986)] has proposed, but rather that a true antecedent of *dou* must C-command *dou* at S-structure and be syntactically ‘close’ to it, that is, be in the same clause as *dou*.” According to our binding approach, *dou* is not a binder or operator. Rather, it is a bindee, bound by its licensers. Since binder phrases always C-command *dou*, the general principle that binding requires C-command is upheld. In other words, the above data show that the underlined elements, which can be licensers of *dou*, must C-command *dou* and thus *dou* cannot be an antecedent of the underlined elements.

As indicated in Kayne (1981) and Belletti (1982), the distribution of floating quantifiers such as *all* in English and *tutti* 'all' in Italian may be accounted for if it is assumed that these quantifiers are anaphoric. As such, they must be related to an antecedent in their governing category. In (238a-f) from Belletti (1982), the anaphoric element is *tutti*. Unless the antecedent *i miei amici*, or the PRO it controls, occurs in the governing category of *tutti*, the sentences will be excluded by the binding theory since the anaphoric *tutti* will be free. Compare (238a), (238c) and (238f) with (238b), (238d), and (238e).

- (238) a. *i miei amici hanno parlato tutti dello stesso problema*
 and my friends have spoken all of-the this problem
 'My friends spoke all of the same problem'
- b. **Mario ha parlato tutti dello stesso problema*
 Mary has spoken all of-the this problem
 'Mary spoke all of the same problem'
- c. *Mario sostenne che i miei amici hanno parlato tutti dello problema*
 Mario maintained that my friends have spoken all of-the problem
 'Mario maintained that my friends spoke all of the same problem'
- d. **i miei amici sostennero che Mario parlò tutti dello stesso problema*
 'My friends maintained that Mario spoke all of the same problem'
- e. **i miei amici mi hanno costretto a parlare tutti dello stesso problema*
 'My friends obliged me to speak all of the same problem'
- f. *ho costretto i miei amici a parlare tutti dello stesso problema*

I obliged

'I obliged my friends to speak all of the same problem'

Thus, Italian *tutti* and Chinese *dou* have the same constraint that they must be C-commanded by their licensors.

Our binding approach to *dou* quantification also explains why *dou* never occurs to the left of non-WH subjects.

- (239) a. **dou tamen mai-le neiben shu.*
 all they buy-ASP that book
- b. *tamen dou mai-le neiben shu.*
 'They all bought that book.'
- c. *dou shei mai-le neiben shu?*
 all who buy-ASP that book
 'Who all bought that book?'

To rule out cases like (239a), where *dou* adjoins to IP and thus occurs to the left of the subject, Cheng (1995) assumes that *dou* adjoins to X^0 and X' verbal projections only, but not to maximal verbal projections. This assumption cannot account for the acceptability of (239c), where *dou* also adjoins to IP and thus occurs to the left of a WH subject. My binding approach, however, predicts that if *dou* is not C-commanded by a binder, the sentence is unacceptable. WH subjects allow a preceding interrogative operator, which can bind a pre-subject *dou*. Since non-WH

subjects do not have an interrogative operator, *dou* preceding a non-WH subject cannot be bound. (240) illustrates the linking involved in the three sentences above.

- (240) a. $*[{}_{IP} \textit{dou} \quad M_{sub}]$
-
- b. $[{}_{IP} M_{sub} \textit{dou}]$
-
- c. $Op[{}_{QH}] [{}_{IP} \textit{dou shei}_i]$
-

5.3.2.2 Against LF movement of *Dou* to its licensors

Following Heim, Lasnik, and May's (1991) analysis of English *each*, Cheng (1995:212) proposes that at LF *dou* adjoins to its licensor first, then the whole NP containing both the licensor and *dou* undergoes quantifier raising. If this could be argued for, backward binding would be avoided. But two issues must be clarified.

First, any LF movement of *dou* requires syntactic motivation. If the only evidence is that the movement is leftward and thus satisfies one condition of movement (Cheng 1995:213), the movement approach is not superior to the binding approach.

Second, assuming that the LF movement of English *each* to its antecedent is defensible, we still need to explain why *dou*, unlike English *each*, can adjoin to several different NPs at the

same time in multiple linking (next section), if multiple linking is possible.⁵¹ This will be shown to be easily explained under the binding approach.

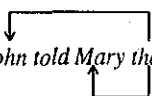
5.3.3 Multiple linking and split antecedents

Higginbotham's (1983) linking version of binding theory provides a nice solution to the possible pronominal binding between singulars and plurals, the so called 'split antecedent' problem. This kind of binding cannot be accounted for by the generally accepted co-indexing version of binding theory.⁵² For example,

(241) *John told Mary they should leave.*

One of the readings of this sentence is that the referent of *they* includes both John and Mary. According to the linking theory, nothing prohibits an element from being linked to more than one antecedent, so that links can be assigned to (241) as follows (Higginbotham 1983:402):

(242) *John told Mary they should leave.*



The diagram shows the sentence "(242) John told Mary they should leave." with two arrows originating from the word "they". One arrow points to "John" and the other points to "Mary", illustrating that "they" is linked to both antecedents.

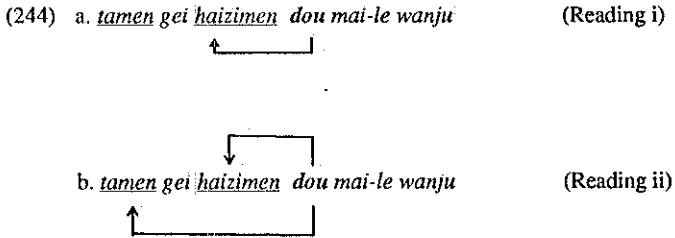
⁵¹ Unlike Lee (1986), Sung (1996), and Jiang (1996), among others, Cheng assumes that multiple linking is not possible.

⁵² See Lasnik (1981:54) for a different solution: partial overlap in reference. Specifically, *John* and *Mary* in *John told Mary they should leave* are disjoint, while *they* is entirely free. *They* can be used to designate the set consisting of *John* and *Mary* (or a larger set properly including *John* and *Mary*). This solution can also be used to handle multiple linking of eventuality quantification of *dou* sentences.

In *dou* quantification binding, multiple binding is very common, a fact that has been noted by many *dou* researchers.⁵³ For example,

- (243) tamen gei haizimen *dou* mai-le wanju.
 they for children all read-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. These are two different eventualities. In our linking approach, the two kinds of binding are shown in (244a) and (244b) respectively.



⁵³ If the dependency in *dou* sentences is one of binding, one might wonder what kind of binding it is: the anaphor type obeying the Binding Principle A, or the pronominal type obeying the Binding Principle B. However, as pointed out by Culicover and Jekendoff (1995: 150), there are referentially dependent elements in natural language that are quite distinct from the familiar English-type pronouns and reflexives. Nevertheless, they behave in a way that is syntactically constrained and should therefore fall under a properly extended binding theory. For example, Saxon (1984) shows that there is an element *ye* in Dogrib that must have an antecedent within the sentence but cannot be locally bound; it thus shares some features of pronouns and some features of reflexives. Chinese *dou* binding also shares some features of both pronoun and reflexive binding. On the one hand, *dou* must be bound locally, i.e., within the clause (but see section 6.5 for a discussion on this). Thus the binding looks like anaphor or reflexive binding. On the other hand, *dou* allows split antecedents. Unlike pronouns, anaphors cannot split their antecedent (Higginbotham 1983: 400).

Multiple linking can also be found between M elements and interrogative operators.

(245) a. *tamen dou mai-le shenme?*


they all buy-ASP what

i. 'What all did they buy collectively?'


ii. 'What did each of them buy?'

iii. 'What all did each of them buy?'

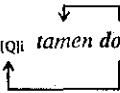
b. $Op_{[Q]i}$ *tamen dou mai-le shenme?* (Reading i)



c. $Op_{[Q]i}$ *tamen dou mai-le shenme?* (Reading ii)



d. $Op_{[Q]i}$ *tamen dou mai-le shenme?* (Reading iii)



Williams (1980) points out that split antecedent binding must be optional. This is also true of Chinese *dou* binding.

So far, we have seen that among asymmetrical binders of *dou*, multiple linking is possible. However, among universal quantifiers, multiple linking is not possible. This is illustrated by the following examples, where (246a) is from Cheng (1991:162).⁵⁴

⁵⁴ See section 4.2 for a discussion of free choice WH phrases.

- (246) a. **meige laoshi meige xuesheng dou renshi.*
 each teacher each student all know
 intended: Every student knows every teacher.
- b. **shei meiben shu dou du-le.*
 who each book all read-ASP
 intended: Everyone has read every book.
 (OK: Who has read all the books?)
- c. **meiben shu shei dou du le.*
 each book who all read-ASP
 intended: Every book every one has read it.

Multiple linking has been claimed to be a serious challenge to feature checking approaches to *dou* quantification. Sung (1996) therefore proposes an unselective operator binding hypothesis, parallel to the operator-variable approach to Chinese WH interrogatives (Tsai 1994). I will discuss problems with this unselective binding hypothesis in the next subsection.

5.4 Against the unselective operator binding approach

Sung (1996) claims that *dou* quantification parallels WH quantification in Chinese in that both allow multiple quantification. Multiple quantification might be unselective binding in the sense of Heim (1982) for indefinite NPs, Pesetsky (1987) for English *which* phrases, Tsai (1994)

for Chinese WH questions, and Cheng and Huang (1996) for donkey sentences. This means that in all of these cases, an operator can bind several variables. Similarly, Sung proposes a sentence initial operator in Spec of CP to account for unselective binding in *dou* sentences. It is suggested that the *Dou* operator in Spec of CP operates on all possible variables in a sentence. For example, the sentence in (247) is ambiguous, as is the multiple WH question in (248).

- (247) a. *wode na liangge pengyou zai dong-xi liang'an dou mai-le fangzi.*
 my that two friend at east-west two-coast all buy-ASP house
 i. 'Each of the two friends of mine bought house(s) at both coasts.'
 ii. 'Two friends of mine bought house(s) at both coasts collectively.'
 (*dou* can quantify either the location or both the agent and the location)
- b. [_{CP} Op_{Dou}_{i,j} [_{IP} ...NP_i ... NP_j... *dou* ...]]
- (248) a. *ni zhidao shei dian-le shenme cai*
 you know who order-ASP what dish
 i. Who do you know t ordered some dish?
 ii. What dish do you know someone ordered?
 iii. Who_i what_j dish do you know t_i order t_j? (pair-list reading)
 (Q operator can quantify *shei*, *shenme cai*, or both)
- b. [_{CP} Op_{Q/ij/ik&j} [_{IP} ... Wh_i ... Wh_j ...]]

One difficulty with this approach is that it cannot explain why variables bound by the *Dou* operator must occur to the left of *dou*. This is different from variables bound by WH

operators in Chinese. Since the *dou* operator is in Spec of CP, it C-commands postverbal objects, and should be able to bind them, as a question operator does. Consequently, the unselective binding approach needs additional constraints to explain the contrast between (a) and (b) sentences in (249) - (251).

