

The Classification of Chinese Adverbials, Interrupted Scopes and the  
Nature of Minimality in Non-Movement Dependencies

By

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## Abstract

This thesis investigates the nature and empirical domain of minimality via Chinese adverbial modifiers. Two types of minimality are examined in this work. First, by reporting a novel interaction pattern that a preverbal adverbial class is not allowed when its post-verbal counterpart has a higher scope in a highly language-specific construction, I argue that the phenomenon is explainable with minimality extended to non-movement dependencies, in compliance with some recent works to unify the theory of syntactic dependencies (e.g. Haegeman and Lohndal 2010, Zeijlstra 2010, Wurmbbrand 2012, Larson 2014 among others). Evidence provided for this in-situ minimality approach includes the fact that the preverbal subject-and object-depictives which are of the identical syntactic form with preverbal adverbials are yet not allowed post-verbally, and the fact that Chinese resultatives are not restricted by Direct Object Constraint (Levin and Rappaport 1995) as observed in Li (1999).

The second type of minimality reported in this thesis bears on the interaction among the preverbal adverbials, that is, a higher class blocks a lower class with *wh*-form regardless whether the higher one is itself compatible with *wh*-form or not, an unexpected fact for Li, Shields and Lin's (2012) Potential Movability Condition and Chomsky's (1995) Minimal Link Condition. Linking this to the fact that *wh*-adverbials can occur inside islands while still producing a wide scope interpretation, I claim that there is no covert *wh*-movement in Chinese, which in turn makes movability irrelevant for evaluating the dependency of a base-generated operator and the in-situ *wh*-expression in Chinese. Ultimately, a non-movement "bipartite" model of minimality is proposed by incorporating another factor influencing the actual form of minimality—the internal homogeneity of a dependency in the sense of Li (1990).

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## List of Abbreviations

3PL	third person plural
3S	third person singular
ASP	aspect
BA	marker of ba construction
CL	classifier
DE	pre-nominal/preverbal modification marker or postverbal resultative marker
HEN	syntactic manifestation of a degree element
LOC	localizer
P	preposition
Q	question particle
Spec	specifier

## Chapter 1: Introduction

This dissertation investigates the nature and empirical domain of minimality via Chinese verbal modifiers. Descriptively, minimality refers the syntactic scenario in (1):

1. \*[ X ... Z ... Y ... ],

where X and Y would form a legitimate dependency if a certain type of Z were not present.

The term minimality was first formally articulated in Chomsky 1986 and was meant to prevent a constituent – a governor to be precise – outside a phrase P from influencing any component inside P (other than the head of P). Rizzi 1990 redefined the term by relativizing what qualifies for the blocker Z in (1). In particular, he proposes that Z must be of the same syntactic type as X, plus other requirements to which we return in later chapters. A different perspective was offered in Chomsky 1995. Rather than identifying a blocker Z between X and Y, Chomsky makes X see only the closest visible constituent Z and thus leave Y no chance to be connected with X. This idea is further incorporated in the subsequent probe-goal model of strictly local operations in Chomsky 2000, 2001.

Since its advent, minimality has been utilized in syntactic analyses of a wide range of cross-linguistic facts. But there is hardly any work other than from the two original authors that is concerned with the precise definition of the notion. An exception is Li, Shields and Lin 2012 where a large quantity of English adverbs are examined with respect to how different classes interact in movement. An extra qualifying factor is identified for Z as the blocker which, according to these authors, also bears on evaluating the pros and cons of the alternative definitions of minimality in the literature.

In this work, we bring Chinese adverbials into consideration with two goals in mind. First, minimality is shown to explain a scope effect that is displayed in a highly language-specific construction and has not been reported before. Second, all the facts covered under the different versions of minimality in the literature are sorted out with the conclusion that there does not exist a single mechanism, at least not in the current understanding of the human language faculty, for imposing (1) on syntactic dependencies.

Aside from this brief introduction, the dissertation contains three more chapters. Chapter 2 establishes the classes of preverbal adverbials in Chinese, based on Cinque's (1999) work on adverb classification. While most classes match, there are also a few that do not. Preverbal depictives, indistinguishable in form from adverbials, are singled out and will play a critical role in later analyses. Chapter 3 takes a close look at a language-specific construction, often referred to as the manner *V-de*. We provide evidence that the construction is much more than

a host for a manner modifier of the verb and that it “scopally” interacts with the preverbal adverbials. The conclusion is that the phenomenon is explainable with minimality extended to non-movement dependencies. Chapter four makes use of the established adverbial classes in Chinese to evaluate the boundaries of the existing implementations of minimality and ultimately propose a “bipartite” model of our own.

## Chapter 2: The classification of Chinese adverbials

This chapter systematically documents the syntactically relevant classes of a major form of Chinese adverbials, a task undertaken for the first time in the principles-and-parameters framework.<sup>1</sup> Section 2.1 defines the particular adverbial form, *X-de*, investigated throughout this dissertation and explains why such a restriction is called for. Section 2.2 identifies eight classes of *X-de* adverbials in Chinese that overall match what have been established in English. Ultimately, it is this cross-linguistic consistency that justifies studying the syntactic behaviors of Chinese adverbials in the theoretical context of Universal Grammar. At the same time, Chinese has unique grammatical constructions that help reveal more classes for both the subject-oriented and object-oriented adverbials, as will be closely looked into in section 2.3. More examples for each class are listed in the Appendix.

### 2.1. The *X-de* form of adverbials

It is a fact that the overall lack of morphological markers in Chinese renders the distinction among lexical categories much less straightforward than in typical European languages. As a matter of fact, other than a finite set of lexical words (e.g., *huran* 'suddenly', *qiaqia* 'just, exactly' and *nandao* for strengthening the force of a

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<sup>1</sup> Liu 1983 is a comprehensive effort in the structuralist tradition to sort out adverbials in Chinese. We return to a brief assessment of her work in section 2.2.

rhetorical question) which are unanimously regarded as adverbs (see Lü 1999), there is no evidence that Chinese has a separate class of words corresponding to the *-ly* form in English or the *-ment* form in French – the Chinese counterpart of, say, *carefully* is *renzhen-de* ‘careful-DE’ which can modify a verb and a noun alike.<sup>2</sup> At the same time, however, when *X-de* is used adverbially, it exhibits both the productivity and classification comparable to the *-ly* adverbs. This is the primary reason that the current dissertation will focus on the *X-de* form. To minimize unwanted implications, the adverbial use of *X-de* will be referred to as an adverbial modifier. But to simplify presentation as well as avoid distracting the reader from more important issues, *X-de* will be glossed as *X-ly* (e.g., *renzhen-de* ‘careful-ly’). As already made clear, no categorial claim is intended with this notation.

In order for the data to be contained more effectively within a manageable domain, all the examples in this work will use adverbial modifiers that can satisfy the four criteria in (2):

2. a. Modifying a VP or a clause;
- b. Ending with *-de*;
- c. Subject to modification by *hen* ‘very’ or in a particular reduplication form;

---

<sup>2</sup> It would be inaccurate to think of *de* as a generic adjunct marker in the sense of the “standard” X-theory because the possessor is also trailed by *de*: *natio yu de* ‘that fish de’ → that fish’s. Kayne’s (1994) asymmetric syntax does not distinguish between Spec and adjunct, thereby offering a possibility to analyze *de* uniformly.

The null semantics of *de* plus its linear location raises an entirely separate question, on the interface between Universal Grammar and iconicity, tackled in Chen and Li 2016a.

d. Unlikely to be clauses or PPs in themselves.

We explain the relevance and/or significance of (2a-d) below.

Given the fact that Chinese lacks sufficient categorial morphology, (2a) is the inevitable contextual condition for singling out adverbial modifiers from “adjectival modifiers”. (3) highlights the point:

3. a. nage xuesheng congming-de huida-le wode wenti.  
 that student smart-ly answer-ASP my question  
 ‘That student smartly answered my question.’
- b. nage congming-de xuesheng huida-le wode wenti.  
 that smart-DE student answer-ASP my question  
 ‘That smart student answered my question.’

Note that *congming-de* in (3b) is inside the DP subject and thus can only be translated simply as ‘smart’ in English, a practice to be followed in the rest of this dissertation.

The significance of (2b) is beyond a telltale marker for a modifier’s presence. For one thing, the use of *-de* is the Chinese way to turn various expressions into a modifier in a predictable and productive manner, a property facilitative to the investigation of adverbial classification and interactions undertaken in this dissertation – an open group of adverbials makes it much easier to construct

examples. For another, the presence of *-de* may effectively exclude certain arguably insignificant complications. We examine two such cases for illustration.

Consider *keneng* ‘likely, perhaps, may’ in Chinese. As the English translations illustrate, it is not straightforward semantically whether the word is a modal or an adverbial modifier. Nor is the category of *keneng* directly discernible from its location or environment in a clause:

4. a. Runrun keneng huida-le nage wenti.

Runrun “perhaps” answer-ASP that question

‘Runrun may have answered that question/perhaps has answered that question.’

b. Runrun xunsu-de huida-le nage wenti.

Runrun quick-ly answer-ASP that question

‘Runrun quickly answered that question.’

Since Chinese adverbials characteristically occur preverbally (with an important exception to which we return later on), they are linearly indistinguishable from modal verbs. But this is far from the end of the complications.

Like most adverbial modifiers, *keneng* can be modified by degree adverbs such as *feichang* ‘much, (literally) abnormally, especially’: inserting *feichang* right after the subject *Runrun* in (4a-b) yields equally acceptable outcomes (with the added semantic intensity). But the same degree adverbs can also modify certain

verbs and modals (e.g., *feichang yinggai ...* ‘especially ought to ...’). Similarly, *keneng, X-de* and some modal verbs can occur at the beginning of a clause:

5. a. *keneng Runrun huida-le nage wenti.*  
 “perhaps” Runrun answer-ASP that question  
 ‘Perhaps Runrun has answered that question.’
- b. *xunsu-de Runrun huida-le nage wenti.*  
 quick-ly Runrun answer-ASP that question  
 ‘Quickly Runrun has answered that question.’
- c. *yinggai Runrun huida nage wenti.*  
 should Runrun answer that question  
 ‘It should be the case that Runrun answer that question.’

So neither degree adverbs nor fronting can determine whether *keneng* is an adverb or a modal verb. The VP-ellipsis test, on the other hand, seems to suggest a three-way distinction:

6. a. Q: *Runrun yinggai huida nage wenti ma?*  
 Runrun should answer that question Q  
 ‘Should Runrun answer that question?’
- A: *ta yinggai.*  
 3s should

'He should.'

b. Q: Runrun keneng huida nage wenti ma?

Runrun "perhaps" answer that question Q

'Might Runrun possibly answer that question?'

A: ?ta keneng.

3s "perhaps"

'He might.'

c. Q: Runrun xunsu-de huida-le nage wenti ma?

Runrun quick-ly answer-ASP that question Q

'Has Runrun quickly answered that question?'

A: \*ta xunsu-de.

3s quick-ly

\*'He quickly.'

Some other tests further obscure the categorial status of *keneng*, but we hope to have demonstrated the issue at hand: there exist words whose category is uncertain; when such a word happens to be incompatible with *-de* (*\*Runrun keneng-de huida-le nage wenti*. 'Runrun "perhaps"-ly answer-ASP that question. '), namely it does not meet criterion (2b), it can be excluded from our investigation provided that the data we do consider remain sufficiently large in size and exhibit a theoretically meaningful pattern.

The second case for illustrating the point of taking *-de* as a sifting criterion is inspired by Li, Shields and Lin 2012 (LSL hereafter). LSL uncovers a new minimality pattern among English adverb classes. Pending an elaborate recount and revision of their work till Chapter 4 of this dissertation, one should note that LSL's data pattern works extremely well with "regular" English adverbs that end with *-ly* (see their 8-page appendix systematically documenting the relevant data among adverb classes). An exception is *often*, which happens to be an irregular non-*ly* adverb. In essence, while regularly formed adverbs such as *frequently* interact negatively with *wh*-adverbs of a structurally lower class (as in (7a)), *often* with practically the same meaning does not (7b):

7. a. How skillfully did John (\*frequently) t mow his lawn? (LSL: 221)  
 b. How skillfully did John (often) t mow his lawn? (LSL: 257)

A similar scenario is found in Chinese despite the lack of overt *wh*-movement:

8. a. Runrun pinfan-de/changchang(\*-de) baifang tade wanju qiche.  
 Runrun frequent-ly/often(\*-ly) arrange his toy car  
 'Runrun frequently/often arrange his toy cars.'
- b. ?Runrun pinfan-de duome zhengqi-de baifang tade wanju qiche?  
 Runrun frequent-ly how tidy-ly arrange his toy car  
 Literally: \*'How tidily does Runrun frequently arrange his toy cars?'

c. Runrun changchang duome zhengqi-de baifang tade wanju qiche?