- (249) a. *neixie shu [IP ta dou jie-le].*
 those book he all borrow-ASP
 'He has borrowed all of those books.'
- b. **ta dou [VP jie-le neixie shu].*
 he all borrow-ASP those book
- (250) a. *meiben shu [IP ta dou jie-le].*
 each book he all borrow-ASP
 'He has borrowed every book.'
- b. **ta dou [VP jie-le meiben shu].*
 he all borrow each book
- (251) a. *dou shei mai-le neiben shu?*
 all who buy-ASP that book
 'Who all bought that book?'
- b. **dou tamen mai-le neiben shu.*
 all they buy-ASP that book

In this unselective binding approach, Sung assumes that the word *dou* not only indicates the presence of a *dou* operator but also marks the boundary of certain kind of scope, for example, the scope of predication. Although Sung (personal communication) claims that the notion of predicate here has not been defined more formally, we may examine it further and see how it might work. In the following sentence, if *dou* marks the scope of predicate, the predicate adjunct PP *gen XiaoLi* 'to XiaoLi' would be out of the predicate, contrary to the fact.

- (252) *tamen [gen XiaoLi] dou shuo-le hua.*
 they to XiaoLi all say-ASP words
 'They all have talked to XiaoLi.'

So *dou* seems not to mark the scope of predicate. One might want to determine whether *dou* marks the scope of quantification: only elements to the left of *dou* can be bound by the *Dou* operator. But as is well known, only operators mark the scope of quantification: all elements to the right of an operator are within the scope of the quantification (see Haegeman 1994:491). Here, according to the assumption that *Dou* is an unselective operator, the operator is in the Spec of CP. The word *dou* is not itself an operator. Even if it were, it would mark the left boundary of the quantification scope, rather than the right boundary of it. So *dou* can be neither a predicate scope marker nor a quantification scope marker. If the position of *dou* does not account for the contrasts in (249) to (251), some other explanation must be introduced. However, all of the above contrasts have been accounted for in my approach by means of the C-command relation between a binder and bindee *dou*.

5.5 Against checking approaches

There are two major problems for checking approaches to *dou* sentences. One is the unpredictability of the strong feature host. The other is the unpredictability of the element which checks the strong feature.

Since a licenser of *dou* must occur to the left of *dou*, one might assume that the licenser has undergone some overt movement to check some strong feature. Strong features of a functional head must be checked before a different level of functional phrase is projected (Chomsky 1995a). For example, if the strong feature of Infl has not been checked, CP cannot be set up above IP. In *dou* sentences, if subjects are licensers of *dou* and check some strong features, Infl would have the strong features. If shifted objects are licensers of *dou* and check some strong features, the head of v^{max} \bar{y} would have the strong features. If the topics are in CP and are licensers of *dou*, checking some strong features, C should have the strong features. In all of these cases, the position of *dou* provides no evidence as to the choice of checking domain. In (253), if the two underlined M elements, the subject and the preverbal object, check some strong features, *dou* does not indicate where the strong features are. In interpretation (i), the subject is the licenser of *dou*, so Infl has the strong feature. However, in interpretation (ii), the shifted object is the licenser, so \bar{y} has the strong feature. It seems that the assumed strong feature in *dou* sentences does not have a stable host. This kind of unpredictability makes any checking explanation hard to maintain.

(253) *LaoWang he LaoLi neixie shu dou mai-le.*

LaoWang and LaoLi those book all buy-ASP

i. 'Both LaoWang and LaoLi bought these books.'

ii. 'LaoWang and LaoLi collectively bought all of these books.'

On the other hand, when several potential checkers of the same functional head occur, there is a syntactically unpredictable optionality in checking, if the NP-*dou* relation does involve checking. In (254), if the two underlined M elements, the preposed object and the locative, check some strong feature of \bar{y} , *dou* does not indicate when the object does the checking and when the locative is the checker. In contrast with multiple checking of strong features in some multiple WH fronting languages, or multiple Case checking in Japanese-Korean type languages, discussed in Koizumi (1995), multiple linking of several NPs in *dou* sentences can involve some or all of the NPs. Again, the availability of the choices is hard to explain syntactically.

(254) *ta [_{VP} zheixie ge zai neixie difang dou chang-guo].*

he these song at those place all sing-ASP

i. 'He sang all of these songs in those places.'

ii. 'He sang all of these songs in each of those places.'

Unlike checking, binding, as suggested by Chomsky (1995b:31), is "part of the interpretive apparatus that applies to LF." If quantification in *dou* sentences is binding rather than checking, as in the approach proposed here, the above two puzzles disappear. First, in this

binding analysis, the dependency feature is in *dou*, not in an M element. So the host of the dependency feature is stable in the binding approach. Second, binding allows multiple antecedents. In addition, as pointed out by Williams (1980), binding by split antecedents is always optional. So the unpredictability of licensers of *dou* is expected in a binding analysis.

One final question is why object M elements move overtly in *dou* sentences, if this kind of binding has nothing to do with strong feature checking. In Chapter 2, I argued that Chinese object shift is motivated to check a strong feature in \bar{y} . This strong feature is triggered by the focus marker of the object. So preverbal objects in *dou* sentences do check some strong features, and that is why they undergo overt movement. But the movement is not driven by the need to license *dou*. Object shift in both *dou* sentences and non-*dou* sentences is motivated to check a strong feature in \bar{y} . Therefore, in *dou* sentences, if the shifted object is an M element, it can be both a binder of *dou* and checker of a strong feature of \bar{y} , as in (255a); if the shifted object is not an M element, it is simply a strong feature checker of \bar{y} , not a binder of *dou*, as in (255b). In (255b), the subject, not the preposed object, is the licenser of *dou*.

- (255) a. *ta neixie shu, dou jie-guo ti.*
 he those book all borrow-ASP
 ‘He borrowed all of THOSE BOOKS.’
- b. *tamen neiben shu, dou jie-guo ti.*
 they that book all borrow-ASP
 ‘They all borrowed THAT BOOK.’

Lin (1996: 53) assumes that *dou* heads a functional projection Distributive Phrase (DistP). He claims: “Universal NPs such as *mei-yi-ben shu* ‘every book’ and NPs with the determiner *dabufen-de* ‘most’ must move to [SPEC, DistP]. Accordingly, DistP must be projected. If DistP is to be projected, then *dou* must be present. This accounts for why *dou* is obligatory. It is easy to account for the word order in (52c, d) [(256c,d)] and (53c, d) [(257c,d)]. We can assume that *mei-yi-ben shu* ‘every book’ in (52c) [(256c)] and *dabufen-de guojia* ‘most countries’ in (53c) [(257c)] must occupy precisely the specifier position of DistP. However, after moving to that position, they can further move to a higher position, perhaps topic position. This would account for (52d) [(256d)] and (53d) [(257d)].”

- (256) a. ??wo kan-*le* meiyiben shu
 I read-ASP each book
 ‘I read every book.’
- b. * wo **dou** kan-*le* meiyiben shu
 I all read-ASP each book
 ‘I read every book.’
- c. wo meiyiben shu **dou** kan-*le*.
 I each book all read-ASP
 ‘I read every book.’

- d. meiyiben shu wo **dou** kan-le.
 each book I all read-ASP
 'I read every book.'
- (257) a. ??wo qu-guo dabufen-de guojia.
 I go-ASP most country
 'I have been to most countries.'
- b. *wo **dou** qu-guo dabufen-de guojia.
 I all go-ASP most country
 'I have been to most countries.'
- c. wo dabufen-de guojia **dou** qu-guo.
 I most country all go-ASP
 'I have been to most countries.'
- d. dabufen-de guojia wo **dou** qu-guo.
 most country I all go-ASP
 'I have been to most countries.'

However, as shown in (214) above, universal NPs do not need to raise. They can stay in the post-verbal position. The (a) sentences of (256) and (257), which are marked by "??", are not as bad as the corresponding (b) sentences, which lack a licenser for *dou*. If some adjunct is merged to the predicate, the sentences would be more natural, as in (214). Thus, if some universal NPs can stay in situ and some appear in the Spec of the assumed DistP, a certain feature of *dou*,

which heads DistP, would be checked overtly in one case and covertly in others. The DistP hypothesis does not explain this.

5.6 Conclusions

This chapter has showed various *dou* licensers: elements that are Measurable to the Eventuality Expressed by the Predicate, interrogative operators, certain quantifiers, and elements which have the word *wulun* 'no matter' adjoined to them . To account for the dependencies of *dou* sentences, a binding approach was proposed. This approach overcomes difficulties met by both movement/checking and operator unselective binding approaches in dealing with the C-command requirement and with multiple linking.

6.1 Introduction

In this chapter some locality constraints on the *dou* binding are analyzed. My main claims are the following. First, the Shortest Link Principle in binding is effective only in the absence of asymmetrical binders (section 6.2). Second, the properties of free choice WH phrases support my analysis (section 6.3). Third, the *ba-/bei*-phrase blocking effect can be accounted for by the binding notion Complete Functional Complex (CFC) (Chomsky 1986:169, among others) (section 6.4). Fourth, *dou* and the dependent of its licenser must be base-generated in the same clause (section 6.5). The chapter is summarized in section 6.6.

6.2 The Shortest Link Principle of symmetrical binding

We distinguished two kinds of binders of *dou* in chapter 5: asymmetrical binders and symmetrical binders. M elements including interrogative operators constitute the former group, while universal quantifiers including WH phrases which link to *dou* constitute the latter group.

Following Cheng (1991), I assume that Chinese WH phrases lack quantificational force and must get their quantificational force somewhere. In addition, the word *wulun* 'no-matter' must be licensed by *dou* (section 5.2.4). Therefore, if *wulun* (deletable at PF (Lin 1996)) adjoins to a WH phrase, it can give universal quantificational force to the WH phrase (Lin 1996). However, since the word *wulun* needs *dou* (see section 5.2.4), and a preverbal element which is

adjoined by a universal quantifier also needs *dou*, the WH phrase together with the adjoined *wulun* must be licensed by *dou*. If a WH phrase is linked to an interrogative operator, it is interpreted as a question element.⁵⁵

There are three generalizations regarding WH and *dou* binding.

- (258) A. Post-*dou* WH phrases are interrogative.
- B. In the absence of a post-*dou* WH phrase and in the absence of a pre-*dou* M element, the nearest symmetrical binder of *dou* is linked to *dou*.
- C. In the presence of a post-*dou* WH phrase or a pre-*dou* M element, a pre-*dou* WH phrase can be either an interrogative element or a universal quantifier.

⁵⁵ In addition to the universal quantifier reading and interrogative reading discussed here, a WH phrase can have an existential reading induced by the yes-no question particle *ma*, as in (ia), and a negative polarity reading induced by a sentence negation marker, as in (ib). (See Cheng 1991, Li 1992)

- (i) a. ta chi-le shenme ma?
 he eat-ASP what Q
 'Did he eat something?'
 b. ta bu tebie xihuan shenme.
 he not particularly like what
 'He does not like anything particularly.'

In the existential contexts, *dou* never links to the WH phrase (Lin 1996: 89). See Lin (1996) for a detailed discussion on existential polarity WH-phrases.

- (ii) a. tamen dou chi-le shenme ma?
 they all eat-ASP what Q
 'Did they all eat something?'
 b. tamen dou bu tebie xihuan shenme.
 they all not particularly like what
 'None of them likes anything particularly.'

GENERALIZATION A tells us that if there are one or more WH phrases to the right of *dou*, they are always interpreted as interrogative, as in (219) above. In such sentences, *dou* C-commands WH. We know that *dou* needs a C-commanding binder and the WH phrase also needs to be linked to something else. Since *dou* can never be bound by an element it C-commands, *dou* and the WH phrase cannot be linked in this case. If a WH phrase is not linked to *dou*, it cannot be a universal quantifier. So a post-*dou* WH phrase can never have a universal quantifier reading. If there is no other licenser of the WH phrase, there must be a null interrogative operator in the sentence to ensure a convergent derivation. It follows that a post-*dou* WH phrase must be interrogative. On the other hand, *dou* also needs to be bound. There are two possibilities. One is that no overt licenser of *dou* appears to the left of *dou*. Then the interrogative operator must bind *dou*. This is shown by the list reading of (259a). The other case is that there is an M element C-commanding *dou*. Then either the operator or the M element, or both, bind *dou*, as in (259b).

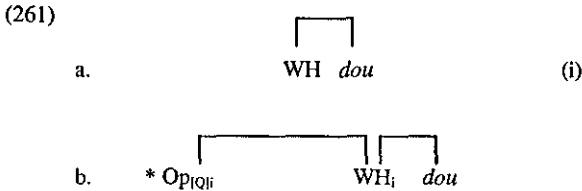
- (259) a. Op_[Q] ta *dou* du-le shenme?
 he all read-ASP what
 ‘What all did he read?’ (Op binds *dou*)
- b. Op_[Q] tamen *dou* du-le shenme?
 they all read-ASP what
- i. ‘What all did they read collectively?’ (Op binds *dou*)
- ii. ‘What did each of them read?’ (M *tamen* binds *dou*)
- iii. ‘What all did each of them read?’ (Op & M bind *dou*)

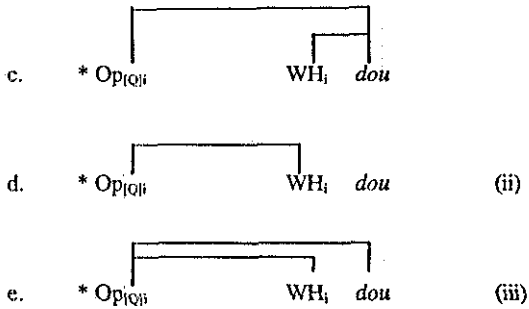
So Generalization A entails that WH phrases *C*-commanded by *dou* must be bound by an interrogative operator, and that the interrogative operator may be the licenser of *dou*.

GENERALIZATION B states that in the absence of an asymmetrical binder of *dou*, i.e. a pre-*dou* M element or an interrogative operator which binds a post-*dou* WH phrase, the nearest symmetrical binder of *dou* must link to *dou*.

- (260) *ta zai nar dou mai-le shu.*
 he at where all buy-ASP book
 i. 'He bought books everywhere.'
 ii. * 'Where did he buy books?'
 iii. * 'Where all did he buy books?'

The WH phrase *nar* 'where' in this sentence must link to *dou* and be interpreted as a universal quantifier, not as an interrogative element bound by an interrogative operator. Let us look at the following five linking patterns.





(261a) is the linking pattern for reading (i) of (260). The double linking of WH phrase in (261b) is impossible because a WH phrase cannot be simultaneously an interrogative element and a universal quantifier. (261c) is impossible because the interrogative operator fails to bind an interrogative phrase. (261d) is the linking pattern for reading (ii) of (260). It is impossible because *dou* is not bound. The question now is why (261e), which corresponds to the reading of (260iii), is impossible. Here, the WH phrase, which is an available symmetrical binder of *dou*, does not link to *dou*. Similar cases can be seen in the following:

- (262) a. shei meiben shu *dou* *du-le*?
 who each book all read-ASP
 ‘Who has read every book?’
- b. *meiben shu shei *dou* *du-le*?
 each book who all read-ASP
 ‘Who has read every book?’

In (262a) the universal quantifier *meiben shu* ‘each book’, which is an adjacent available symmetrical binder of *dou*, links to *dou*; and the WH phrase *shei* ‘who’, which is also an available binder of *dou* but not an adjacent one, is bound by an interrogative operator. In (262b), the WH phrase *shei* as an adjacent symmetrical binder of *dou* does not link to *dou* but to an interrogative operator. The sentence is unacceptable. We propose a Shortest Link Principle to account for cases like (260iii) and (262b):

(263) Shortest Link Principle

In the absence of an asymmetrical binder of *dou*, the nearest available symmetrical binder of *dou* must link to *dou*.

If the nearest binder of *dou* is a WH phrase, it must link to *dou* and thus be interpreted as a universal quantifier, not as an interrogative element, as in (260i). In (262b), if the WH phrase links to *dou* and gets a universal quantifier reading, the sentence is still unacceptable, because the other universal quantifier *meiben shu* ‘each book’ is not licensed. Recall that *dou* can only link to one symmetrical binder (see the end of section 5.3.3). We can see that symmetrical linking differs from asymmetrical linking not only in that it shows mutual dependency, but also in that it is always a one-to-one linking.

From the Shortest Link Principle we can also predict that in the absence of a post-*dou* WH phrase and in the absence of a pre-*dou* M element, if there are two pre-*dou* WH-phrases, the one adjacent to *dou* is a universal quantifier while the other one is interrogative.

- (264) *shei zai nar dou mai-le shu*
 who at where all buy-ASP book
 i. 'Who bought books everywhere?'
 ii. * 'Everyone bought books everywhere.'⁵⁶
 iii. * 'Who all at what place all bought books.'
 iv. * 'Where did everyone buy books?'

In this situation, each WH phrase needs an independent link to its own licenser, since they cannot get licensed by binding each other. In addition, *dou* also needs a binder, though it might link to one of the WH phrases to get licensed. The four possible readings of (264) are illustrated below:

- (265)
- a. $Op_{iQ_{ii}}$ WH_i WH *dou* (264-i)
- b. * WH WH *dou* (264-ii)
- c. * $Op_{iQ_{ii}}$ WH_i WH_i *dou*_i (264-iii)
- d. * $Op_{iQ_{ii}}$ WH WH_i *dou* (264-iv)
-

⁵⁶ The aspect marker *le* is important here. See section 5.4.2 for an analysis of free-choice reading of WH sentences where no aspect marker *le* is allowed for the matrix predicate.


(265a) is the only convergent linking pattern. (265b) is ruled out because *dou* cannot link to two symmetrical binders. Both (265c) and (265d) are ruled out by the Shortest Link Principle.

If the Shortest Link Principle is on the right track, then shortest operation applies to both copying/moving and binding. Economy plays a role in human language computation and interpretation generally.

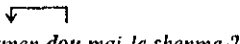
However, the Shortest Link Principle does not work with asymmetrical binders of *dou*. This can be seen in (245a) above. (245) is repeated here as (266).

- (266) a. *tamen dou mai-le shenme?*
 they all buy-ASP what
 i. 'What all did they buy collectively?'
 ii. 'What did each of them buy?'
 iii. 'What all did each of them buy?'

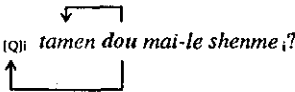
b. Op_{[Q]i} *tamen dou mai-le shenme*? (Reading i)



c. Op_{[Q]i} *tamen dou mai-le shenme*? (Reading ii)



d. Op_{[Q]i} *tamen dou mai-le shenme*? (Reading iii)



In (266d), *dou* links to both the adjacent and the other potential licensor. However, in (266b), *dou* does not link to its nearest potential licensor *tamen* ‘they’.

GENERALIZATION C states that in the presence of a post-*dou* WH phrase, or a pre-*dou* M element, a pre-*dou* WH phrase can be either interrogative or a universal quantifier. That is to say, the Shortest Link Principle, which was proposed to account for Generalization B, does not work in this context, since the nearest WH phrase to *dou* can link to an interrogative operator rather than to *dou*.

Sung (1996: 18) presents a so-called “Q-slicensing effect”: a pre-*dou* WH phrase can be interpreted as interrogative in the presence of a post-*dou* WH phrase.

(267) Q-slicensing: WH -> [+ Q] / ___ *dou* WH (Sung 1996)

(268) a. *ta shenme-shihou dou du zheiben shu.*
 he when all read this book

i. ‘He always reads this book.’

ii. *‘When (all) does he read this book?’

b. *ta shenme-shihou dou du shenme?*

he when all read what

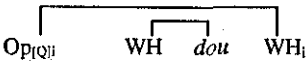
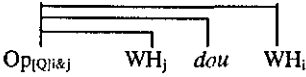
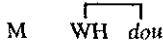
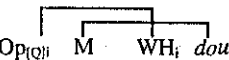
i. ‘What does he always read?’

ii. ‘When all and what all does he read?’

The pre-*dou* *shenme-shihou* 'when' in (268a) cannot be interpreted as interrogative according to the Shortest Link Principle, while in (268b) it can, as shown by reading (ii). In (268a) there is no post-*dou* WH phrase, while in (268b) there is. In fact, we find that not only a post-*dou* WH phrase, but also a pre-*dou* M element, allows pre-*dou* WH phrases to be interpreted as interrogative. This is shown in (269) below.

- (269) *tamen shenme-shihou dou du zheiben shu*
 they when all read this book
 i. 'They always read this book.'
 ii. 'When do they all read this book?'

The linking patterns of above (268b) and (269) are:

- (270)
- a.  (268b-i)
- b.  (268b-ii)
- c.  (269-i)
- d.  (269-ii)

(270a) to (270d) are all fine. The pre-*dou* WH phrase does not link to *dou* in (270b) and (270d), although it is the nearest binder of *dou*. So the Shortest Link Principle does not work here.

More examples are listed below.

- (271) a. *shei cong nar dou jie-guo shu*
 who from where all borrow-ASP book
 i. *‘Everyone borrowed books from all of the places.’
 (*symmetrical double linking)
 ii. ‘Who borrowed books from all of the places?’
 iii. *‘From where ...?’ (Generalization B)
- b. *tamen cong nar dou jie-guo shu*
 they from where all borrow-ASP book
 i. ‘They borrowed books from all of the places.’
 ii. ‘From where did they all borrow books?’
- c. *cong nar tamen dou jie-guo shu* (= b)
- (272) a. *shei shenme dou kan-guo*
 who what all read-ASP
 i. *‘Everyone has read everything.’ (*symmetrical double linking)
 ii. ‘Who has read everything?’
 iii. *‘What ...?’ (Generalization B)
- b. *tamen shenme dou kan-guo*

they what all read-ASP

i. 'They have read everything.'

ii. 'What have they all read?'

c. shenme tamen dou kan-guo (= b)

In the presence of an asymmetrical binder of *dou*, *dou* does not always link the nearest binder. There is no Shortest Link Principle in asymmetrical binding of *dou*. Symmetrical and asymmetrical binders exhibit different properties. When they both occur, they interact with each other in some way and a constraint on symmetrical linking cannot be applied generally.