Runrun often how tidy-ly arrange his toy car

'How tidily does Runrun often arrange his toy cars?'

(8a) shows two frequency adverbials, *pinfan* and *changchang*, one with *-de* and the other rejecting *-de*. As it happens, the one with *-de* in (8b) deteriorates in the presence of a lower “result” adverb in *wh*-form (marked by *duome* ‘how’ literally meaning ‘how much’) while the *de*-less one in (8c) does not seem to interfere with the acceptability of the sentence. Whatever the explanation for this contrast turns out to be – a mystery to LSL and to the author of this dissertation – which is unlikely to be accidental given its cross-linguistic exhibition, it seems clear that irregular adverbial forms should be singled out at this moment. There may well be separate or extra factors at work which should not be mingled with the regular forms, *-ly* in English and *-de* in Chinese.

Back to the specific criteria for *X-de* adverbials, (2c) consists of two “tests” both of which are unique in Chinese. In itself, *hen* means either ‘very’ or, more often than not, nothing. When one describes a person as *hen congming*, literally translated as ‘very smart’, the default meaning is simply ‘smart’ instead (see example (9b) below; Li and Thompson 1981, S. Huang 2006, Gu and Li 2013, Zhang 2015 among others). While specific theories vary, there is a general consensus in the field of Chinese syntax that the null-semantic use of *hen* signals the syntactic manifestation of a Degree element in an adjectival projection, and at least for most

of the examples used in this work, the *X* part of *X-de* is usually taken in various grammar books as an adjective. It must be made clear from the onset that *hen* also works with certain stative verbs (e.g., *xihuan* 'like', *ai* 'love', *liaojie* 'understand'). So its occurrence is not a foolproof identification of *X* as a particular category. Still, *hen* is simply incompatible with, say, a preposition (e.g. (\**hen*) *cong* Harbin '(\*)very from Harbin'). Consequently, it indeed helps exclude certain types of unwanted adverbial modifiers. But the primary reason for including *hen* as a sifting criterion is its degree-signaling function. A fact at the core of Chapter 4 is that a subset of adverbial classes, in English and Chinese, reject the *wh*-form *how Adv*. At the same time, the two languages differ critically in how those non-*wh*-adverbials interact syntactically with other adverbials. The *hen*-criterion is meant to show that semantic reasons do not explain why an adverbial class has no *wh*-form: If *X-de* can be modified by *hen*, then it is measurable in terms of degree; it follows that logically there is nothing semantically wrong with questioning the degree of *X-de* by adding *duome* 'how, how much'.

Reduplication is a morphological process that happens to certain types of verbs and adjectives (and thus our adverbial modifiers). There are multiple patterns whose correlations with categories remain partially unclear (see Lü 1999 and Chapter 1 of Huang, Li and Li 2009). What matters for us is that this phenomenon, in the form of AABB, is grammatically in complementary distribution with *hen* and semantically indicative of a milder degree of the bare root AB:

9. a. Runrun renzhen-de ting gushi.  
 Runrun careful-ly listen.to story  
 ‘Runrun attentively listens to stories.’
- b. Runrun hen renzhen-de ting gushi.  
 Runrun HEN careful-ly listen.to story  
 Default reading: Same as (9a).
- c. Runrun (\*hen) renrenzhenzen-de ting gushi.  
 Runrun HEN carecareful-ly listen.to story  
 ‘Runrun quite attentively listens to stories.’

Note the unacceptable use of *hen* in (9c) despite its zero contribution in meaning. Even without any further analysis, it should be obvious that reduplication and *hen* each fulfill the role in Chinese syntax to manifest a degree element. If every relevant phrase (= *X* in *X-de*) supports only one degree element (Cover 1997, Grano 2012, Zhang 2015 and references therein), the complementary distribution seen in (9c) follows.

With this brief introduction on reduplication, what matters more to this dissertation is two other forms, ABB and AA. For various reasons some of which remain unclear, one encounters modifiers, adverbial and “adjectival” alike (recall that they share the same form in Chinese), that only have ABB or AA without the

corresponding bare root forms AB or A: (See Feng 1995's prosodic theory for an explanation).

10. a. shilinlin-de  
       drippingping-ly  
       'drippingly'
- b. nennen-de  
       softsoft-ly  
       'tenderly'

At least for the adverbial use, there is no "going back" to *\*shilin-de* 'dripping-ly' or *\*nen-de* 'soft-ly'. Still, the milder flavor of reduplication can be detected in most such cases and no degree adverb such as *hen* is allowed with the reduplication form. In brief, there will be examples of adverbial modifiers, especially within a couple of classes, that may not directly meet the *hen*-criterion due to reduplication, but they should not be viewed as being inconsistent with (2c).

The motivation behind (2d) is an observation made in LSL (section 3.6.3), namely that PP adverbials in English do not interact with adverbs in the same way as their semantically corresponding adverbs:

11. a. \*How skillfully did John frequently t mow his lawn? (Ibid: 238)
- b. With what degree of skill did John frequently mow his lawn? (Ibid: 239)

12. a. \*How vigorously did John consistently t promote the theory? (Ibid: 238)

b. With what level of vigor did John consistently promote the theory?

(Ibid: 239)

(11a) and (12a) repeat the interference pattern seen in (7a), with a frequency adverb blocking the *wh*-adverb of a lower class (the manner class in these examples; see section 2.2 below). The (b) examples essentially spell out the blocking adverbs with PPs and the blocking effect disappears completely. Since the later chapters will examine how different adverbial classes interact, what is already known not to likely participate in such interactions should not be included in the first place.

There is an auxiliary reason for (2d). It is a well-known fact about Chinese that practically all prepositions (or what are claimed to be prepositions by some researchers) in modern Chinese originated as verbs, and some of them almost certainly remain to have the verbal use even now. Consequently, *X-de* minus the restriction in (2d) could easily include examples in which *X* is clausal in structure.<sup>3</sup> We see no reason to include this extra layer of potential complication in view of a possibility in Chinese. Recall that a major concern of this work is on the *wh*-form of the adverbial modifiers. Suppose *X* is underlyingly a VP which has no *wh*-form

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<sup>3</sup> For those who know Chinese, there exists another element of concern: Since most modern Chinese words are multi-syllabic formulated with the older mono-syllabic words, the internal structure of a modifier may become relevant in this sense as well. For instance, a quadri-syllabic “idiom” may even be internally clausal, raising further issues in various ASPects of the theory.

even though semantically it belongs to an adverbial class that supports *wh*. Should this be viewed as a counterexample?

In sum, all the examples used in this work will be constructed with the guidance of (2a-d), out of considerations explicated in this section. With this restriction on data, we are ready to classify the *X-de* adverbials.

## 2.2. Adverbial classes: From English to Chinese

Based on an extensive cross-linguistic study, Cinque (1999: 106) has listed 30 or so classes of adverbs as shown in (13) below, each in the Spec position of a corresponding functional head *F* which he argues to be independently evidenced in one language or another with some morphological marker or a separate lexical item.

13. [*frankly* Mood<sub>speech act</sub>] [*fortunately* Mood<sub>evaluative</sub>] [*allegedly* Mood<sub>evidential</sub>] [*probably* Mod<sub>epistemic</sub>] [*once* T(Past)] [*then* T(Future)] [*perhaps* Mood<sub>irrealis</sub>] [*necessarily* Mod<sub>necessity</sub>] [*possibly* Mod<sub>possibility</sub>] [*usually* ASP<sub>habitual</sub>] [*again* ASP<sub>repetitive(I)</sub>] [*often* ASP<sub>frequentative(I)</sub>] [*intentionally* Mod<sub>volitional</sub>] [*quickly* ASP<sub>celerative(I)</sub>] [*already* T(Anterior)] [*no longer* ASP<sub>terminative</sub>] [*still* ASP<sub>continuative</sub>] [*always* ASP<sub>perfect(?)</sub>] [*just* ASP<sub>retrospective</sub>] [*soon* ASP<sub>proximative</sub>] [*briefly* ASP<sub>durative</sub>] [*characteristically(?)* ASP<sub>generic/progressive</sub>] [*almost* ASP<sub>prospective</sub>] [*completely* ASP<sub>SgCompletive(I)</sub>] [*tutto* ASP<sub>PlCompletive</sub>] [*well* Voice] [*fast/early* ASP<sub>celerative(II)</sub>] [*again* ASP<sub>repetitive(II)</sub>] [*often* ASP<sub>frequentative(II)</sub>] [*completely* ASP<sub>SgCompletive(II)</sub>]

(Cinque 1999: 106)

Our examination of the Chinese adverbial modifiers traces back to Cinque's work (and inevitably on the many works that inspired Cinque (e.g., Travis 1988); also see Ernst 2002). Meanwhile, it is yet unclear that every class has an easily

identifiable match in Chinese, in addition to the fact some classes merely contain one or two lexical items that are irregular in form (recall *often* and *changchang* ‘often’ from 2.1; in fact, most Chinese examples cited by Cinque (ibid: 39ff) do not meet all the criteria in (2)) and will not be looked at in this work. Instead, this section will start with a subset, six of the regular-formed classes of English adverbs in LSL and their direct *X-de* counterparts in Chinese, expanding the coverage where data in the latter language makes new contributions to the study of adverbs.

(14) summarizes the six adverb classes, followed by samples of proof for their hierarchy. Throughout this dissertation, “>” stands for linear precedence and structurally asymmetric c-command. Unless stated otherwise, all the English examples are from LSL:

14. Ev > Evi > So > Fr > Ma > Re

- a. Evaluative (Ev):      fortunately, luckily, regrettably, surprisingly, ...
- b. Evidential (Evi):    allegedly, reportedly, evidently, apparently, ...
- c. Subject-oriented (So):   wisely, cleverly, stupidly, clumsily, ...
- d. Frequentative (Fr):    frequently, regularly, consistently, ...
- e. Manner (Ma):          cautiously, slowly, skillfully, loudly, ...
- f. Resultative (Re):      perfectly, thickly, deeply, widely, tightly, ...

15. Ev > Evi (Cinque 1999: 33; quoting Siewierska 1992)

- a. Fortunately, he had evidently had his own opinion of the matter.
- b. \*Evidently, he had fortunately had his own opinion of the matter.

## 16. Evi &gt; So

- a. Apparently, John has foolishly been recording the meetings.
- b. \*Foolishly, John apparently has been recording the meetings.

## 17. So &gt; Fr

- a. Wisely, Chris has regularly been checking the account.
- b. \*Regularly, Chris has wisely been checking the account.

## 18. Fr &gt; Ma

- a. John regularly skillfully mows his lawn.
- b. \*John skillfully regularly mows his lawn. (with *skillfully* as Ma and not So!)

## 19. Ma &gt; Re (from our own informants)

- a. Ted skillfully tightly tied the knots.
- b. \*Ted tightly skillfully tied the knots.

Especially worth noting is that adverbs of certain classes, for instance So, are often “ambiguous”, subject to the interpretation (and the linearization) of another class. A famous example is *John cleverly has answered their questions cleverly*. (Jackendoff 1972, Cinque 1999), with the first *cleverly* being So (cf. *It was clever of John to answer ...*) and the second being Ma. (18b) is unacceptable only with the lower Ma reading (LSL, fn 3).

For each class in (14), one can find a Chinese counterpart in the *X-de* form (a fuller list for each class, as well as more examples for between-class interactions,

are given in Appendix 1). It must be noted that the English translations are but approximations and no accurate subtleties are guaranteed.

20. a. Ev

xingyun-de ‘fortunately’, jiaoxing-de ‘luckily’, daomei-de ‘unfortunately’, ...

b. Evi

xianran-de ‘evidently’, mingxian-de ‘obviously’, xianeryijian-de  
‘clearly’, ...

c. So

haoqi-de ‘curiously’, tanlan-de ‘greedily’, congming-de ‘smartly’, ...

d. Fr

pinfan-de ‘frequently’, chizhiyiheng-de ‘consistently’, jingchangxing-de  
‘regularly’, ...

e. Ma

xunsu-de ‘rapidly’, liuli-de ‘fluently’, qiaomiao-de ‘cleverly’, ...

f. Re

shenshen-de ‘deeply’, kuankuan-de ‘widely’, zhengqi-de ‘tidily’, ...

The rest of this section concentrates on two things. First, the hierarchy in (14) is not fully matched in Chinese. Second, (20) will serve as the base for both bringing in more adverbial classes and introducing a unique construction in Chinese that will bear on later discussions.

### 2.2.1. Ev vs. Evi: a reversed hierarchy, etc.

It is obvious that the Evi class ranks higher than Ev in Chinese, contra Cinque's claim in (15) (the English translations are not judged for acceptability):

#### 21. When Ev > Evi

- a. \*ta hen xingyun-de xianran-de jieshou-guo zhuanye-de xunlian.  
 3s HEN fortunately evidently receive-ASP profession-DE training  
 'S/He fortunately evidently has received professional training.'
- a'. \*hen xingyun-de, ta xianran-de jieshou-guo zhuanye-de xunlian.  
 HEN fortunately 3s evidently receive-ASP profession-DE training  
 'Fortunately, s/he evidently has received professional training.'
- b. \*ta hen daomei-de mingxian-de yudao-le yige da pianzi.  
 3s HEN unfortunately obviously run.into-ASP a big imposter  
 'S/He unfortunately obviously ran into a big imposter.'
- b'. \*hen daomei-de, ta mingxian-de yudao-le yige da pianzi.  
 HEN unfortunately 3s obviously run.into-ASP a big imposter  
 'Unfortunately, s/he obviously ran into a big imposter.'

#### 22. When Evi > Ev

- a. ta hen xianran-de xingyun-de jieshou-guo zhuanye-de xunlian.  
 3s HEN evidently fortunately receive-ASP profession-DE training  
 'S/He evidently fortunately has received professional training.'

- a'. *hen xianran-de, ta xingyun-de jieshou-guo zhuanye-de xunlian.*  
 HEN evidently 3s fortunately receive-ASP profession-DE training  
 'Evidently, s/he fortunately has received professional training.'
- b. *ta hen mingxian-de daomei-de yudao-le yige da pianzi.*  
 3s HEN obviously unfortunately run.into-ASP a big imposter  
 'S/He obviously unfortunately ran into a big imposter.'
- b'. *hen mingxian-de, ta daomei-de yudao-le yige da pianzi.*  
 HEN obviously 3s unfortunately run.into-ASP a big imposter  
 'Obviously, s/he unfortunately ran into a big imposter.'

In addition to the straightforward Evi>Ev hierarchy, two more small points should be made to facilitate understanding these examples. First, note the “adjectival” modifier inside the object, namely *zhuanye-de* ‘professional’. This illustrates what was mentioned in section 2.1, that *X-de* in itself is simply an adjunct indiscriminate to the category of what it modifies. Second, Chinese is a language in which acceptability is determined jointly by grammaticality and prosody (Feng 2000), that is, a sentence that meets all the grammatical requirements may still be judged bad – being avoided or disliked by native speakers – if a certain constituent has the wrong (often fewer) number of syllables. This factor is clearly outside the concern of the current dissertation, so no further discussion will be included<sup>4</sup>. Suffice it to

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<sup>4</sup> However, it needs to be pointed out that prosody is not able to rescue a sentence with Ev>Evi order even when Ev is focused as illustrated in (21a') and (21b').

note that *hen*, the degree marker by default, is used in (21-22) because adding it to the first adverbial modifier, especially when it is fronted to the beginning of the sentence, sounds significantly more natural even though no extra semantics is detectable. To put it differently, the reader is safe in disregarding its presence/absence as far as syntax is concerned.

Another class of adverbs in Cinque 1999 is alethic (Al, expressing “necessary or possible truths”), including *necessarily* and *possibly* which occur after Tense modals such as *will* and are to be distinguished both from the structurally higher epistemic (Ep, expressing “the speaker’s degree confidence about the truth of the proposition”) adverbs like *probably* and from the immediately lower So class. In brief, his ranking is  $Ep > will > Al > So$ . If we relax the criteria in (2) slightly, it is possible to compare this hierarchy with Chinese if *necessarily* corresponds to *biran-de*:

23.  $Ep > Al > hui > So$

- a. gongsi dagai biran-de hui yuchun-de jiegu yixie yuangong.  
 company probably necessarily will foolishly fire some employee  
 ‘The company probably will necessarily foolishly fire some employees.’
- b. \*gongsi dagai hui biran-de jiegu yixie yuangong.  
 company probably will necessarily fire some employee
- c. \*gongsi biran-de dagai hui jiegu yixie yuangong.  
 company necessarily probably will fire some employee

(23a) contains all the four elements: the epistemic (and non-*X-de*) *dagai* ‘probably’, the alethic *biran-de* ‘necessarily’, the modal *hui* (to which we return shortly) and the So adverbial *yuchun-de* ‘foolishly, stupidly’. Different from Cinque’s ranking is that Al precedes the future-denoting modal. (23b) swaps the two and sounds very bad. Meanwhile, Ep remains higher than Al in Chinese, since reversing them in (23c) results in a sentence that seems uninterpretable.<sup>5</sup>

The modal *hui*, translated as ‘will’ in (23), deserves more explication. It has been long recognized that *hui* expresses a “possible event in the future” (Zhu 1982: 63). In a more recent work, Tsai 2015 points out that *hui* may express anyone of three types of modality: irrealis, deontic (aka root, for obligation and permission) and dynamic (expressing pure ability). In this sense, *hui* in (23) is used as an irrealis modal and not simple future tense. But a different categorization like this does not resolve the inconsistency between Cinque’s theory and Chinese either, as he explicitly places the “irrealis mood” below T and above the functional phrase hosting alethic adverbs (Cinque 1999: 88f). So even if *hui* is best analyzed as an irrealis marker instead of future tense, it ought to appear to the left of alethic adverbials according to Cinque but contradicting the fact in Chinese.

By now, two hierarchy-reversions are found. Earlier, we demonstrated that Evi is higher than Ev in Chinese. Now Al is also shown to be higher than T/irrealis

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<sup>5</sup> Interestingly, for some reason it is not straightforward what (21a) means either, with *probably* and *necessarily* both in the same sentence. Nevertheless, (21a) sounds acceptable but (21c) does not.

(and thus higher than any adverbial depending on these heads – this is where it becomes harder to test because of entangled factors). Such details aside, Cinque’s theory places Evi and Ev (whatever is their own hierarchical arrangement) higher than Al and T/irrealis (again, whatever is the hierarchical arrangement between them). It follows that at least in Chinese, we should have (24):

24. Evi > Ev > Al > T/Ir

This can be confirmed:

25. Ev > Al

a. zai zhege yuzhou li, 1+1 hen buxing-de biran-de dengyu 2.

at this universe inside 1+1 HEN unfortunately necessarily equal 2

‘In this universe, 1+1 unfortunately necessarily equals 2.’

b. \*zai zhege yuzhou li, 1+1 biran-de hen buxing-de dengyu 2.

at this universe inside 1+1 necessarily HEN unfortunately equal 2

Literally: ‘In this universe, 1+1 necessarily unfortunately equals 2.’

26. Evi > Al

a. zai zhege yuzhou li, 1+1 mingxian-de biran-de dengyu 2.

at this universe inside 1+1 obviously necessarily equal 2

‘In this universe, 1+1 obviously necessarily equals 2.’

b. \*zai zhege yuzhou li, 1+1 biran-de mingxian-de dengyu 2.

at this universe inside 1+1 necessarily obviously equal 2

Literally: 'In this universe, 1+1 necessarily obviously equals 2.'

But the Ep adverb *dagai* 'probably' seems to require another adjustment (which we discuss with a degree of reluctance due to its irregular form).

Recall that Ep is higher than Al. In Cinque's system (also see LSL movement-based data), Ep is lower than Ev and Evi. This cannot be substantiated in Chinese:

#### 27. Ev vs. Ep

a. zai zhege yuzhou li, 1+1 dagai (hen buxing-de) dengyu 2.

at this universe inside 1+1 probably HEN unfortunately equal 2

'In this universe, 1+1 probably (unfortunately) equals 2.'

b. zai zhege yuzhou li, 1+1 hen buxing-de dagai dengyu 2.

at this universe inside 1+1 HEN unfortunately probably equal 2

'In this universe, 1+1 unfortunately probably equals 2.'

#### 28. Evi vs. Ep

a. zai zhege yuzhou li, 1+1 dagai hen mingxian-de dengyu 2.

at this universe inside 1+1 probably HEN obviously equal 2

'In this universe, 1+1 probably obviously equals 2.'

b. zai zhege yuzhou li, 1+1 hen mingxian-de dagai dengyu 2.

at this universe inside 1+1 HEN obviously probably equal 2

'In this universe, 1+1 obviously probably equals 2.'

The parentheses in (27a) show that there is intrinsic incompatibility between the probability adverb *dagai* and what's presumed to be a truth. Overall, Ep appears to enjoy a free word order with respect to Evi and Ev.

Strictly speaking, (27-28) do not falsify Cinque's placement of Ep if we take into consideration the irregular form of *dagai* 'probably' plus LSL's observation about the odd-acting *often* in English (see (7) in section 2.1). Suppose *dagai* to be right above Al and below Ep in Chinese in accordance with Cinque. Then (27a) and (28a), with *dagai* before Ev and Evi, may simply be the result of scrambling (cf. Shields 2010) targeting some clause-internal c-commanding position, exempted from blockage by Ev and Evi (see Chapter 4 below) because of its irregular form. Whether this is indeed a viable route toward a coherent solution is partially dependent on identifying more Ep adverbs/adverbials in Chinese. Furthermore, one wonders why (certain?) irregular adverbs are entitled to act as exceptions. We can only leave these questions to future research. For now, the conclusion is a revised hierarchy (29a) based on several classes of adverbial modifiers in Chinese, which is compared with Cinque's (29b):

29. a. Evi > Ev > Ep? > Al > T/Ir > So  
 b. Ev > Evi > Ep > T/Ir > Al > So

In (29a), the position of *Ep* saw superficial counterexamples that might be “excused”, *Evi* and *Ev* are swapped, so are *Al* and *T/Ir*. Furthermore, *T/Ir* only indicate the functional heads that would license corresponding adverb/adverbial classes in Cinque’s theory of which we find no actual manifestation in Chinese. The linear location of *T/Ir* is determined only through the modal *hui*. As for the *So* class, it necessarily occurs to the right of *hui*, making its ranking self-evident. Compare (23a) with the unacceptable (30):

30. *gongsi biran-de (\*yuchun-de) hui jiegou yixie yuangong.*  
 company necessarily foolishly HUI fire some employee  
 ‘The company necessarily (foolishly) will fire some employees.’

### 2.2.2. About one’s manner

What used to be included in the manner class (*Ma*) are now argued to be better described with finer divisions, not all of which will be considered in this subsection. Rather, we will focus mostly on reaching two goals. The first is to highlight the ability of certain adverbials to belong to more than one class. Since there is hardly any systematic investigation of adverbials in the Principles-and-Parameters approach to Chinese syntax, much data awaits discovery, assessment and theorizing upon. The more awareness one develops of the intriguing complexity of the facts, the likelier this portion of the language can be studied productively. The second goal is in effect a specific manifestation of the first: the

very knowledge that an adverb such as *quickly* has the multi-class capacity while the semantically similar *fast* does not, allows us to notice various differences between English and Chinese which in turn lead to curious questions.

Consider the pair of examples below:

31. a. zhege xuesheng hen yuchun-de pinfan-de huida guanjian-de wenti.

this student HEN foolishly frequently answer key-DE question

‘This student foolishly frequently answers key questions.’

b. zhege xuesheng hen pinfan-de yuchun-de huida guanjian-de wenti.

this student HEN frequently foolishly answer key-DE question

‘This student frequently foolishly answer key questions.’

The most salient readings, possibly the only ones, of these examples are, respectively, that (31a) describes how foolish of this student it is to frequently pick key questions to answer and (31b) says the student frequently gives foolish answers to key questions. The first is the typical So interpretation, with the adverbial *yuchun-de* ‘foolishly’ describing some quality of the subject; the second represents the Ma reading, associating foolishness to the way of question-answering. Minimally, the contrast in (31) proves the default position for So to be before – and thus higher than – the frequentative adverb *pinfan-de* ‘frequently’ and that of Ma, after – and lower than – Fr.