6.3 Free choice WH phrases

In the above discussion, I have intentionally avoided discussion of a certain type of WH phrase, namely the free choice WH phrase.

- (273) [shei mai-le neiben shu] *dou gen wo wuguan*
 who buy-ASP that book all to me irrelevant
 i. 'Whoever bought that book is irrelevant to me.'
 ii. *Everyone bought that book is irrelevant to me.
 iii. *Who ... ?

This kind of WH phrase is interpreted neither as the usual universal quantifier, as the second reading shows, nor as an interrogative word, as the third reading shows.

Cheng (1991:135, 1995:232) distinguishes free choice WH phrases from other kind of WH phrases, and claims that there is a modality operator involved in the former. The modality operator is related to either a negation word or a modal. In such sentences no aspect marker is allowed with the matrix predicate. Lin (1996) shows that the free choice reading can occur in either a WH NP which is preceded by a deletable *wulun* 'no-matter', or a clause which is also preceded by *wulun* 'no-matter'.

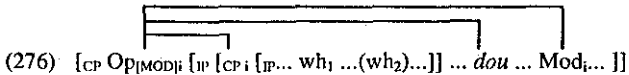
- (274) a. (wulun) shei *dou* hen congming.
 no-matter who all very bright
 'No matter who (= any person) is bright.'
- b. *wulun* ni yaoqing shei, wo *dou* huanying ta.
 no-matter you invite whom I all welcome him
 'No matter whom you invite, I will welcome him.'

We also see that *dou* is obligatory in free choice WH sentences. I assume that an $Op_{[MOD]}$ licenses a free choice constituent which contains a WH phrase, either an NP or a clause. The $Op_{[MOD]}$ also licenses *dou*. This assumption allows us to account for the following two differences between free choice WH and other licensors of *dou*.

First, the C-command condition seems to be violated in linking, but in fact is not.

- (275) a. [shei mai-le neiben shu] dou gen wo wuguan.
 who buy-ASP that book all to I irrelevant
 'Whoever bought that book is irrelevant to me.'
- b. [shei chi shenme] dou gen wo wuguan.
 who eat what all to I irrelevant
 'Whoever ate whatever is irrelevant to me.'

In contrast to (235) and (236), the WH phrases in (275) do not C-command *dou*, but the sentences are grammatical. If we assume that what *dou* links to is the modality operator, rather than the WH phrase, then the C-command condition of *dou* linking is obeyed, as illustrated in the following.



From sentence (275b) above, we can see that the two free choice WH phrases seem to be licensed by the same modality operator. The sentence is not ambiguous. Both of the WH phrases must be interpreted as free choice and they are paired or related. This is different from interrogative operator binding in Chinese, which has been argued to be a kind of unselective binding (Tsai 1994). Thus it is the lower CP which contains the WH phrases, rather than each WH phrase individually, that is licensed by the modality operator.

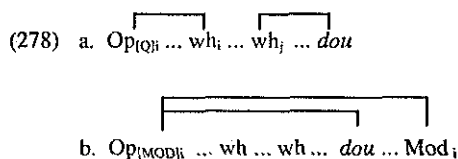
Second, the constraint ruling out multiple linking of pre-*dou* WH phrases to *dou* seems to be violated. In fact it is not.

- (277) a. shei zai nar **dou** he shui
 who at where all drink water
 i. 'Who drinks water everywhere?'
 ii. 'Anyone drinks water anywhere.'
- b. shei shenme-shihou **dou** xuyao pengyou
 who what-time all need friends
 i. 'Who needs a friend all the time?'
 ii. 'Anyone needs a friend anytime.'

In this sentence, *shei* 'who' can be either interrogative or free choice. If it is interrogative, *nar* 'where' must be universal quantifier; if *shei* is a free choice, *nar* must also be a free choice. These properties can be analyzed as follows.

Recall that *dou* can only link one universal quantifier (section 5.3.3). In the previous section, our Generalization B or the Shortest Link Principle tells us that in the absence of asymmetrical binders, a potential linker which is adjacent to *dou* must link to *dou*. So in the first reading of (277a), *nar* 'where' must link to *dou* and get a universal quantifier reading. However, *shei* 'who', which is not adjacent to *dou*, does not link to *dou* due to the fact that *dou* cannot link to multiple symmetrical binders. Thus *shei* is interrogative, as in (264) above.

In the second reading of (277a), *shei* is not interrogative. This contrasts with (264) above. One might think that both of the WH phrases are directly linked to *dou*, violating the constraint of no multiple linking of pre-*dou* WH phrases to *dou*. But if we assume that *dou* links $Op_{[MOD]_i}$ rather than the WH phrases directly, the constraint is not violated. The linking patterns of both readings of (277a) are shown below.



In this section I have shown that both free choice WH phrases and *dou* can be licensed by $Op_{[MOD]_i}$.

6.4. CFC and *Ba/Bei*-phrase blocking effect

In this section we will see that for both kinds of *dou* binding, i.e. symmetrical and asymmetrical binding, a *ba/bei*-phrase generally cannot intervene between the binder and the bindee.

Ba marks the patient or the theme of a transitive verb, while *bei* marks the agent of a passive verb.⁵⁷ Both *ba* and *bei* phrases must occur in preverbal positions. The *ba* blocking

⁵⁷ If the theme introduced by *ba* is neither an M element itself nor an element which can be affected iteratively, thereby ensuring the plural agent to be an M element, *dou* cannot occur, since it will not be licensed, regardless

effect in *dou* sentences was observed in Lee (1986:17), and the *bei* blocking effect in *dou* sentences was noted in Cheng (1995). (279) and (280) are examples of asymmetrical binding of *dou* in sentences containing *ba* or *bei* phrases.

- (279) a. *LaoLi [ba tamen] dou pian-le.*
 LaoLi BA they all cheat-ASP
 'LaoLi has cheated them all.
- b. **tamen [ba LaoLi] dou pian-le.*
- c. *tamen dou [ba LaoLi] pian-le.*
 'They all have cheated LaoLi.'

of its position. The following examples are from Sung (personal communication). In these examples, the subject *tamen* 'they' is not an M element to the eventuality of 'selling this book'.

- (i) a. **tamen dou [ba zheiben shu] mai-le.*
 they all BA this book sell-ASP
 intended: Each of them sold that book
- b. **tamen [ba zheiben shu] dou mai-le.*

But if the theme introduced by *ba* can be affected iteratively, the plural agent can be an M element, and the *ba*-phrase blocking effect is obvious.

- (ii) a. *tamen dou [ba neishou shi] kan-le yiyan.*
 they all BA that poem look-ASP one-eye
 'Each of them had a glance at that poem.'
- b. **tamen [ba neishou shi] dou kan-le yiyan.*
- (iii) a. *tamen dou [ba neige ren] piping-le yidun.*
 they all BA that person criticize-ASP once
 'Each of them criticized that person once.'
- b. **tamen [ba neige ren] dou piping-le yidun.*

Other verbs such as *da-le* 'hit-ASP' can also occur in the context of (iii), and the contrast between (iii-a) and (iii-b) is the same.

- (280) a. *LaoLi [bei tamen] dou pian-guo.*
 LaoLi BEI they all cheat-ASP
 ‘LaoLi has been cheated by them all.’
- b. **tamen [bei LaoLi] dou pian-guo.*
- c. *tamen dou [bei LaoLi] pian-guo.*
 ‘They all have been cheated by LaoLi.’

(281) and (282) are examples of symmetrical binding of *dou* by non-WH-universal quantifiers.

- (281) a. *LaoLi [ba suoyoude ren] dou pian-le.*
 LaoLi BA all person all cheat-ASP
 ‘LaoLi has cheated all persons.’
- b. **suoyoude ren [ba LaoLi] dou pian-le.*
- c. *suoyoude ren dou [ba LaoLi] pian-le.*
 ‘All persons have cheated LaoLi.’
- (282) a. *LaoLi [bei suoyoude ren] dou pian-guo.*
 ‘LaoLi was cheated by all persons.’
- b. **suoyoude ren [bei LaoLi] dou pian-guo.*
- c. *suoyoude ren dou [bei LaoLi] pian-guo.*
 ‘All persons were cheated by LaoLi.’

(283) and (284) are examples of symmetrical binding of *dou* by WH-universal quantifiers.

- (283) a. *LaoLi* [*ba shei*] *dou pian-le*.
 LaoLi BA who all cheat-ASP
 ‘LaoLi has cheated everyone.’
- b. **shei* [*ba LaoLi*] *dou pian-le*.
- c. *shei dou* [*ba LaoLi*] *pian-le*.
 who all BA LaoLi cheat-ASP
 ‘Everyone has cheated LaoLi.’
- (284) a. *LaoLi* [*bei shei*] *dou pian-guo*.
 ‘LaoLi was cheated by everyone.’
- b. **shei* [*bei LaoLi*] *dou pian-guo*.
- c. *shei dou* [*bei LaoLi*] *pian-guo*.
 ‘Everyone was cheated by LaoLi.’

(285) to (288) are examples in which *dou* co-occurs with a PP. Note that the (b) and (c) sentences have the same interpretation.⁵⁸

⁵⁸ Comparing these *dou* binding data with the *dou* focusing data in (18), we can see a difference: in (18) *dou* must M-command the focused element, while in (285) - (288), *dou* does not need to M-command its licenser. I will make a general discussion on this in section 7.5.

- (285) a. *LaoLi [gen tamen/shei/suoyoude ren] dou chi-guo fan.*
 LaoLi with they/who/all persons all eat-ASP dinner
 LaoLi has eaten with them all/everyone/all of the persons.’
- b. *tamen/shei/suoyoude ren [gen LaoLi] dou chi-guo fan.*
 ‘they all/everyone/all of the persons ate with LaoLi.’
- c. *tamen/shei/suoyoude ren dou [gen LaoLi] chi-guo fan.*
 ‘they all/everyone/all of the persons ate with LaoLi.’
- (286) a. *LaoLi [gei tamen/shei/suoyoude ren] dou xie-le xin.*
 LaoLi to they/who/all persons all write-ASP letter
 ‘LaoLi wrote letters to them all/everyone/all of the persons.’
- b. *tamen/shei/suoyoude ren [gei LaoLi] dou xie-le xin.*
 ‘They all/everyone/all of the persons wrote letters to LaoLi.’
- c. *tamen/shei/suoyoude ren dou [gei LaoLi] xie-le xin.*
 ‘They all/everyone/all of the persons wrote letters to LaoLi.’
- (287) a. *LaoLi [dui tamen/shei/suoyoude ren] dou hen hao.*
 LaoLi to they/who/all persons all very good
 ‘LaoLi is very good to them all/everyone/all of the persons.’
- b. *tamen/shei/suoyoude ren [dui LaoLi] dou hen hao.*
 ‘They all/everyone/all of the persons are/is very good to LaoLi.’
- c. *tamen/shei/suoyoude ren dou [dui LaoLi] hen hao.*
 ‘They all/everyone/all of the persons are/is very good to LaoLi.’