Many, perhaps all (Ernst 2002), So adverbials are subject to an Ma interpretation provided that they occur in the corresponding position. The next example starts with English. Traditionally, *quickly* is grouped under the Ma class. But Travis (1988: 292) points out an “ambiguity” with the adverb:

32. a. John quickly lifted his arm.  
       b. John lifted his arm quickly.

Travis notes that (32a) remains true even when John’s arm was lifted in slow motion as long as he responded (e.g., to the arm-lifting instruction) fast enough. In comparison, (32b) holds if John’s arm-lifting was done swiftly, regardless of how much time passed between him hearing the instruction and his carrying it out. Cinque labels *quickly* in (32a) as celerative I (Ce1) and the one in (32b) celerative II (Ce2). Furthermore, if we simplify his entire picture somewhat, Ce1 is higher than what remain to be Ma and Ce2 is lower than Ma:  $Ce1 > Ma > Ce2$ .

Cinque takes Ce1 to be lower than Fr but gives no direct evidence (in the sense of directly pairing adverbs from the two classes). Moving on to Chinese, the Ce1-Ce2 ambiguity can be found when the adverbial is lower than Fr:

33. a. na   jia     ren     pinfan-de   xunsu-de   chanchu     menkou-de   jixue.  
       that family people frequently   quickly   shovel.away doorway-DE   snow  
       i. “That household is frequently quick in getting the snow shoveled in

front of their door entrance.’

- ii. ‘The shoveling of the snow in front of their door entrance is frequently carried out quickly by that household.’

- b. \*na jia ren xunsu-de pinfan-de chanchu menkou-de jixue.  
that family people quickly frequently shovel.away doorway-DE snow

As (33b) shows, placing an Fr adverbial after *xunsu-de* ‘quickly’ results in uninterpretability, proving that even the Ce1 class is lower than Fr. On the other hand, we find no clear fact regarding the hierarchy among Ce1, Ce2 and the manner class (with *shulian-de* ‘skillfully’):

34. a. na jia ren xunsu-de shulian-de chanchu-le menkou-de  
that family people quickly skillfully shovel.away-ASP doorway-DE  
jixue.  
snow

Intended reading: ‘That household was quick in skillfully shoveling ...’

- b. ?na jia ren shulian-de xunsu-de chanchu-le  
that family people skillfully quickly shovel.away-ASP  
menkou-de jixue.  
doorway-DE snow

Intended reading: With *xunsu-de* inside the scope of *shulian-de*’.

The intended Ce1 reading of *xunsu-de* ‘quickly’ in (34a) seems available but at least to my ear the salient meaning of the sentence is for the snow-shoveling to have been carried out in a quick and skillful manner. In other words, the two adverbials seem to be understood as Ma parallels rather than Ce1 before Ma. Also, (34b) apparently poses difficulty in interpretation, somewhat contradicting the impression of parallel reading in (34a). All in all, the data are not clear enough for evaluating Cinque’s hierarchy, and vaguely cast a doubt on separating Ce2 from Ma. Given (31) where So precedes Fr by default, we reach a temporary ranking as follows:

35. Evi > Ev > Ep? > Al > T/Ir > So > Fr > Ce1 > Ma/Ce2?

There is another layer of complication, for which we start with a pair of celerative adverbials *hen kuai-de* ‘HEN quickly’ and *hen man-de* ‘HEN slowly’ as illustration. As mentioned earlier, *hen* is used here to make the *X* portion of the adverbial disyllabic – a monosyllabic *X* is generally unacceptable regardless of its class and semantics.

36. na    jia    ren    hen kuai-de/hen man-de chan-le    xue.  
       that family people HEN quickly/HEN slowly    shovel-ASP snow  
       ‘That household quickly/slowly shoveled the snow.’

Whereas *hen kuai-de* ‘quickly’ remains ambiguous between Ce1 and Ce2, *hen man-de* ‘HEN slowly’ feels like a Ce2 adverbial only. The contrast takes a sharper turn when the modifier-marker *-de* is removed:

37. na jia ren hen kuai/\*hen man chan-le xue.

that family people HEN quickly/HEN slowly shovel-ASP snow

Intended reading: ‘That household quickly/slowly shoveled the snow.’

*Hen kuai*, still meaning ‘quickly’, is good with only the Ce1 reading. Whatever is the reason for this disambiguation – which we admit not to understand, it helps us see why *hen man* is totally unacceptable. Since *hen man de* ‘slowly’ already belongs to Ce2 only, the removal of *-de* creates the impossible situation of requiring the Ce1-incapable *hen man* to be Ce1.

As a side note, it remains unclear what conditions license the removal of *-de*. Quite often, the process seems unpredictable. One tendency is for the adverbial use of *X* to be slightly more tolerant. For instance, while only *hen man* (literally translated as ‘very slow’) is not allowed adverbially, both *hen kuai* and *hen man* are unacceptable when used “adjectivally” to modify nouns: *hen kuai-\*(de) lieche* ‘HEN fast-DE train’ and *hen man \*(de) lieche* ‘HEN slow-DE train’. For an argument that when *-de* is an option, the expression with *-de* is phrasal and the one without is necessarily a compound, see Y. Li’s Chapter 1 in Huang, Li and Li 2009.

Another case of what appears to be language-specific idiosyncrasy has to do with the postverbal placement of adverbial modifiers. A major criterion used by scholars on adverbs, including Cinque, is the linear position in a clause (which, in most cases, matches identifiably unique semantics). The English examples in (32) above represent a perfect case, with the preverbal Ce1 *quickly* describing an instant start of an event (referred to “quantifying over the event” by Cinque (1999: 103)) and the postverbal Ce2 *quickly* the “speed” at which the event is carried out (“quantifying over the process”, *ibid*). By the same token, *early* can only be Ce2 (*ibid*: 104, ex. 88)):

38. a. Today, I woke up early.  
 b. \*Today, I early woke up.

Before examining how this matches up with Chinese, a new syntactic construction in Chinese needs to be introduced.

All the modifiers seen so far in Chinese examples are preverbal. There is a postverbal form as well. Compare (36), repeated in (39a), with (39b):

39. a. na jia ren hen kuai-de chan-le xue. (cf. (36))  
 that family people HEN quickly shovel-ASP snow  
 ‘That household quickly shoveled the snow.’  
 b. xue, na jia ren chan-de hen kuai.

snow that family people shovel-DE HEN quick

Same as (39a). plus the topicalization of the object.

In (39b), the modifier *hen kuai* occurs after the verb *chan* ‘shovel’, with an obligatory and semantically empty *-de* in between.<sup>6</sup> A detailed structural analysis of this construction, often referred to as the manner *V-de* in Chinese syntax (which turns out to be a misnomer; see below), will be presented in Chapter 3. For now, we simply note one of its properties in order to help understand the data: other than the marker-like *-de*, there must not be any overt constituent between the verb and the postverbal modifier. The restriction appears to be purely at the PF level because any means to not have an overt object in that position works: topicalization (as in (39b)), relativization or simply using an intransitive verb (Ting and Li 1997).

Other than these specific traits, (39b) might look like the counterpart of (32b) and (38a) in English, namely that Chinese also allows an adverbial modifier (of certain classes) to be either pre- or post-verbal. This is not true, however. In fact, (39b) is also ambiguous between Ce1 and Ce2. The following context highlights the Ce1 reading of *hen kuai* ‘quickly’ in (39b):

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<sup>6</sup> No one in the field of Chinese linguistics knows for certain what these instances of *-de* really are and whether they are the same one in different locations or separate ones. See Chen and Li 2016b for a study of *-de* in a cross-linguistic context. Also see another use of *-de* in the next subsection which introduces the resultative.

40. na jia ren pingshi cong lai bu chan xue. zhe ci bu zhidao  
 that family people usually ever not shovel snow this time not know  
 weishenme, tamen chan-de hen kuai, xue gang ting jiu chan-le.  
 why 3PL shovel-DE HEN quick, snow just stop then shovel-ASP  
 ‘Usually, that household never shovels snow. But this time, I have no idea  
 why. They quickly shoveled (it). They did it the moment it stopped snowing.’

As expected, the Chinese counterparts of (38a-b) with *early* are both good (topicalization is used in both examples for a minimal pair):

41. a. menkou-de xue, na jia ren hen zao-de chan-le.  
 doorway-DE snow that family people HEN early shovel-ASP  
 ‘The snow in front of their door entrance, that household shoveled early.’
- b. menkou-de xue, na jia ren chan-de hen zao.  
 doorway-DE snow that family people shovel-DE HEN early  
 Same as (41a).

Descriptively, Chinese does not distinguish between the pre-/postverbal positions with respect to adverbial modifiers (See Appendix 2 for more examples), a fact that deserves attention in Chapter 3.

### 2.2.3. Resultatives

The Re class of adverbials in Chinese, also known as object-oriented (Oo), is clearly lower than Ma (with Ce2 avoided because (a) it is difficult to prove that Ce2 is lower than Ma in the language and (b) any example with Ce2 must worry about excluding the reading of Ce1):

42. a. zhexie cunmin qiaomiao-de kuankuan-de xiu-le yitiao lu.  
 these villager cleverly widely build-ASP a road.  
 'These villagers cleverly built a road widely.'
- b. \*zhexie cunmin kuankuan-de qiaomiao-de xiu-le yitiao lu.  
 these villager widely cleverly build-ASP a road
43. a. Runrun shulian-de nongnong-de dun-le yiwan jitang.  
 Runrun skillfully thickly stew-ASP a.bowl chicken.soup  
 'Runrun skillfully cooked a bowl of chicken soup thickly.'
- b. \*Runrun nongnong-de shulian-de dun-le yiwan jitang.  
 Runrun thickly thickly stew-ASP a.bowl chicken.soup

Adding this to (35) yields (44), with the proven differences from English in boldface and uncertainties followed by a question mark:

44. **Evi** > **Ev** > Ep? > **Al** > **T/Ir** > So > Fr > Ce1 > Ma/Ce2? > Re

In addition, just as English has an *Re* class of adverbs and a separate resultative construction, Chinese has the preverbal *Re* adverbials and a postverbal resultative which happens to resemble the so-called manner *V-de* in (39) in form. Partially because the two look-alikes must be distinguished in order for us to concentrate on the manner *V-de*, we will briefly look at the resultative *V-de* and the telltale differences from its modifier “half-twin”.

(45) are typical examples of the resultative *V-de* when *V* is transitive:

45. a. Runrun kua-de nage nühair hen kaixin.

Runrun praise-DE that girl HEN happy

‘Runrun praised that girl and as a result she was happy.’

b. Runrun ba nage nühair kua-de hen kaixin.

Runrun BA that girl praise-DE HEN happy

Same as (45a).

Compared with the manner *V-de* in (39b), it is obvious that (45a) permits a constituent, the object of *V nage nühair* ‘that girl’, between the *V-de* complex and the expression *hen kaixin* ‘HEN happy’. (45b) illustrates another way to introduce the object in Chinese: via the morpheme *ba* which used to mean ‘hold in hand’ in classical Chinese but is now semantically bleached and often treated as a light verb in modern Chinese (cf. Huang, Li and Li 2009 and the references cited there). Technical details aside, *ba* helps introduce the object DP of the verb by (a) placing

this DP before the verb and (b) requiring the DP to have an “affected” interpretation (Chao 1968). In (45b), *nage nühair* ‘that girl’ as the object of *kua* ‘praise’ would occur after it, with Chinese VP having a head-initial structure (cf. (45a)). But the entire sentence contains a resultative construction so that the object of the verb is also an affected argument (for becoming happy due to a praise). Hence it semantically qualifies for *ba* and consequently occurs before *kua* ‘praise’.

Also of interest is that *ba* fares differently with the preverbal resultative adverbial and the postverbal *V-de* resultative:

46. a. *naxie cunmin ba lu xiu-de hen kuan.*

those villager BA road build-DE HEN wide

Literally: ‘Those villagers built the road wide.’

b. \**naxie cunmin ba lu kuankuan-de xiu-le.* (based on (42a))

those villager BA road widely build-ASP

Intended reading: ‘Those villagers built the road widely.’

The precise semantic and syntactic nature of *ba* has been the center of much literature (Chao 1968, Cheng 1986, Zou 1995, Sybesma 1999, Huang, Li and Li 2009 among many others) and is yet to be better understood. Regarding the resultatives, Li 1999 formulates an algorithm to generate the Causer and Affected readings off of explicitly defined structures. Specifically, an argument acquires the

Affected interpretation when it is thematically associated with the second part of a structurally expressed V-X construction where V represents the causing event, X represents the resulting situation, and X is the structural complement of V. By this theory, the resultative *V-de* in (46a) is a V-X construction (see Huang 1989 and Ting and Li 1997 for argument that the result-denoting expression after *V-de* is in the complement position of V; also see Rizzi 1990 and Levin and Rappaport 1995 for the same conclusion with English resultatives). Furthermore, the DP *lu* 'road' is not only the object of the verb *xiu* 'build' but also is thematically associated with *hen kuan* 'HEN wide' (either directly or via some form of local control, either choice sufficient for the theory). This is enough to make the DP acquire the Affected reading and thus match it with *ba*. (46b) fails because *kuankuan-de* 'widely' is not the structural complement of V *xiu* 'build' but an adjunct, creating no structural context for assigning the Affected interpretation. To be put differently, *ba*'s requirement of the object being affected must be "grammaticalized" in a particular manner and not merely understood from the overall context. The resultative construction in (46a) is able to assign the Affected reading to the object *lu* 'road' in a way, e.g. in terms of thematic content as Li suggests, that allows the object to act accordingly in syntactic computation. The *Re* adverbial as an adjunct does not have this ability to affect the relevant syntactic operations, leaving the object *lu* 'road' understood to be affected only at the level of common sense. In brief, the

road that was built wide is grammatically Affected, but the one that was widely built is not.<sup>7</sup>

### 2.3. Subject-oriented and object-oriented depictive modifiers

The traditional literature on Chinese adverbials notices two more types of modifiers (Zhang 1980, Liu 1983, Lu 1985):

47. a. Runrun shilinlin-de pao-jin jiaoshi.

Runrun wetly run-enter classroom

'Runrun ran into the classroom all drenched.'

b. Runrun cuicui-de qie-le yipan huangguasi.

Runrun crisply cut-ASP a.plate cucumber.slice

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<sup>7</sup> A possible alternative to account for the difference between the preverbal resultative adverbial and the postverbal *V-de* resultative bears on the telicity/boundedness of the events these two kinds of predicates describe. To be specific, it is argued in Sybesma (1992), Yong (1993) and Liu (1997) that *ba* only appears with predicates describing telic/bounded events. Following this line of reasoning, we can argue that the reason why postverbal *V-de* resultative is compatible with *ba* construction is that *V-de* resultative denotes a telic event, which actually is a well accepted claim in the literature (Chen 1988, Smith 1991, Sybesma 1992, Yong 1993, Liu 1997 among many others). And thus, the incompatibility of the preverbal resultative adverbial with *ba* construction is explained immediately if we assume that the predicates modified by these adverbials cannot denote telic/bounded events. The key issue now is how to independently bear out the claim that *V-de* resultatives denote telic events while predicates with preverbal resultative adverbials do not. A syntactic test to distinguish telic predicates from atelic predicates is provided in Chen (2017) in progress, which makes use of the well-accepted test --the time frame adverbial and the time span adverbials, which is further specified and adapted cross-linguistically in Chinese. In this dissertation, I will not discuss it in detail and leave it for future research.

‘Runrun made a plate of cucumber slices that were crispy.’

In (47a), *shilinlin-de* ‘wetly’ merely describes a particular state of the subject *Runrun* while he ran into the house and is not part of the entering event itself. Similarly, though *cuicui-de* ‘scriply’ in (47b) concerns a physical state of the cucumber slices, this state is independent of cutting – there is in fact no way in this world that mere cutting can make a cucumber, or its slices, become crispy, for instance. In the literature, the modifiers in these examples are also grouped under the So and Oo classes, respectively. This section hopes to demonstrate that they each represent a standalone class of modifiers. Anticipating proof, the type shown in (47a) is called subject-depictive (Sd) and the one in (47b), object-depictive (Od).

### 2.3.1. Separating Sd from So

Included in Sd are *shilinlin-de* ‘wetly’, *chitiaotiao-de* ‘nakedly’, *qihuhu-de* ‘angrily’, *zangxixi-de* ‘dirtily’, among quite a few others. These expressions differ clearly from the So adverbials with respect to the previously introduced manner *V-de* construction (More examples are provided in Appendix 3):

48. a. zhexie wenti, nage jiahuo yuchun-de huida-le.  
 these question that fella stupidly answer-ASP  
 ‘These questions, that fella stupidly answered.’
- b. zhexie wenti, nage jiahuo huida-de hen yuchun.

these question that fella answer-DE HEN stupid

Same as (48a).

49. a. zhexie wenti, nage jiahuo chitiaotiao-de huida-le.

these question that fella nakedly answer-ASP

'These questions, that fella answered while naked.'

- b. \*zhexie wenti, nage jiahuo huida-de chitiaotiao-de.

these question that fella answer-DE nakedly

Intended reading: Same as (49a).

A So modifier (or more precisely the *X* part of the *X-de* modifier; see the third point below) can occur after *V-de*, as shown in (48b). In contrast, no Sd modifier of any form is permitted in the same spot (49b). This behavioral distinction sufficiently proves that Sd should be treated separately from So.

The data in (48-49) exhibit two more things bearing on the concerns of this dissertation. First, when a So expression occurs postverbally, after *V-de*, it remains ambiguous. That is, (48b) can mean either that it was stupid of that guy to answer the questions (= So reading) or that the answering was conducted in a stupid manner, namely giving stupid answers (= Ma reading). This very fact shows, minimally, that calling this construction a manner *V-de*, as is frequently found in the literature of Chinese syntax (Li and Thompson 1981: 623; also see Huang, Li and Li 2009 (HLL), chapter 3), is inaccurate. In addition, it also raises a question: if multiple classes are fine with *V-de*, why not Sd? An explanation will be presented

in Chapter 3. For now and to be more precise about the fact, we will rename the construction *the modifier V-de*.

Second, it should be clear by now that the preverbal adverbial modifiers and their postverbal counterparts do not look entirely identical. Specifically, the *X-de* form occurs before the verb (of which we have seen many examples by now) while after *V-de* we only keep *X* but drop *-de* (48b, 41b, 39b). At the same time, though (49b) is unacceptable, the postverbal *Sd* modifier is nonetheless given the *X-de* form. This is no accident. More generally, the use of *-de* follows the rule in (50):

50. Add *-de* to an “adjectival” phrase *X* unless *X* is introduced with *V-de* and not in a reduplicated form.<sup>8</sup>

Under (50), all preverbal modifiers use *-de*, so does a reduplicated one even after *V-de* (this is why *-de* should be present with *chitiaotiao* ‘naked’ in (49b); many good examples of this kind will be available in the course of this dissertation). (50) also holds of the *Re* class of modifiers and the resultative *V-de* (see (46a) and (45b)). Later on, we will show that there is a deeper correlation underneath (50).

*So* and *Sd* can be further distinguished by taking the subject DP into consideration. In an intuitive manner, both *So* and *Sd* pertain to some trait of the

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<sup>8</sup> (50) of course does not apply to the small set of adverbs in Chinese that are *de*-less by nature (e.g., *shenzhi* ‘even’, *huran* ‘suddenly’, *dou* ‘all’, ...).

subject. But they have different conditions when compared with their adjectival counterparts inside the subject DPs. The examples below are based on (48):

51. a. Runrun shilinlin-de pao-jin      jiaoshi.  
       Runrun wetly      run-enter      classroom  
       ‘Runrun ran into the classroom all drenched.’
- b. shilinlin-de Runrun pao-jin      jiaoshi.  
       wet-DE      Runrun ran-enter      classroom  
       Literally: ‘The drenched Runrun ran into the classroom.’
52. a. Runrun congming-de pao-jin      jiaoshi.  
       Runrun smartly      run-enter classroom  
       ‘Runrun smartly ran into the classroom.’
- b. congming-de Runrun pao-jin      jiaoshi.  
       smart-DE      Runrun ran-enter      classroom  
       Literally: ‘The smart Runrun ran into the classroom.’

If semantic subtleties are put aside, (51a-b) have the same truth value, that is Runrun went into the classroom while he was drenched. But (52a-b) can have very different truth values. After all, it is always possible for a smart person to perform

a stupid act. One naturally wonders where the differences come from when both classes are “subject-oriented”, a question we postpone till later.<sup>9</sup>

But the Sd class does not resemble all other classes examined so far in one area: it has a freer linear order. We start with Sd vs. So:

53. a. ta hen yuchun-de qihuhu-de sisui-le biye zhengshu.

3s HEN stupidly panting.with.rage-ly tear-ASP graduation certificate

‘S/He stupidly tore his graduation certificate while breathing heavily

with rage.’

b. ta qihuhu-de hen yuchun-de sisui-le biye zhengshu.

3s panting.with.rage-ly HEN stupidly tear-ASP graduation certificate

‘S/He, breathing heavily with rage, stupidly tore his graduation

certificate.’

54. a. nage ren kunhuo-de zangxixi-de kan-zhe zhouwei-de renqun.

that person confusedly dirtily stare-ASP surrounding crowd.

‘That person confusedly stared at the surrounding crowd while covered

with dirt.’

b. nage ren zangxixi-de kunhuo-de kan-zhe zhouwei-de renqun.

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<sup>9</sup> In Chapter 3, a syntactic analysis will be provided to account for the differences between So and Sd. However, a possible alternative to explain the difference here could be traced to the observation that Sd can only be stage-level, but So can be both stage-level and individual-level. When used attributively as in (52b), So ‘smartly’ has the individual-level interpretation, but a stage-level reading is forced when used as an adverbial as in (52a).

that person dirtily      confusedly stare-ASP    surrounding    crowd.

‘That person, dirty all over, confusedly stared at the surrounding crowd.’

In each pair, a So adverbial precedes a depictive modifier in (a) and follows it in (b). In certain cases, one can detect a scopal reading. For instance, what is stupid in (53) may, but not must, be ANGRILY tearing the certificate, suggesting that a more pleasant attitude during the tearing would be a smart move. But this scopal effect seems to be neither obligatory nor observed with all modifiers of the So or Sd class and so does not justify a particular hierarchy between the two. The lack of intrinsic hierarchy is also observed between Sd and Fr, the class lower than So in (44):

55. a. Runrun pinfan-de shilinlin-de jin-chu      jiaoshi.  
 Runrun frequently wetly      enter-come.out classroom  
 ‘Runrun frequently goes in and out of the classroom all drenched.’
- b. Runrun shilinlin-de pinfan-de    jin-chu      jiaoshi.  
 Runrun wetly      frequently    enter-come.out classroom  
 ‘Drenched, Runun frequently goes in and out of the classroom.’

On the other hand, Sd is higher than Ma and lower than Ev:

56. Sd vs. Ev

- a. Pengpeng hen buxing-de hanjinjin-de diaojin-le chitang.

Pengpeng HEN unfortunately sweatily fall.into-ASP pond

‘Pengpeng unfortunately fell into the pond while all sweaty.’

- b. ??Pengpeng hanjinjin-de hen buxing-de diaojin-le chitang.

Pengpeng sweatily HEN unfortunately fall.into-ASP pond

Intended reading: ‘All sweaty, Pengpeng unfortunately fell into the pond.’

57. Sd vs. Ma

- a. Pengpeng hanjinjin-de qiaomiao-de jiejie-le nage nanti.

Pengpeng sweatily ingeniously solve-ASP that problem

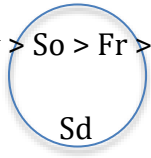
‘Pengpeng solved that problem ingeniously while all sweaty.’

- b. \*Pengpeng qiaomiao-de hanjinjin-de jiejie-le nage nanti.

Pengpeng ingeniously sweatily solve-ASP that problem

‘Pengpeng ingeniously sweatily solved that problem.’

(56) is straightforward. (57) is better appreciated with a fact about the Ma adverbial: Unlike its English translation, *qiaomiao* cannot be predicated of a person but instead can only describe a manner. Neither *\*ta hen qiaomiao* ‘3s HEN QIAOMIAO’ (cf. *She is ingenious.*) nor *qiaomiao-de gongchengshi* ‘QIAOMIAO-DE engineer’ (cf. *an ingenious engineer*) is allowed in Chinese, making *qiaomiao-de* unlikely to be also a member of the So class. In sum, Sd enjoys a limited freedom in linearization, between Ev and Ma as marked by the circle:

58. ... Ev > So > Fr > Ma ...  