- (288) a. ta [cong Fenlan he Jia'nada] dou dalai-le dianhua.
 he from Finland and Canada all call-ASP telephone
 'He called from both Finland and Canada.'
- b. tamen/shei/suoyoude ren [cong Fenlan] dou dalai-le dianhua.
 they who all person from Finland all call-ASP telephone
 'They all/everyone/all of the persons called from Finland.'
- c. tamen/shei/suoyoude ren dou [cong Fenlan] dalai-le dianhua.
 'They all/everyone/all of the persons called from Finland.'

The data shown above naturally lead to a generalization that *ba/bei*-phrases to the left of *dou* block *dou* from linking to anything to the left of the *ba/bei*-phrases. Other PPs, however, do not have this blocking effect. The following sentence shows that linking of *dou* to an element to the right of a *ba*-phrase is acceptable, not surprisingly.

- (289) LaoLi [ba zheiben shu] yizhi dou fang zai jia-li.
 LaoLi BA this book all-the-time all put at home-in
 'LaoLi has put this book in his home all the time.'

There are two issues involved here. One is how the object of a preposition can bind *dou* without C-commanding *dou*. The other is why there is a *ba*-/bei-phrase blocking effect.

6.4.1 PP object binders and C-command

We have seen that on the one hand, PP objects can be binders of *dou*. For example, the objects of the PPs in (285a), (286a), (287a) and (288a), are all grammatical binders of *dou*. On the other, in situ objects of verbs, as in (233b) and (234b), and phrases within subject CPs, as in (235) to (237), cannot be binders of *dou*. The latter case can be accounted for by a C-command condition on binding, but the former case cannot. One solution, suggested by Cheng (1995: 219), is that Chinese PPs can be either real PPs or NPs. If they are NP, the apparent prepositions are dummy Case-markers. To limit the optionality between the NP and PP status of a phrase, and pursue more explanatory power, I suggest a different solution: *dou* binding by eventuality quantifying elements has a special structure requirement, which I call Verbal C-command (VC-command).

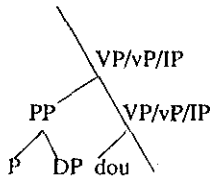
Verbal constituents include any projections of V, \bar{v} , I, and C, but not P. Grimshaw (1991,1993) proposes that IP and CP are verbal projections, suggesting that these functional projections arise because of properties of the verb. My distinction of VP, vP , IP and CP from PP is based on the claim that the head of any member of the former group can either contain a verb or attract an uninterpretable feature of a verb to get the feature checked in various languages (Chomsky 1995), while the head of a PP cannot contain a verb or attract a feature of a verb.

My definition of C-command is taken from Kayne (1994: 16). Thus the definition of my VC-command is the following:

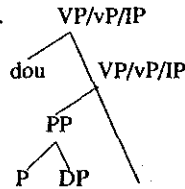
(290) X VC-commands Y iff X and Y are categories and X excludes⁵⁹Y and every verbal category that dominates X dominates Y.

The essence of VC-command involves skipping or ignoring non-verbal projection PPs in computing C-command relationships. If VC-command is relevant to *dou* binding, then, neither an in situ object, nor a constituent within a subject CP, both of which do not VC-command *dou*, can be binder of *dou*. As for PPs, if they occur to the left of *dou*, they may adjoin to a verbal projection, and the object of the preposition is dominated by the PP. This PP is in turn dominated by a verbal projection which also dominates *dou*. Thus the object of the preposition can VC-command *dou*. This is shown in (291a). If a PP occurs to the right of *dou*, the object of the preposition is dominated by the PP, which is in turn dominated by a verbal projection. However, this verbal projection does not dominate *dou*. Thus the object of the preposition does not VC-command *dou* and it cannot bind *dou*. This is shown in (291b). In such a case, if there is no other binder of *dou*, the *dou* sentence is unacceptable. The data are in (292).

(291) a.



b.



⁵⁹ Kayne (1994: 133) notes: "In the sense of Chomsky (1986b, p. 9): X excludes Y if no segment of X dominates Y."

- (292) a. *zai neijige chengshi, ta dou chang-guo zheishou ge.*
 at that-several city he all sing-ASP this song
 'He sang this song in all of those cities.'
- b. *zai neijige chengshi ta zheishou ge dou chang-guo.*
 at that-several city he this song all sing-ASP
 'He sang this song in all of those cities.'
- c. **ta dou zheishou ge zai neijige chengshi chang-guo.*
 he all this song at that-several city sing-ASP

6.4.2 *Ba/Bei*-phrase blocking effects and CFC

A *Ba*-phrase marks the preverbal patient of a transitive verb. There is a debate over which category the word *ba* belongs to: a preposition (traditional view), a dummy Case marker (Huang 1982 and Li 1990), a causative verb (Sybesma 1992), an inner aspectual verb (Travis 1993), or the head of a functional projection BaP (Zou 1995). *Bei*-phrases, on the other hand, mark the preverbal agent of a passive verb. *Bei* has been considered to be a dummy Case marker, a preposition, a modal (Tsai 1993), or a verb (Cheng, 1989, Ting 1996).⁶⁰

Following the current assumption that both *bei*-phrases and *ba*-phrases are base-generated in their preverbal positions, we can see that at the right of a *bei*-phrase or a *ba*-phrase,

⁶⁰ If *bei* is taken to be a verb, the *bei*-phrase blocking effect might be accounted for by the clause-bound constraint of *dou* licensing (if there is no restructuring between two clauses) (for the clause bound constraint, see Chiu 1993). But one still has to explain the *ba*-phrase blocking effect. My approach will provide a unified treatment to these two kinds of blocking effect.

- b. *dou* [^{CFC} *bei*-XP ... V_{PASS} t_{OBJ}] (c) of (280), (282) and (284)
[agent]
- c. *dou* [^{CFC} t_{SUB} V NP_{OBJ}] e.g. (285)
- d. [^{CFC} *ba*-XP ... *dou* t_{SUB} V] (a, b) of (279), (281) and (283)
[patient]
- e. [^{CFC} *bei*-XP ... *dou* V_{PASS} t_{OBJ}] (a, b) of (280), (282) and (284)
[agent]

Recall that an English anaphor is usually bound in the CFC where the anaphor occurs, and thus the CFC is an S (or IP or TP in the recent Minimalist version) or NP with a subject. If an anaphor cannot be bound in its CFC because there is no compatible antecedent, the sentence is unacceptable.

- (294) a. *She_i washed herself_i.*
b. **He washed herself.*
c. *Mary saw* [_{NP} *John's_i picture of himself_i].*
d. **Mary_i saw* [_{NP} *John's picture of herself_i].*

The linking of *dou* to its binders is similar to anaphor binding in this respect: if *dou* occurs to the right of a *ba*-phrase or a *bei*-phrase, it is in a CFC and must be bound within it. If there is no available binder in the CFC (no M element, universal quantifier or quantifier *dabufen* 'most'), the sentence is unacceptable. *Dou* cannot skip a *ba*-phrase or a *bei*-phrase to link to a phrase farther to the left.

However, *dou* can link to both a *ba/bei*-phrase and a phrase preceding the *ba/bei*-phrase. In (295a) *dou* links to both the subject *tamen* 'they', which is to the left of a *ba*-phrase, and the adverb *yizhi* 'always', which is to the right of the *ba*-phrase. In (295b), since the pre-*ba* NP *nimen* 'you-pl' and the NP of the *ba* phrase *tou* 'head' have an inalienable possessive relation, double linking of *dou* to both of the NPs is implied. So the sentence is acceptable.

- (295) a. *tamen* [*ba zheijian shi*] *yizhi* *dou*_{i,Rj} *fang zai xin-shang*
 they BA this matter all-the-time all put at heart-on
 'They all care about this matter all the time.'
- b. *nimen* [*ba tou*] *dou tai gao*.
 you-pl BA head all raise high
 'All of you lift up your heads.'

Since binding takes place at LF (Chomsky 1995b:31), we expect binding domains to be relevant to interpretation. CFC is an interpretive notion. The introduction of CFC permits a straightforward binding analysis for the special behaviour of *ba/bei*-phrases in *dou* sentences.

6.4.3 The *Ba*-phrase blocking effect and “characterizing” verbs

There is no *ba*-phrase blocking effect with ‘characterizing verbs’ (the term is from Levin 1993: 181), for example, *dangzuo* ‘consider/regard’, and *zuowei* ‘consider/regard’. In the following, the binder of *dou* is to the left of the *ba* phrase.

- (296) a. *LaoWu he LaoLi [ba neijian shi] dou dangzuo zui zhongyao de gongzuo*
 LaoWu and LaoLi BA that job all regard-as most important DE work
 ‘LaoWu and LaoLi both consider that job to be the most important task.’
- b. *tamen [ba zheiben shu] dou zuowei yijian jinianpin..*
 they BA this book all regard-as one souvenir
 ‘They all regard the book as a souvenir.’
- c. *tamen ba wo dou dangcheng riben-ren le.*
 they ba I all take Japan-people ASP
 i. ‘They all took me to be a Japanese.’
 ii. ‘They even took me to be a Japanese.’ (wo ‘I’ bears stress)

These characterizing verbs take predicate complements. The postverbal nominal is the predicate of the nominal in the *ba*-phrase. In other words, the nominal in a *ba*-phrase and the nominal to the right of the characterizing verb can form a small clause. Only when the predicate of the small clause is a nominal, can *dou* binding escape the *ba*-phrase blocking effect. I have no explanation for this and leave it open for further study.

6.5 Speculations on the clause boundedness of *dou* licensing

In this section I argue that *dou* and the dependent of its related element must be base-generated in the same clause.

One frequently mentioned locality constraint on *dou* sentences is that the licenser of *dou* must “be syntactically ‘close’ to it, that is, be in the same clause as *dou*.” (Chiu 1993:192) (The underlined part is the licenser of *dou*.)

- (297) a. *zhexie xuesheng* *wo dou xihuan.*
 these student I all like
 ‘I like all of these students.’
- b. **zhexie xuesheng* *zhidao [wo dou xihuan Suying].*
 these student know I all like Suying
 ‘All of these students know that I like Suying.’

However, Cheng (1995:200) presents the following example (a) where *dou* and its licenser appear to be in different clauses:

- (298) a. *neixie xuesheng*_i *wo xiangxin [Lisi dou hen xihuan t_i]*
 those student I believe Lisi all very like
 ‘All of those students, I believe Lisi likes them.’

- b. **neixie xuesheng_i wo dou xiangxin [Lisi hen xihuan t_i]*
 those student I all believe Lisi very like
 'All of those students, I believe Lisi likes them.'

The question here is why long distance binding in (298a) is allowed, while shorter distance binding in (298b) is not allowed. Cheng claims that *dou* and its related nominals must be base-generated in the same clause. This claim explains the above data nicely. However, the following data shows that this claim may be too strong.