As the last note, Ernst 2002 suggests splitting the So class of English adverbs into what he calls Agent-oriented (Ao) and mental attitude (Mat). (59) lists a few counterparts of each class in Chinese:

59. a. Ao

congming-de 'smartly', wanqiang-de 'tenaciously', keku-de  
 'assiduously', ...

b. Mat

pingjing-de 'calmly', kangfen-de 'excitedly', kunhuo-de 'confusedly', ...

The Ao class includes some typical So adverbials seen so far while the Mat class is self-evident in its coverage: it includes those adverbs/adverbials that describe the mental attitudes of the subject. The Division may be more than semantic in some languages, though we see no coherent behavioral distinction in Chinese:

60. a. Runrun pingjing-de wanqiang-de duidai gezhong kunnan.

Runrun calmly tenaciously deal.with various difficulty

'Runrun calmly tenaciously deals with all sorts of difficulties.'

b. Runrun wanqiang-de pingjing-de duidai gezhong kunnan.

Runrun tenaciously calmly deal.with various difficulty

‘Runrun tenaciously calmly deals with all sorts of difficulties.’

The indeterminacy may be indicative of a mere semantic factor not manifested grammatically (in Chinese), or it may result from complicating factors such translations and/or the interference of the Sd class in Chinese (e.g., is *kangfen-de* ‘excitedly’ a member of Ernst’s Mat class or does it actually belong to the Sp class?). Since the in-depth analyses of interactions among adverbial classes in later Chapters does not depend on this division, we will leave the issue as is for now, assuming a single So class that include (at least most of) the candidates of Ao and Mat.

### 2.3.2. Od vs. Re

The Re class of adverbials examined in 2.2.3 earlier is “object-oriented” in the sense that it pertains to some trait of the object. For instance, when one *widely built a road*, the road acquired the property of being wide. Just as the modifiers pertaining to the subject fall into two classes So and Sd, those related to the object split into Re and Od, the object-depictive class. Compare the two examples below:

61. a. Runrun manman-de cheng-le yiwan mian.

Runrun fully fill-ASP a.bowl noodle

‘Runrun fully filled a bowl with noodles.’

b. Runrun rere-de cheng-le yiwán mian.

Runrun hotly fill-ASP a.bowl noodle

'Runrun filled a bowl with noodles hot.'

Putting noodles into a bowl can make it full, but the same action in itself cannot make the noodles hot (note: *cheng* 'fill' in both examples are used as simple transitive verbs taking *yiwán mian* 'a bowl of noodles' as the object). Hence *manman-de* 'fully' is Re but *rere-de* 'hotly' is merely an object depictive (Od).

Like the So-Sd division, Od is more than semantically distinguished from Re. As a matter of fact, Od resembles Sd in being incompatible with the modifier *V-de* (More examples are provided in Appendix 3):

62. a. zhewán mian, Runrun cheng-de manman-de.

this.bowl noodle Runrun fill-DE fully

'This bowl of noodles, Runrun filled to the brink.'

b. \*zhewán mian, Runrun cheng-de rere-de.

this.bowl noodle Runrun fill-DE hotly

Intended reading: 'This bowl of noodles, Runrun filled while the noodles were hot.'

63. a. máma zài chuāng shàng pīngpīng-de pū-le yīzhāng chuāngdān.

mom P bed LOC<sup>10</sup> flatly spread-ASP a bed.sheet

‘Mom spread a bed sheet flatly on the bed.’

a'. nazhang chuangdan, mama zai chuang shang pu-de pingping-de.

that bed.sheet mom P bed LOC spread-DE flatly

‘That bed sheet, mom spread flatly on the bed.’

b. mama zai chuang shang bobo-de pu-le yizhang chuangdan.

mom P bed LOC thinly spread-ASP a bed.sheet

‘Mom spread a bed sheet thinly on the bed.’

b'. \*nazhang chuangdan, mama zai chuang shang pu-de bobo-de.

that bed.sheet mom P bed LOC spread-DE thinly

Intended reading: ‘That bed sheet, mom spread thinly on the bed.’

(62) is to be compared with (61), where the od modifier *rere-de* ‘hotly’ detectably less acceptable after *V-de* than preverbally.<sup>11</sup> (63) gives another Re-Od pair, with *pingping-de* ‘flatly’ describing the state of the bed sheet due to spreading it and

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<sup>10</sup> LOC represents a small set of words in Chinese that denote the spatial relations. *Shang*, for instance, means ‘top, space above’. Unlike English, Chinese has no specific locative prepositions. In their place is a generic spatial P, *zai* in these examples, plus a loc word. So the discontinuous *zai ... shang* together correspond to *above* or *on* in English. See Chapter 1 of Huang, Li and Li 2009 for a detailed analysis of loc.

<sup>11</sup> Some speakers might detect an “interference” by the resultative *V-de* construction given the fact that both the Sd and Re modifiers pertain to the object. That is, upon hearing (62b), one may be tempted, with difficulty from common sense, to interpret the post-*V-de rere-de* ‘hotly’ as some kind of result from filling the bowl.

*bobo-de* ‘thinly’ the inherent nature of the sheet (that is, being thin does not result from spreading it). The *V-de* form in (63b’) might become interpretable if somehow one could imagine making the bed sheet thinner than before spreading it, a resultative reading which further confirms the point here.

With Re and Od proven to be different classes, the next question is naturally about their hierarchical/linear distributions. As the following examples show, there seems to be very vague contrast between  $Od > Re$  and  $Re > Od$ :

64. a. Runrun rere-de maman-de cheng-le yiwan mian.

Runrun hotly fully fill-ASP a.bowl noodle

Literally: ‘Runrun hotly filled a bowl with noodles fully.’

- b. ?Runrun manman-de rere-de cheng-le yiwan mian.

Runrun fully hotly fill-ASP a.bowl noodle

Literally: ‘Runrun fully hotly filled a bowl with noodles.’

65. a. mama bobo-de (zai chuang shang) pingping-de pu-le yizhang

mom thinly P bed LOC flatly spread-ASP a

chuangdan.

bed.sheet

‘Mom thinly spread a bed sheet flatly on the bed.’

- b. (?)mama pingping-de (zai chuang shang) bobo-de pu-le yizhang

mom thinly P bed LOC flatly spread-ASP a

chuangdan.

bed.sheet

The marginality of the (b) examples (= Re > Od) is hardly detectable, with some speakers finding no difference at all. At the same time, any deterioration, no matter how small, is always with Re before Od, suggesting that this is not a random phenomenon. It is unclear to us how the current theory of syntax can account for this extremely weak but consistent marginality. What is of interest is a similar contrast, much sharper, between the resultative and depictive small clauses in English (Rizzi 1990):

66. a. ... Re Od

b. \*... Od Re

We return to the nature of the preverbal depictive modifiers in Chinese in Chapter 3.

One fact reported in the literature (Lu 1997, Wang and Gu 2000) is that the Re modifiers also seem to divide into two groups:

67. a. mama nongnong-de dun-le wan jitang.  
 mom thickly stew-ASP (a).bowl chicken.soup

‘Mom cooked a bowl of chicken soup thickly.’

a'. mama dun-le wan nongnong-de jitang.

mom stew-ASP (a).bowl thick-DE chicken.soup

‘Mom cooked a bowl of thick chicken soup.’

b. cunmin-men kuankuan-de xiu-le yitiao lu.

villager-pl widely build-ASP a road

‘The villagers built a road widely.’

b'. cunmin-men xiu-le yitiao kuankuan-de lu.

villager-pl build-ASP a wide-DE road

‘The villagers built a wide road.’

68. a. Runrun ganganjingjing-de tuo-le di.

Runrun clearly mop-ASP floor

‘Runrun mopped the floor clean.’

a'. Runrun tuo-le ganganjingjing-de di.

Runrun mop-ASP clean-DE floor

‘Runrun mopped the clean floor.’

b. ta gaogao-de ju-zhe paizi.

3s highly hold-ASP poster.board

‘S/He held a poster board high.’

b'. ta ju-zhe gaogao-de paizi.

3s hold-ASP tall-DE poster.board

‘S/He held a tall poster board.’

The difference between (67a) and (67a') is in using the modifier *nongnong-de* adverbially or inside the object DP, but the two have the same truth conditions. The same cannot be said of (68a-a'). While (68a') remains good with *ganganjingjing-de* inside the object, the clean state is no longer the result of mopping, as the English translation makes obvious.

Beyond this contrast, however, we see no independent evidence for needing to have two syntactically relevant classes of resultative modifiers. Whether it is *nongnong-de* 'thickly' and *kuankuan-de* 'widely' or it is *ganganjinjin-de* 'cleanly' and *gaogao-de* 'highly', they all can occur in the resultative V-*de*. The contrast in (67) vs. (68) seems to be correlated with whether a verb of creation, call it  $V_{cr}$  is used (see Levin 1993 for English verb classes). The verbs in (67) are the  $V_{cr}$  type (cooking a soup or building a road). To cook a soup with the result of making it thick is in effect to cook a thick soup. The verbs in (68) are non- $V_{cr}$ . The floor is already present whether one mops it or not; what mopping does is to change the cleanness of the floor, logically requiring the floor to be less clean before the event, contrary to the semantics of *mop a clean floor*. Note that the situation is comparable to the So class, with Ernest's Ao and Mat division real but semantic only, not manifested in any syntactically relevant manner.

### 2.3.3. Thinking theoretically

The preverbal modifiers in Chinese examined so far may be summarized as follows:

## 69. Hierarchies of Chinese preverbal modification

Non-depictives: **Evi** > **Ev** > Ep? > **Al** > **T/Ir** > So > Fr > Ce1 > Ma/Ce2? > Re

Depictives:

Sd

Od

Where adjacent boldfaced pairs mark opposite orders from Cinque's theory, "?" shows insufficient evidence for the class's location or even independent identity, and the ovals indicate where a given depictive modifier is (approximately) located. The slant oval including Re and Od is intentional, reminding us of the vague tendency for Od to precede Re. The central reason for making these two hierarchies is the modifier *V-de* test, which depictives do not pass. Also keep in mind that technically Re does not pass the test either since it has a dedicated *V-de* resultative which differs from the modifier *V-de* in more than mere semantics; see (45a) and the discussion thereunder.

An obvious question is what prevents the two depictive classes from occurring in the modifier *V-de* construction. An answer using the theory of Chomsky's (2000, 2001) probe-goal will be articulated and defended in the next Chapter which we hope to also capture the intuition behind the depictives. Another question has to do with Re.

It is a well-documented fact that the English resultative small clause (cf. Williams 1980; Simpson 1983, Hoekstra 1988, Levin and Rappaport 1995, Bowers

1997, Ramchand 2008 among others) can only have the object of the matrix verb as its semantic subject:

70. a. Tina washed the floor clean.  
 b. Tina danced (herself) dizzy.

What became clean after washing was the floor and not Tina (even though one can imagine a real-world scenario in which Tina washed the floor with some kind of shower-like tool hanging from the ceiling and as a result she got clean but the floor didn't). More obvious is (70b). Unless *herself* is present (in some kind of object position), the small clause *dizzy* must be depictively predicated of the subject. It is examples like (70) that form the empirical foundation for Levin and Rappaport Hovav's (1995) Direct Object Restriction (DOR). But as Li 1999 points out, the DOR is not supported in Chinese.

Focusing on the resultative *V-de*, consider the example below:

71. Runrun chang-de (tingzhong) hen shangxin.

Runrun sing-DE audience HEN heart.broken

With *tingzhong* 'audience' present, (71) yields the characteristic resultative reading, meaning Runrun's singing caused the audience to be very sad. As in English, an audience doesn't get expressed as the object of the verb *sing*, just as

*herself* in (70b) isn't the real object, not to mention "direct object", of *dance*. So the DOR is actually an inaccurate name. But this can be fixed easily, especially in a theory where the structure of VP is much more elaborate than before (Larson 1988, Kayne 1994). The real problem arises with *tingzhong* 'audience' absent. Without this "object", (71) is ambiguous between understanding *shangxin* 'heartbroken' as the manner of singing and as the mental state of the subject *Runrun* that results from his own singing. The first reading is simply the Ma class in the modifier *V-de* construction, which we know is permitted. The second one, however, appears to contra the DOR because the secondary predicate *hen shangxin* 'HEN heartbroken' is predicated of the subject of an unergative verb and expresses the result of singing.