- (299) a. **Op_{ia_j} ni renwei [ta dou_i mai-le shenme_j]**
 you think he all buy-ASP what
 'What all do you think he bought?'
- b. ***Op_{ia_j} ni dou_i renwei [ta mai-le shenme_j]**
 you all think he buy-ASP what

If we claimed that *dou* in (299a) is licensed by the WH phrase *shenme* 'what', we would violate the C-command condition, since *shenme* does not C-command *dou*. If we claimed that *dou* is licensed by the operator, which is base-generated at the matrix CP (Tsai 1994), we would contradict the hypothesis that *dou* and its related elements must be base-generated in the same clause. This hypothesis does not explain the acceptability of (299a). (299b) further shows that if *dou* and a WH operator are base-generated in the same clause, the sentence is unacceptable.

Long distance WH binding is allowed in the Chinese/Japanese type of languages, as observed by Ouhalla (1996). Thus an embedded WH phrase can be bound by an operator in the matrix CP, as shown in the following.

(300) Op_j *ni renwei* [*ta mai-le shenme*]_j

you think · he buy-ASP what

'What do you think he bought?'

However, an embedded *dou* cannot unconditionally be bound by a phrase in the matrix clause. Otherwise, (297b) would be predicted to be acceptable, contrary to fact. Thus long distance *dou* binding is different from long distance WH binding.

The condition of *dou* binding, regardless of long binding or short binding, I claim, is that if the binder of *dou* has a dependent, either a trace or a variable, *dou* and the dependent of the *dou* binder must be base-generated in the same clause. This assumption revises Cheng's above hypothesis that *dou* and its related elements must be base-generated in the same clause, and thus is able to deal with the data such as (299), as well as (298). Specifically, in (299a), *dou* occurs in the embedded clause and its licenser, the WH operator, occurs in the matrix clause. The long distance of *dou* binding is possible because the variable of the operator *shenme* 'what' is also base-generated in the embedded clause. In (299b), *dou* occurs in the matrix clause and its licenser, the WH operator, also occurs in the matrix clause. The short binding of *dou* is impossible because the variable of the operator *shenme* 'what' is base-generated in the embedded clause, not in the matrix clause where *dou* is merged. In (298a), *dou* is merged in the

embedded clause and its licenser *neixie xuesheng* ‘those students’ is moved to the matrix clause. The long distance of *dou* binding is possible because the trace of *neixie xuesheng* ‘those students’ is in the embedded clause. Both *dou* and the dependent of its licenser (the trace here) are in the same clause. In (298b), *dou* occurs in the matrix clause and its licenser, *neixie xuesheng* ‘those students’, also occurs in the matrix clause. The short binding of *dou* is impossible because the trace of *neixie xuesheng* ‘those students’ is in the embedded clause, not in the matrix clause where *dou* is merged. More data are listed below.

- (301) a. $Op_{i,j}$ *ni renwei [dou_i shei_j kan-le neiben shu]*
 you think who all read-ASP that book
 ‘Who all do you think have read that book?’
- b. $Op_{i,j}$ *ni renwei [ta dou_i zai shenme shihou_j kan dianshi]*
 you think he all at what time watch TV
 ‘When all do you think he watches TV?’
- c. $Op_{i,j}$ *ni renwei [ta dou_i zai nar_j kan dianshi]*
 you think he all at where watch TV
 ‘Where all do you think he watches TV?’
- d. Op *ni renwei [tamen dou_i mai-le shenme_j]*
 you think they all buy-asp what
- i. ‘What do you think each of them buy?’ Op_j [M_i *dou_i*; WH_j]
- ii. ‘What all do you think they buy collectively?’ $Op_{i \& j}$ [M *dou_i*; WH_j]
- iii. ‘What all do you think each of them buy?’ $Op_{i \& j}$ [M_i *dou_i*; WH_j]

In all of these data *dou* and the dependent of *dou*'s licenser, if there is one, are both base-generated in the embedded clause.

In the following data, the dependent of *dou*'s licenser is an external argument. My claim still holds.

- (302) a. *Op_{i,dj} shei_i renwei [ta dou_j kan-le neiben shu]
 who think he all read-ASP that book
- b. *Op_{i,dj} ni dou_j renwei [shei_i kan-le neiben shu]
 you all think who read-ASP that book
- c. Op_{i,dj} ni renwei [dou_j shei_i kan-le neiben shu]
 you think all who read-ASP that book
 ‘Who all do you think read that book?’
- (303) a. neixie xuesheng_i wo xiangxin [t_i dou kan-guo zheiben shu]
 those student I believe all read-ASP this book
 ‘Those students, I believe (they) all have read this book.’
- b. *neixie xuesheng_i wo dou xiangxin [t_i kan-guo zheiben shu]
 those student I all believe read-ASP this book

The above data further show that a *dou* sentence is acceptable if the dependent of *dou*'s licenser and *dou* are in the same clause.

In this subsection I explored the conditions of long and short distance *dou* binding. My conclusion supports and refines Cheng's claim that *dou* and its related nominals must be base-generated in the same clause. The revised condition on *dou* binding with respect to the binding distance is that *dou* and the dependent of its binder must be in the same clause. One implication of this study is that the two kinds of dependent, a movement trace and a binding variable, play the same role in *dou* binding.

6.6 Conclusions

In this chapter, first, the locality constraints of *dou* linking were explained by a Shortest Link Principle. To be precise, I discussed why a pre-*dou* WH phrase must be interpreted as a universal quantifier in the absence of an M element and a post-*dou* WH phrase, and why a *dou* linking which skips an adjacent universal quantifier will cause ungrammaticality. I also discussed the linking properties of free-choice WH phrases, which are mentioned by Cheng (1991, 1995). Second, the *ba*-/*bei* blocking effect is, for the first time, accounted for by the binding notion Complete Functional Complex (CFC, Chomsky 1986, among others). This binding approach unifies the *ba* and *bei* phrase blocking effect, regardless of the syntactic status of these phrases. Other approaches to *dou* do not account for the common properties of *ba* and *bei* phrases, thus do not explain why it is *ba* and *bei* phrases, not others, that have the blocking effect. Finally, extending the proposal of Cheng (1995), I claim that *dou* and the dependent of its licenser must be base-generated in the same clause.

Chapter 7 Some Notes on the Semantic Properties of *Dou* Sentences

7.1 Introduction

As a polarity item licenser, *dou* ensures sentence acceptability, while as a quantification indicator, *dou* contributes aspects of meaning, such as distributivity and totality, to the sentence. The semantics of *dou* sentences has been extensively studied in the recent literature. This chapter attempts to fill some gaps and put forward new proposals on some controversial issues, based on the evidence presented in this thesis.

Section 7.2 studies the interaction between *dou* and the restrictive and the contrastive focus constructions. Section 7.3 clarifies that the distributive key function of *dou* applies only to the binders of *dou*, not to other elements of the *dou* sentence. Section 7.4 presents the inability of an instrument element to bind *dou* and provides an explanation for the restriction. Finally, section 7.5 compares the *dou* in the additive focus sentences and *dou* elsewhere. Section 7.6 concludes the chapter.

7.2 *Dou* in the restrictive and contrastive focus constructions

A hitherto unnoticed property of quantification in *dou* sentences is that this quantification does not have a restrictive sense. The appropriate interpretation of *dou*

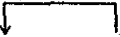
quantification is so many as, so much as, as many as and as much as, as in (304a), (304b) and (304c), but not as little as or only, as in (304d) and (304e).⁶²

- (304) a. tamen dangzhongde yi ban ren (*dou*) *xue-guo Deyu*.
 they among one half person (all) learn-ASP German
 ‘Half of them have learned German.’
- b. tamen dangzhongde dabufen ren (*dou*) *xue-guo Deyu*.
 they among big-part person (all) learn-ASP German
 ‘A majority of them have learned German.’
- c. tamen dangzhong sanfenzhiyi-de ren (*dou*) *xue-guo Deyu*.
 they among one-third person (all) learn-ASP German
 ‘One third of them have learned German.’
- d. tamen dangzhongde yi xiao bufen ren (**dou*) *xue-guo Deyu*.
 they among one small part person (all) learn-ASP German
 ‘A small part of them have learnt German.’
- e. zhiyou wuge ren (**dou*) *jie-guo zheiben shu*.
 only five person (all) borrow-ASP this book
 ‘Only five persons have borrowed this book.’


⁶² I would like to thank Sarah Cummins for pointing this out to me.


The preverbal arguments in all sentences above are M elements. They have a restrictive sense in (c) and (d), but not in (a) and (b). *Dou* cannot link to M elements in (c) and (d). So *dou* is incompatible with restrictive readings.

However, *dou* binding can co-occur with restrictive focus if the binder of *dou* and the focus are not the same element. In the following sentence, the binder is the adjunct *zheixie tian* ‘these days’, while the focus is the subject *ta* ‘he’.

- (305)  *zhiyou ta zheixie tian dou zai he jiu.*
 only he these day all ASP drink alcohol
 ‘Only HE is drinking alcohol all these days.’

We have seen in Chapter 5 that the *dou* construction allows object shift of the contrastive focus type, whether or not the object is a binder of *dou*. The following sentences show that contrastive focus and *dou* binding can co-occur. In (306a), the binder of *dou* and the focused element are two different elements, while in (306b), they are the same element.

- (306) a.  *shi ta zheixie tian dou zai he jiu.*
 FM he these day all ASP drink alcohol
 ‘HE is drinking alcohol all these days.’

- 
- b. *shi* *tamen* *dou* *zai* *he* *jiu*.
- FM they all ASP drink alcohol
- ‘THEY are all drinking alcohol.’

I therefore conclude that a single element can simultaneously be a binder of *dou* and a contrastive focus, but not simultaneously a binder of *dou* and a restrictive focus. *Dou* in additive focus constructions will be discussed in section 7.6.

7.3 Binders of *dou* and distributive keys

Many researchers of *dou* have argued that one function of *dou* is to specify a distributive meaning (Lee 1986, Jie Li 1995, Cheng 1995, Lin 1996). However, it seems that no one has discussed the scope of the distributive meaning in a *dou* sentence. It is not true that every aspect of the eventuality encoded by a *dou* sentence is distributive.

A distributive aspect “indicates that the actions involved are performed separately, sequentially, or in a number of locations, that a number of agents are each carrying out an action, working as individuals rather than as a group, or that the action is performed on a number of objects.” (Rice 1989: 677) The presence of *dou* can specify that an M element has a distributive meaning.

- (307) a. *haizi-men mai-le zixingche.*
 child-PL⁶³buy-ASP bike
 ‘The children bought a bike/bikes.’ (collective or distributive)
- b. *haizi-men dou mai-le zixingche.*
 ‘Each of the children bought a bike.’ (distributive)

Following Choe (1987) and current studies on distributivity (Gil 1995, among others), I call the antecedent of a distributive dependency the distributive key, while calling the bound element the distributive share. So in (307b), *haizi-men* ‘children’ is the distributive key. The following sentence shows that only a binder of *dou* can be a distributive key. This statement implies that elements other than the binders of *dou* can receive a collective reading in the relevant respect. In other words, distributive meaning is related only to the binder elements, not to other elements in the sentence.

- (308) a. *LaoLi he LaoWang zheiji tian zai shangliang zheijian shi.*
 LaoLi and LaoWang these day at discuss this matter
 ‘LaoLi and LaoWang have been discussing the matter these days.’
- b. *LaoLi he LaoWang zheiji tian dou zai shangliang zheijian shi.*
 ‘LaoLi and LaoWang have been discussing the matter all the time these days.’

⁶³ *-men* is a [-singular, +human, +specific] marker. I label it as PL (plural) only for convenience. For a detailed discussion of *-men*, see Iljic (1994).

In (308b), the presence of *dou* specifies the distributive meaning of its temporal binder *zheiji tian* ‘these days’, but not of the agent, which is not an M element and cannot be a binder of *dou*. Similarly, if the binders of *dou* are locatives, goals and patients, as in the following, no distributive agent is specified.

- (309) a. *zheizhang zhi hua-le xiao mao.*
 this paper draw-ASP small cat
 ‘A cat has been drawn on the paper.’
 ‘Cats have been drawn on the paper.’
- b. *zheizhang zhi dou hua-le xiao mao.*
 ‘Cats have been drawn on all over the paper.’
- (310) a. *ta lian-shang jian-zhe pijiu.*
 he face-on splash-ASP beer
 ‘There is some splashed beer on his face.’
- c. *ta lian-shang dou jian-zhe pijiu.*
 he face-on splash-ASP beer
 ‘His face was covered by the splashed beer.’
- (311) a. *zhuo-shang fang-zhe shu.*
 table-up put-ASP book
 ‘There is a book on the table(s).’
 ‘There are books on the table(s).’

- b. *zhuo-shang dou fang-zhe shu.*
 ‘There are books all over the table(s).’
- (312) a. *neizuo fangzi shao-diao le.*
 that house burn-finish ASP
 ‘That house has been burnt.’
- b. *neizuo fangzi dou shao-diao le.*
 ‘That house has been burnt completely.’
- (313) a. *feng ba tade toufa chui-qilai le.*
 wind BA her hair blow-up ASP
 ‘The wind blew up her hairs.’
- b. *feng ba tade toufa dou chui-qilai le.*
 ‘The wind blew up all her hairs.’

In the following (314b), there are two M elements C-commanding *dou*. Either or both of them can bind *dou* and can be interpreted as distributive. But in (314c), only one binder is available, since the other M element does not C-command *dou*. Only the binder is distributive.

- (314) a. *tamen gei sange haizi mai-le wanju.*
 they for three kid buy-ASP toy
 ‘They have bought toys for the three kids.’

- b. *tamen gei sange haizi dou mai-le wanju.*
 i. 'They have collectively bought toy(s) for each of the three kids.'
 ii. 'Each of them has bought toy(s) for the three kids.'
 iii. 'Each of them has bought toy(s) for each of the three kids.'
- c. *tamen dou gei sange haizi mai-le wanju.*
 'Each of them has bought toys for the three kids.' (unspecified with whether for each kid)

My conclusion is that only binders of *dou* can be distributive keys. The distributive interpretation of *dou* sentences is restricted to binders of *dou*.

7.4 *Dou* and instrument elements

Another hitherto unmentioned property of *dou* quantification is that instruments cannot be binders of *dou*.

- (315) a. *ta yong zheixie shaozi chi-guo fan.*
 he with these spoon eat-ASP meal
 'He has eaten meals with these spoons.'
- b. **ta yong zheixie shaozi dou chi-guo fan.*
 he with these spoon all eat-ASP meal
 intended: He has eaten meals with all of these spoons.

Many theta roles, for example, agent, theme, goal, locative, temporal and experiencer, can be binders of *dou*. Semantically, instruments should also be measurable to an eventuality as other theta roles are. This may be explained by aspectual structure in the sense of Tenny (1992) (Also see Ghomeshi and Massam 1994). An aspectual structure is associated with various kinds of event participants and constrains their syntactic positions. Instrument as an event participant has a rather restricted position in Chinese. It must occur to the left of a verb and is closer to the verb than other adverbials, as in (316b). Only a manner adverbial can separate an instrument from the verb, as in (316a). Data (316b-e') show that various adverbs can occur only to the left of an instrument.

- (316) a. ta zai [yong mao-bi] manmande xie xin.
 he at with brush-pen slowly write letter
 'He is writing a letter slowly with a brush pen.'
- b. ta jingchang [yong mao-bi] xie xin.
 he often with brush-pen write letter
 'He often writes a letter with a brush pen.'
- b'. *ta [yong mao-bi] jingchang xie xin.
 he with brush-pen often write letter
 'He often writes a letter with a brush pen.'

- c. ta zong [yong mao-bi] xie xin.
 he always with brush-pen write letter
 'He always writes a letter with a brush pen.'
- c'. *ta [yong mao-bi] zong xie xin.
 he with brush-pen always write letter
 'He always writes a letter with a brush pen.'
- d. ta ye [yong mao-bi] xie xin.
 he also with brush-pen write letter
 'He also writes a letter with a brush pen.'
- d'. *ta [yong mao-bi] ye xie xin.
 he with brush-pen also write letter
 'He also writes a letter with a brush pen.'
- e. ta nandao [yong mao-bi] xie xin ma?
 he really with brush-pen write letter Q
 'Does he really write letters with a brush pen?'
- e'. *ta [yong mao-bi] nandao xie xin ma.
 he with brush-pen really write letter Q
 'Does he really write letters with a brush pen?'

Dou as an adverb is not an exception to the restriction that adverbs are usually merged to the left of an instrument phrase. This observation leads us to conclude that there is no way for an instrument to C-command *dou*.

7.5 *Dou* in the additive focus construction and *dou* elsewhere

The adverb *dou* also occurs in additive focus sentences. It is a matter of disagreement whether *dou* in additive focus sentences has the same properties as in non-focus sentences. (See Gao (1994), Shyu (1995), Cheng (1995) and S.-Z. Huang (1995), Sybesma (1996))

In this section I will discuss how *dou* in additive focus sentences behaves differently from *dou* in other sentences. I present three major differences, which have not been noted in the literature, as far as I know. Then I will review another five differences noted by Sybesma (1996).

First, the distributor function of *dou* shown in non-focus sentences is lost in additive focus sentences if the only possible licenser of *dou* is the plural agent subject. Compare:

- (317) a. *tamen dou mai-le neiben shu.*
 they buy-ASP that book
 ‘They all bought that book.’ (distributive)
- b. *lian tamen dou mai-le neiben shu.*
 ‘Even they bought that book.’ (collective or distributive)

Although additive focusing presupposes that there must be plural elements in a set and highlights the fact that the focused one is included in the set, no distributive meaning for the focused agent is implied.

Second, universal quantifiers and quantifier *dabufen* 'most' are always possible licensors of *dou* in non-focus sentences. However, this is not true in additive focus sentences, which do not allow these quantifiers.

- (318) a. *meiyige ren dou mai-le neiben shu.*
 every person all buy-ASP that book
 'Everybody has bought that book.'
- b. **lian meiyige ren dou mai-le neiben shu.*
 even every person all buy-ASP that book
- (319) a. *dabufen ren dou mai-le neiben shu.*
 most person all buy-ASP that book
 'Most of the people has bought that book.'
- b. **lian dabufen ren dou mai-le neiben shu.*
 even most person all buy-ASP that book

Third, in a declarative sentence without additive focus, if there is neither an M element, nor a proper quantifier (a universal quantifier or *dabufen* 'most') to the left of *dou*, the sentence is unacceptable. However, this situation is allowed in additive focus sentences.

- (320) a. **ta dou mai-le neiben shu.*
 he buy-ASP that book

b. *lian ta dou mai-le neiben shu.*

'Even he bought that book.'

Sybesma (1996) points out several more differences between *dou* in an additive focus sentence and *dou* in other cases.

First, *dou* is not stressed in an additive focus sentence, but may be seen to be (slightly) stressed and is fully pronounced with a full-fledged first tone in a *dou* quantification sentence. In fact, my research shows that it is only when the binder of *dou* is an M element that *dou* can be stressed. In all other cases, i.e. when the binder is a universal quantifier or the quantifier *dabufen* 'most', there is no stress on *dou*. This fact can be accounted for: *dou* is stressed if and only if the presence of *dou* contrasts with the absence of *dou* in interpretation. A preverbal M element can stand alone without *dou*. The presence of *dou* specifies the distributive meaning of the M element. Thus *dou* is crucial to the interpretation. However, universal quantifiers, the quantifier *dabufen* 'most', and the deletable focus marker *lian* 'even' are polarity items. They absolutely require *dou* to ensure the acceptability of the sentence where they occur. Here the absence of *dou* in such sentences results in ungrammaticality, not in a different interpretation. Thus the stress factor is not linked to the distinction between a focus sentence and a quantification sentence, as Sybesma claims. In the case of *dou* sentences, stress is required to help to eliminate ambiguity or vagueness of the interpretation, however, it is not required and even not allowed to occur with a dummy licenser of a polarity item.

Second, Sybesma points out that while *dou* alternates with an unstressed *ye* ‘also’ in an additive focus sentence, it does not do so elsewhere.⁶⁴ If there is no additive focus, *ye* is stressed and means ‘also’. In fact, Sybesma’s claim needs a constraint: if *dou* in a non-additive focus sentence does not link to a free-choice WH phrase, it cannot alternate with *ye*. In other words, it is only in either an additive focus sentence or a free-choice WH sentence that *dou* can alternate with *ye*.

- (321) a. ta (lian) zhexie shu *dou/ye* mai-le.
 he (even) these book all/also buy-ASP
 ‘He even bought these books.’
- b. ta zhexie shu *dou* mai-le.
 he these book all buy-ASP
 ‘He bought all of these books.’
- c. ta zhexie shu *ye* mai-le.
 he these book also buy-ASP
 ‘He also bought these books.’
- d. (wulun) shei *dou/ye* yao he shui.
 (no-matter) who all/also want drink water
 ‘Any person wants to drink water.’

⁶⁴ See my page 15, Chapter 2. ‘Also’ is generally an English gloss for Chinese word *ye*. In fact *ye* does not mean ‘also’ in an additive focus sentence.

- e. (wulun) shei *dou*/**ye* lai le.
 (no-matter) who all/also come ASP
 ‘Everyone came.’

Sentence (a) shows that *dou* can alternate with *ye* in an additive focus sentence. Sentences (b) and (c) show that if there is no additive focus, *dou* and *ye* contribute different meanings to a sentence. Sentence (d) tells us that *dou* can alternate with *ye* in licensing a free-choice WH phrase. Sentence (e) indicates that if the WH phrase is not a free-choice one, *dou* cannot alternate with *ye* (notice the aspect marker *le* in the sentence). Cases like sentence (d) imply that the ability to alternate *dou* with *ye* cannot distinguish *dou* of a focus sentence from *dou* of other sentences.