Whatever is a plausible explanation for the counter-DOR phenomenon in Chinese (see Li 1999 for an analysis that makes use of the structural differences among the resultatives in Chinese vs. English), the adverbial hierarchy in (69) further complicates it. Note that the subject and the object each has a pair of modifiers pertaining to it. The subject has *So* and *Sd* while the object has *Re* and *Od*, and both *Sd* and *Od* are incompatible with the modifier *V-de* in addition to neither having a clearly unique linear/hierarchical spot in the clause. The parallels are obvious except for one thing: only *Re* describes the resulting state of its associated argument; *Od* does not. To put it in another way, with respect to the adverbial modifiers, there is also a DOR-like distinction. Only the adverbial pertaining to the object has the result reading. Notice that this is begging an

explanation because the language has (71), where the DOR is not respected. In fact, it's especially not clear why *So* can't have the resultative reading when after *V-de*. Admittedly, we do not have an explanation at this point and will leave this problem in future research.

Appendix 1: A fuller list of six basic adverbial classes and their in-between interactions

#### I The list of six non-depictive adverbial classes

##### 72. a. *Evi*:

*xianran-de* 'evidently', *mingxian-de* 'obviously', *xianeryijian-de* 'clearly', ...

##### b. *Ev*:

*xingyun-de* 'fortunately', *jiaoxing-de* 'luckily', *daomei-de* 'unfortunately', *chuhuyiliao-de*, 'unexpectedly', *mangmu-de* 'blindly', *pubian-de* 'generally', *mingzhi-de* 'wisely'...

##### c. *So*:

*haoqi-de* 'curiously', *tanlan-de* 'greedily', *congming-de* 'smartly', *yuchun-de* 'foolishly', *chengshi-de* 'honestly', *dafang-de* 'generously', *renzhen-de* 'earnestly', *naixin-de* 'patiently', *xixin-de* 'prudentially', *keku-de* 'assiduously', *wanqiang-de* 'tenaciously', *zixi-de* 'attentively', *xinxu-de* 'guiltily', *kangfen-de* 'excitedly', *jinzhang-de* 'nervously', *ganga-de*

'awkwardly', pingjing-de 'calmly', kuijiu-de 'apologetically', kunhuo-de 'confusedly', jidong-de 'excitedly', nanguo-de 'sadly', fennu-de 'angrily', tongku-de 'painfully', jiaobao-de 'proudly' ...

d. Fr:

pinfan-de 'frequently', chizhiyiheng-de 'consistently', jingchangxing-de 'regularly', ...

e. Ma:

xunsu-de 'rapidly', liuli-de 'fluently', qiaomiao-de 'ingeniously', dasheng de 'loudly', shulian-de 'skillfully', xiangxi-de 'detailedly', xizhi-de 'meticulously', shengdong-de 'vividly', shenke-de 'profoundly', zhashi-de 'sturdily'...

f. Re:

shenshen-de 'deeply', kuankuan-de 'widely', zheng(zheng)qi(qi)-de 'tidily', nenen-de 'tenderly', xixi-de 'thinly', xiangxiang-de 'tastily', ganganjingjing-de 'cleanly', manman-de 'fully', jiejieshishi-de 'firmly', gaogao-de 'highly', nongnong-de 'densely', heihei-de 'darkly'...

## II The in-between interactions

### 73. Evi > Ev

a. ta hen xianran-de xingyun-de tongguo-le zheci yuangong kaohe.

3s HEN evidently fortunately pass-ASP this employee assess

'S/He evidently fortunately has passed the employee assess.'

b. \*ta hen xingyun-de xianran-de tongguo-le zheci yuangong kaohe .

3s HEN fortunately evidently pass-ASP this employee assess

a'. hen xianran-de, ta xingyun-de tongguo-le zheci yuangong kaohe .

HEN evidently 3s fortunately pass-ASP this employee assess

'Evidently, s/he fortunately has passed the employee assess.'

b'. \*hen xingyun-de, ta xianran -de tongguo-le zheci yuangong kaohe .

HEN fortunately 3s evidently pass-ASP this employee assess

74. Ev> So

a. nage xuesheng hen xingyun-de congming-de jie-le

that student HEN fortunately smartly answer-ASP

nage dianhua.

that phone.call

'The student fortunately smartly answered that phone call.'

b. \*nage xuesheng hen congming-de xingyun-de jie-le

that student HEN smartly fortunately answer-ASP

nage dianhua.

that phone.call

a'. hen xingyun-de, nage xuesheng congming-de jie-le

HEN fortunately that student smartly answer-ASP

nage dianhua.

that phone.call

'Fortunately, the student smartly answered that phone call.'

b'. \*hen congming-de, nage xuesheng xingyun-de jie-le

HEN smartly that student fortunately answer-ASP

nage dianhua.

that phone.call

75. Evi> So

a. ta hen xianran-de yuchun-de xuanze-le nage zhunye.

3s HEN evidently stupidly choose-ASP that major

'S/He evidently stupidly chose that major.'

b. \*ta hen yuchun-de xianran-de xuanze-le nage zhunye.

3s HEN stupidly evidently choose-ASP that major

a'. hen xianran-de, ta yuchun-de xuanze-le nage zhuan ye .

HEN evidently 3s stupidly choose-ASP that major

'Evidently, s/he stupidly chose that major.'

b'. \*hen yuchun-de, ta xianran-de xuanze-le nage zhuan ye .

HEN stupidly 3s evidently choose-ASP that major

76. Ev> Fr

a. ta hen daomei-de pinfan-de cuoguo jinsheng jihui.

3s HEN unfortunately frequently miss promotion opportunity

'S/He unfortunately frequently missed the opportunities for promotion'

b. ta hen pinfan-de daomei-de cuoguo jinsheng jihui.

3s HEN frequently unfortunately miss promotion opportunity

a'. hen daomei-de, ta pinfan-de cuoguo jinsheng jihui.

HEN unfortunately 3s frequently miss promotion opportunity

'Unfortunately, s/he frequently missed the opportunities for promotion'

b'. hen pinfan-de, ta daomei-de cuoguo jinsheng jihui.

HEN frequently 3s unfortunately miss promotion opportunity

#### 77. So > Fr

a. Zhangsan congming-de pinfan-de huida wenti.

Zhangsan smartly frequently answer question

'Zhangsan smartly frequently answered the questions.'

b. \*Zhangsan pinfan-de congming-de huida wenti.

Zhangsan frequently smartly answer question

Intended: 'Zhangsan smartly frequently answered the questions.'

a'. Zhangsan jiaoao-de chizhiyiheng-de tanwang naxie tuiwujunren.

Zhangsan proudly consistently visit those veterans

'Zhangsan proudly consistently visited those veterans.'

b'. \*Zhangsan chizhiyiheng-de jiaoao-de tanwang naxie tuiwujunren.

Zhangsan consistently proudly visit those veterans

## 78. So&gt; Ma

- a. Zhangsan congming-de dasheng-le langsong-le nafeng xin.  
 Zhangsan smartly loudly read-ASP that letter  
 ‘Zhangsan smartly read that letter loudly.’
- b. ?? Zhangsan dasheng-le congming-de langsong-le nafeng xin.  
 Zhangsan loudly smartly read-ASP that letter

## 79. Fr&gt; Ma

- a. Zhangsan jingchangxing-de xunsu-de chuli gezhong wenti.  
 Zhangsan regularly quickly solve various problem  
 ‘Zhangsan regularly solved various kinds of problems quickly.’
- b. \*Zhangsan xunsu-de jingchangxing-de chuli gezhong wenti.  
 Zhangsan quickly regularly solve various problem
- a’. Zhangsan chizhiyiheng-de dasheng-de du yingwen baozhi.  
 Zhangsan consistently loudly read English newspaper  
 ‘Zhangsan consistently reads English newspaper loudly.’
- b’. \*Zhangsan dasheng-de chizhiyiheng-de du yingwen baozhi.  
 Zhangsan loudly consistently read English newspaper

## 80. Ma&gt; Re

- a. Zhangsan xunsu-de nongnong-de dun-le wan jitung.  
 Zhangsan quickly thickly stew-ASP bowl chicken.soup

'Zhangsan quickly stewed a bowl of chicken soup thickly.'

- b. \*Zhangsan nongnong-de xunsu-de dun-le wan jitang.

Zhangsan thickly quickly stew-ASP bowl chicken.soup

- a'. zhengfu zai xuanyabian qiaomiao-de kuankuan-de xiu-le

government P cliff.side ingeniously widely build-ASP

tiao lu.

CL road

'The government ingeniously built a wide road by the cliff.'

- b'. \*Zhengfu zai xuanyabian kuankuan-de qiaomiao-de xiu-le

government P cliff.side widely ingeniously build-ASP

tiao lu.

CL road

### 81. Fr > Re

- a. Zhangsan jingchangxing-de zhengzhengqiqi-de baifang naxie shu.

Zhangsan regularly neatly place those book

'Zhangsan regularly placed those books neatly.'

- b. \* Zhangsan jingchangxing-de zhengzhengqiqi-de baifang naxie shu.

Zhangsan neatly regularly place those book

- a'. Zhangsan pinfan-de ganganjingjing-de ca chufang-de diban.

Zhangsan frequently cleanly mop kitchen-DE floor

'Zhangsan frequently mopped the floor of the kitchen cleanly.'

b'. \*Zhangsan ganganjingjing-de pinfan-de ca chufang-de diban.

Zhangsan cleanly frequently mop kitchen-DE floor

Appendix 2: The post-verbal adverbial classes (V-de modifiers)

82. Ev

a. daxuesheng hen pubian-de canjia-le

college.student HEN generally participate-ASP

shetuan huodong.

student.union activity

'College students generally participated in the activities of the student union.'

b. shetuan huodong, daxuesheng canjia-de

student.union activity college.student participate-DE

hen pubian.

HEN general

Same as (82a)

a'. najia da gongsi mangmu-de shougou-le naxie pochan-de

that big company blindly purchase-ASP those bankrupt-DE

xiao gongsi.

small company

'The big company blindly purchased those bankrupted small companies.'

- b'. naxie pochan-de xiao gongsi, najia da gongsi  
 those bankrupt-DE small company that big company  
 shougou-de hen mangmu  
 purchase-DE HEN blind.  
 Same as (82a')

## 83. So

- a. jingli hen congming-de kaichu-le nage yuangong.  
 manager HEN smartly fire-ASP that staff  
 'The manager smartly fired that staff.'

- b. nage yuangong, jingli kaichu-de hen congming.  
 that staff manager fire-DE HEN smart  
 Same as (83a)

- a' Zhangsan hen xinxu-de sa-le nage huang.  
 Zhangsan HEN guiltily lie-ASP that lie  
 'Zhangsan told that lie guiltily.'

- b'. nage huang, Zhangsan sa-de hen xinxu.  
 that lie Zhangsan lie-DE HEN guilty  
 Same as (83a')

## 84. Ce1

- a. Zhangsan hen zao-de chan-le menkou-de xue.

Zhangsan HEN early shovel-ASP doorway-DE snow

‘Zhangsan shoveled the snow in the doorway early.’

b. menkou-de xue, Zhangsan chan-de hen zao.

doorway-DE snow Zhangsan shovel-DE HEN early

Same as (84a)

85. Fr

a. Zhangsan hen pinfan-de tanwang naxie tuiwujunren.

Zhangsan HEN frequently visit those veteran

‘Zhangsan frequently visited those veterans.’

b. naxie tuiwujunren, Zhangsan tanwang-de hen pinfan.

those veteran Zhangsan visit-DE HEN frequent

Same as (85a)

86. Ma

a. Zhangsan hen qiaomiao-de huida-le nage jizhe-de wenti.

Zhangsan HEN ingeniously answer-ASP that reporter-DE question

‘Zhangsan answered the reporter’s question ingeniously.’

b. nage jizhe-de wenti, Zhangsan huida-de hen qiaomiao.

that reporter-DE question Zhangsan answer-DE HEN skillful

Same as (86a)

a' Zhangsan hen xunsu-de zhiding-le nage jihua.