Sybesma’s third distinction between the two *dous* is that their distribution is not entirely the same. For instance, in an additive focus sentence, *dou* cannot be separated from the shifted and focussed object, while in other cases, *dou* can be separated from the shifted object which is linked to *dou*.

- (322) a. ta (lian) neixie huasheng **dou** yijing chi-wan-le.
 he (even) those peanut all already eat-finish-ASP
 ‘They already even ate those peanuts.’
- b. *ta (lian) neixie huasheng yijing **dou** chi-wan-le.
 he (lian) those peanuts already all eat-finish-ASP

- (323) a. ta neixie huasheng dou yijing chi-wan-le.
 he those peanut all already eat-finish-ASP
 'They already ate all those peanuts.'
- b. ta neixie huasheng yijing dou chi-wan-le.
 he those peanut already all eat-finish-ASP
 'They already ate all those peanuts.'

My data (18) in section 2.3.3 and (285) to (288) support Sybesma's observation: the distance between *dou* of an additive focus sentence and the focused element is shorter than the distance between *dou* elsewhere and its linked element (distributive key). This phenomenon can also be explained in my analysis that *dou* in a focus sentence M-commands the focused element, while *dou* in a distributive quantification sentence is a bound element and is C-commanded by its licenser. Section 2.3.3 and section 6.4.1 discuss the structural relation between *dou* and its related elements in a focus sentence and in a quantificational sentence respectively. The structural differences of the two dependencies are obvious.

Sybesma's fourth claim on the relation of the two *dous* is that both can occur in one sentence. This fact is also noted by Gao (1994).

- (324) lian tamen *dou* meiyou *dou* mai zheiben shu.
 even they all not all buy this book
 'Even they did not all buy this book.'

This example clearly indicates that the two *dous* have different functions.

Sybesma's fifth point on the relation of the two *dous* has to do with their interpretation. Since Shyu (1995) claims that the two *dous* can be unified, Sybesma argues: "If it is true that *dou* is responsible for the even-semantics [i.e. the additive focalization], it is not immediately clear how it would completely lose this element of its semantics when it gets to quantify over referential NPs." As we have seen in the previous chapters, there is no additive focus meaning when *dou* links to an M element or a quantifier. Thus Sybesma's comment is reasonable.

All of these aspects discussed above show that *dou* in additive focus and other sentences behaves differently. Thus the properties and functions of the same lexical item *dou* are structurally dependent. It can function as a anaphor, which is bound by an M element or by a certain quantifier, or function as a focus marker.

7.6 Conclusions

Dou is never bound by an element which is restrictively focused. In addition, the distributive key function of *dou* only applies to its licensors, not other elements of a *dou* sentence. Furthermore, an instrument is syntactically barred from binding *dou*. Finally, *dou* in the additive focus sentence differs from *dou* elsewhere in phonological, semantic and syntactic aspects.

The research in the Part B of this thesis argues against the commonly assumed condition on *dou* licensors: the plurality condition. Instead, the notion of Measurable to the Eventuality

Expressed by the Predicate is shown to be involved in the licensing of *dou*. To account for the dependencies of *dou* sentences, a binding approach is adopted. This approach overcomes difficulties met by both movement/checking and operator unselective binding approaches in dealing with the C-command requirement and with multiple linking. This approach also accounts for the locality constraints on linking by a Shortest Link Principle and the binding notion Complete Functional Complex. The clause boundedness of *dou* dependency is re-examined. Some semantic properties of *dou* sentences are also studied.

In this chapter I will put the analyses of the previous chapters in a wider theoretical perspective to evaluate the implications that the data and analysis have for the more general questions of the possible unification of checking and binding, and the degree to which computational options within a language are arbitrary.

8.1 To what extent can checking and binding be unified?

Non-overt copy dependencies such as WH-in-situ and reflexives have drawn the attention of formal syntacticians since Huang (1982). There are two thrusts in the current literature. Pesetsky (1987), Tsai (1994) and Ouhalla (1996), among others, pursue a no-movement analysis of WH-in-situ, arguing that in certain cases, the WH-in-situ dependencies involve binding, rather than covert LF movement. On the other hand, Chomsky (1986a), Cole and Sung (1994), Huang and Tang (1991), Reinhart and Reuland (R&R, 1991, 1993), among others, pursue an LF-movement analysis of reflexives, arguing that the interpretation of reflexives involves covert movement of the refl-/self-morpheme to the functional head related to the antecedent (cliticization_{LF}). An anaphoric expression is taken to be the spellout of a trace (Hornstein 1997b). In the Minimalist Program, movement/copy, regardless of whether it is covert or overt, must be motivated by the need to check an uninterpretable feature of the attractor. Thus Hornstein (1996b, 1997b) observes with respect to the movement analysis mentioned above that we need anaphors to move but it is not clear why they should.

Specifically, the movement cannot be required for Case-checking. An accusative reflexive should not move to I to check its Case, since I has [assign nominative Case] feature. The two Case features, nominative and accusative, are not compatible. It cannot be phi-feature checking either, if one considers phi-features of a nominal not to require checking, although a reflexive must agree with its antecedent in phi-features. Chomsky (1995b, 1995 lecture notes) claims that the binding theory must be outside of the computation system and that binding is something occurring at the interface of an interpretive system. If this claim is adopted, no explanation would be found within the computation system for the unacceptability of forms such as **He washed herself*.

In this thesis, I have analyzed some new data, and given new analyses of some old data, with respect to both checking and binding. This study further shows the similarities and differences between these two kinds of syntactic dependency, which have been seen in the studies of WH-questions and reflexives. My question now is whether it is possible to unify these two kinds of dependencies at some higher level and derive their differences. If binding operations are part of the computation system, how different will the notion of syntactic computation be from one which includes only checking?

My hypothesis is that syntactic computation not only deletes uninterpretable features by checking, but also repairs 'referentially defective' elements, as in the case of anaphors (R&R 1993: 673). Repairing is done by binding, a matching operation. Repairing by binding is another way of eliminating undesirable features for Full Interpretation. After repair, a referentially defective feature is fully interpretable. In both cases, the two elements involved, the attractor and the attracted in checking, and the antecedent and the bindee in binding, can be taken to be

links of a chain. It is the elimination of undesirable features for interpretation by means of forming links of a chain that unifies checking and binding. If this unification is realized in the syntactic computation system, the present definition of syntactic computation is extended. Saying this, we can account for the similarities and differences between checking and binding.

The first difference between checking and binding is that in checking a feature of the upper link of the chain must be deleted, thus copy is driven by Attract. The Superiority Effect with English WH movement is an example of Attract, rather than Greed. A feature to be repaired in binding is always the lower link of the chain, thus binding is driven by Greed. It is the reflexive morpheme or the Chinese distributive variable *dou* 'all', rather than its antecedent, that requires repair in order to interpret.

The second difference between checking and binding is that in checking, a functional category is always involved, while this is not true in binding. Binding can be applied between two lexical categories. Checking can be either overt or covert, and unchecked Case and phi features must be compatible between the two links of the chain. Binding is covert, and can be carried out after all uninterpretable features have been checked off. Thus binding does not have Case clash problems. However, it requires compatibility of the interpretable features, such as phi features of nominals. Forms such as **He washed herself* are ruled out in binding computation because of the phi feature clash. Forms such as **neiben shu ta dou jie le* 'That book he all borrowed' are rule out in binding computation because the non-M feature of the binder *neiben shu* 'that book' clashes with the distributive feature of the bindee *dou* (M is defined as 'measurable to the eventuality'. See Chapter 5 for discussion.).

The first similarity shared by checking and binding is that both have symmetrical as well as asymmetrical dependencies. The typical example of a symmetrical dependency in checking is Case checking, where both the attractor and the attracted have an uninterpretable Case feature to be deleted. The typical example of asymmetrical dependency in checking is phi feature checking, where the uninterpretable phi features of [V-y] attract the interpretable phi features of a nominal. In binding, Chinese *dou* also has both symmetrical binders, such as universal quantifiers, and asymmetrical binders, such as M elements. *Dou* has a distributive feature, however, unless it is bound to some participant in the eventuality, this distributive feature is referentially defective. On the other hand, Chinese universal quantifiers as polarity items also have defective features. A binding between a universal quantifier and *dou* can repair the defective features of both. An in situ Chinese WH nominal as a variable of unselective binding and its null operator also symmetrically depend on each other, as shown in Tsai's (1994) work.

The second similarity shared by checking and binding is that both kinds of dependencies require some version of the Minimal Distance Principle. For example, in Chinese S-not-V questions, it is always the nearest verb which is attracted and copied (section 4.3). In *dou* linking where there are two available symmetrical binders of *dou*, the nearest C-commanding one must bind *dou* if there is no potential asymmetrical binder present (section 6.2).

The third similarity shared by checking and binding is that both kinds of dependents, a movement trace and a binding bindee, play the same role in *dou* binding. In section 6.5 of Chapter 6 I demonstrated that if the binder of *dou* has a dependent, either a trace of movement or a bindee of binding, *dou* and the dependent of the *dou* binder must be base-generated within the same clause.

The fourth similarity shared by checking and binding is that binding allows split antecedents (section 5.3.3), and checking also allows several elements to check one feature of a particular functional head (Koizumi 1995). Multiple WH movement in Ukrainian and multiple nominative Case checking in Korean have this property. Thus theoretically, in both cases, dependencies can be a one-to-many relation. In addition, in both cases, the single element part of the one-to-many relation is always the uninterpretable or defective part, while the multiple element part is always the checker or binder part.

If binding and checking belong to two different systems, the above similarities would be accidental. If binding is also a computational operation, binding and checking can be unified at some higher level and their similarities and differences can be accounted for.

8.2 Computational options within one language

If both binding and checking are operations of the computation system, we are confronted with the choice between different computational operations in a single language, for example, why *in situ* WH elements in Chinese and Iraq Arabic involve binding rather than covert checking. Tsai (1994) and Ouhalla (1996) discuss this issue and conclude that it is the morphological properties of the WH elements in these languages that make the choice. Thus, there are underlying principles governing the options between checking and binding.

We are also confronted with another kind of choices between different computational operations in a single language: in checking, what governs the choice between overt checking and covert checking, and between merge checking and movement checking. While the latter

variation has been assumed to be an issue of numeration, the former, i.e. overt/covert variation, has been claimed to be a strong/weak parameter issue in the current Minimalist theory. The chapter 2 and chapter 4 of this thesis conclude that languages differ in the default strength of a formal feature, rather than the absolute strength of the feature, and that the choice between overt and covert checking can be decided contextually by the presence of a certain feature in the complement domain of the relevant functional head. For example, in Chinese object shift, the focus feature of a focus marker adjoined to an object triggers the strength of \bar{v} , and in Chinese yes-no questions, a certain feature of the elements which adjoin to the interrogative Σ /Neg makes the [Q] of C to be strong.

In conclusion then the options in the computation system are not arbitrary. There are always underlying principles determining the choice.

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