Zhangsan HEN quickly make-ASP that plan

‘Zhangsan made that plan quickly.’

b' nage jihua, Zhangsan zhiding-de hen xunsu.

that plan Zhangsan make-DE HEN quick

Same as (86a')

87. Re

a. Zhangsan zhengzhengqiqi-de baifang-le naxie hualan.

Zhangsan neatly place-ASP those flower.basket

‘Zhangsan placed those flower baskets neatly.’

b. naxie hualan, Zhangsan baifang-de zhengzhengqiqi-de.

those flower.basket Zhangsan place-DE neat-DE

Same as (87a)

a' Zhangsan ganganjingjing-de xi-le najian chenyi.

Zhangsan cleanly wash-ASP that shirt

‘Zhangsan washed that shirt cleanly.’

b' najian chenyi, Zhangsan xi-de ganganjingjing-de.

that shirt Zhangsan wash-DE clean-DE

Same as (87a')

Appendix 3: The list of Sd and Od vs. their incapability as V-de modifiers

## I The list of Sd and Od

## 88. a. Sd

chiluouo-de ‘nakedly’, shilinlin-de ‘drenched/dripping’, gulingling-de  
 ‘lonely’, hanjinjin-de ‘sweatily’, zangxixi-de ‘dirtily’, lezizi-de ‘merrily’,  
 qihuhu-de ‘angrily’, zuixunxun-de ‘drunkly’...

## b. Od:

cuicui-de ‘crispily’, houhou-de ‘thickly’ ; rere-de ‘warmly’, pangpang-de  
 ‘chubbily’, baobao-de ‘thinly’,...

## II The incapability of Sd as V-de modifiers

## 89. a. Zhangsan lezizi-de jujue-le nage liwu.

Zhangsan merrily refuse-ASP that gift

‘Zhangsan refused that gift merrily.’

## b. \*nage liwu, Zhangsan jieju-de lezizi-de.

that gift Zhangsan refuse-DE merry-DE

## 90. a. Zhangsan qihuhu-de jujue-le naci jinsheng-de jihui.

Zhangsan angrily refuse-ASP that promotion-DE opportunity

‘Zhangsan refused the opportunity of promotion angrily.’

## b. \*naci jinsheng-de jihui, Zhangsan jujue-de qihuhu-de.

that promotion-DE opportunity Zhangsan refuse-DE angry-DE

91. a. Zhangsan hanjinjin-de chan-le menkou-de xue.  
 Zhangsan sweatily shovel-ASP doorway-DE snow  
 ‘Zhangsan shoveled the snow in the doorway sweatily.’
- b. \*menkou-de xue, Zhangsan chan-de hanjinjin-de.  
 doorway-DE snow Zhangsan shovel-DE sweaty-DE
92. a. Zhangsan zuixunxun-de jieshao-le naxie zuopin.  
 Zhangsan drunkly introduce-ASP those works  
 ‘Zhangsan introduced those works drunkly.’
- b. \*naxie zuopin, Zhangsan jieshao-de zuixunxun-de.  
 those works Zhangsan introduce-DE drunk-DE
93. a. Zhangsan chiluluo-de da-le nage jiahuo.  
 Zhangsan nakedly hit-ASP that guy  
 ‘Zhangsan hit that guy nakedly.’
- b. \*nage jiahuo, Zhangsan da-de chiluluo-de.  
 that guy Zhangsan hit-DE naked-DE

### III The incapability of Od as V-de modifiers

94. a. Zhangsan cuicui-de qie-le pan huanggua.  
 Zhangsan crisply cut-ASP plate cucumber  
 'Zhangsan cut a crisp plate of cucumber.'
- b. \*Zhangsan ba huanggua qie-de cuicui-de.  
 Zhangsan BA cucumber cut-DE crisp-DE
95. a. Zhangsan nongnong-de he-le wan jitang.  
 Zhangsan thickly drink-ASP bowl chicken.soup  
 'Zhangsan drank a bowl of thick chicken soup.'
- b. \*Zhangsan ba jitang dun-de nongnong-de.  
 Zhangsan BA chicken.soup stew-DE thick-DE
96. a. Zhangsan bobo-de fu-le ceng fen.  
 Zhangsan thinly apply-ASP CL foundation  
 'Zhangsan applied a thin foundation.'
- b. \*Zhangsan ba fen fu-de bobo-de.  
 Zhangsan BA powder apply-DE thin-DE
97. a. Zhangsan rere-de chi-le wan mian.  
 Zhangsan warmly eat-ASP bowl noodle  
 'Zhangsan ate a bowl of warm noodle.'
- b. \*Zhangsan ba mian chi-de rere-de.

Zhangsan BA noodle eat-DE warm-DE

98. a. Zhangsan pangpang-de sheng-le ge erzi.

Zhangsan chubbily give.birth.to-ASP CL son

‘Zhangsan gave birth to a chubby boy.’

b. \*Zhangsan ba erzi sheng-de pangpang-de.

Zhangsan BA son give.birth.to-DE chubby-DE

Compare with Resultatives:

Pre-verbal resultatives

99. a. Zhangsan cuicui-de zha-le pan huashengmi.

Zhangsan crisply fry-ASP plate peanut

‘Zhangsan fried the plate of peanuts crisply.’

b. Zhangsan nongnong-de dun-le wan jitang.

Zhangsan thickly stew-ASP bowl chicken.soup

‘Zhangsan stewed the bowl of chicken soup thickly.’

c. Zhangsan baobao-de gan-le ge bing .

Zhangsan thinly make-ASP CL flat.cake

‘Zhangsan made the flat cake thin.’

Post-verbal Resultatives

100. a. Zhangsan ba huashengmi zha-de cuicui-de.

Zhangsan BA peanut fry-DE crisp-DE

'Zhangsan fried the peanuts crisply.'

b. Zhangsan ba jitang dun-de nongnong-de.

Zhangsan BA chicken.soup stew-DE thick-DE

'Zhangsan stewed the chicken soup thickly.'

c. Zhangsan ba bing gan-de baobao-de.

Zhangsan BA flat.cake make-DE thin-DE

'Zhangsan made the flat cake thin.'

### Chapter 3: Modifier *V-de*, scope and minimality

To help sort out adverbial classes in Chinese, the previous chapter introduced what I call the modifier *V-de* construction which, contrary to the popular “manner *V-de*” name tag in the literature, can accommodate multiple classes of modifiers. It was also mentioned in passing that no overt constituent is permitted between *V-de* and the X after it (p. 34). As a matter of fact, there is a cluster of properties associated with the modifier *V-de* construction which, to my knowledge, have not been given a comprehensive analysis. In this chapter, these properties are laid out that eventually lead to a new interaction pattern not yet reported in the literature. On this basis, a minimality-based explanation will be formulated that extends minimality beyond restricting movement, in compliance with some recent works to unify the theory of syntactic dependencies (e.g. Haegeman and Lohndal 2010, Zeijlstra 2010, Wurmbrand 2012, Larson 2014 among others).

In this chapter, section 1 elaborates on the various properties of the modifier *V-de* that are “scattered” in the literature in order to eventually pin down its structural nature. How this construction interacts with preverbal modifiers is the focus of section 2, ending with an account making use of minimality. The fact that preverbal subject- and object-depictives are rejected by the modifier *V-de*, as we demonstrated in Chapter 2 (section 2.3.1), is also given an account.

### 3.1. Determining the structural representation of the modifier *V-de*

In brief, the modifier *V-de* is known with the following properties:

101. a. No constituent between *V-de* and the subsequent X;
- b. No island effect on movement out of X;
- c. No more than one *V-de* X per clause;
- d. X takes a morphologically different form from its preverbal counterpart.

Each of these properties is closely investigated below.

#### 3.1.1. Strict (superficial) adjacency

Descriptively, the modifier *V-de* construction is compatible with four scenarios so far as the object of *V* is concerned: object-topicalization, object-relativization, passivization and no object at all:

#### 102. a. Topicalization

xue, na jia ren chan-de hen kuai. (Same as (39b), Ch 2)

snow that household people shovel-DE HEN quick

'Snow, that household shoveled quickly.'

#### b. Relativization

na jia ren chan-de hen kuai de na chang xue

that household people shovel-DE HEN quick DE that CL snow

'the snow which that household shoveled quickly'

c. Passivization

? na chang xue bei chan-de hen kuai.

that CL snow PASS shovel-DE HEN quick.

'That snow was shoveled quickly.'

d. No object

na jia ren pao-de hen kuai.

that household people run-DE HEN fast

'People of that household all run fast.'

In comparison, the superficially similar resultative *V-de* construction has no such restriction (see (45a) of Chapter 2). Ting and Li 1997 (recounted in Huang, Li and Li 2009) correlates this with another fact in Chinese: the morpheme order of verbal compounds.

Consider these examples:

103. a. dou-xiao 'cheer-laugh → cheer ... into a laughter'

da-bai 'fight-defeat → fight ... into a defeat'

b. jing-zuo 'silent-sit → sit quietly (in demonstration)'

kuai-pao 'fast-run'

(103a) illustrate the resultative compounds, with the first morpheme in each word expressing the causing event and the second the resulting event. In (103b), each compound contains an “adverbial” morpheme preceding the head morpheme. With this as background, Ting and Li assume *-de* to be a “grammaticalized” verbal morpheme whose single argument is a clause. When this *-de* is used for the resultative, it corresponds to the second morpheme of the resultative compound. Such a *V-de* compound is good because a resultative compound is good. Thematically, the *V-de* compound takes among other things the clausal argument in accordance with Li’s (1990) theory of Chinese compounding. In contrast, a non-resultative modifier can be part of a compound only when it precedes the verbal head it modifies and not follows the head, as shown in (103b). So a *V-de* with *-de* corresponding to a modifier is independently not allowed in Chinese. The only option for *-de* to introduce its clausal argument is to do so directly in syntax with the structure [ *-de* clause ]. At the same time, *-de* is suffixal and needs a verbal host. The compromise is to make *-de* linearly adjacent to the main verb so as to form a “PF-word” without (necessary) structural constituency (cf. *I’d’ve* in English). This explains why no object of *V* is permitted in-situ – it must be moved elsewhere to let *V* right next to *-de* at PF. The final structure is ... *V* (*t*) [ *-de* clause ], with *t* being the trace of displaced object if *V* happens to have one.

Of all the properties of the modifier *V-de* in (101), this one is least associated with the central concern of this chapter. To the extent that there exists a plausible analysis of the phenomenon, we can safely proceed with the modifier *V-de* while

taking for granted that the obligatory displacement of the object is not an interfering factor for the rest of the discussion on *V-de*.

### 3.1.2. *V-de* X ≠ island

Ting and Li also proved the “manner” X to be in a complement position.

- 104.a. ta pao-de kuai-dao dou keyi chaoguo nage shijie guanjun.  
 3s run-DE fast-to even can surpass that world champion  
 ‘S/he runs so fast as to be able to even surpass that world champion.’
- b. nage shijie guanjun, ta pao-de kuai-dao dou keyi chaoguo.  
 that world champion 3s run-DE fast-to even can surpass  
 ‘That world champion, s/he runs so fast as to be able to even surpass.’
- c. [s ta pao-de kuai-dao dou keyi chaoguo ] de nage shijie guanjun  
 3s run-DE fast-to even can surpass DE that world champion  
 ‘the world champion that s/he runs so fast as to be able to surpass’

(104a) expands *kuai* ‘fast’, the X part of the construction, so as to create a context for a standard island test. The result is long and a bit clumsy but still acceptable. Topicalization (104b) and relativization (104c) out of the base form (104a) do not create detectable deterioration in acceptability, suggesting that the post-*de* X is best treated as a complement.

Ting and Li's test suits other classes of modifiers too. Given (101a), both the object of a transitive matrix *V* must move out for *V-de*. The extraction test out of *X* also involves movement. Since multiple movements might interact to affect the acceptability of an example (see Lasnik and Saito 1993), all the examples below use unergative verbs to bypass any movement from (101a). We start with the EV class:

105.a. xuesheng-men pubian-de chidao.

student-PL generally arrive.late

'Students generally arrive late.'

b. xuesheng-men chidao-de hen pubian.

student-PL arrive.late-DE HEN general

'Students generally arrive late.'

c. xuesheng-men chidao-de pubian-dao yijing jingdong-le

student-PL arrive.late-DE general-to already alert-ASP

xiaozhang.

president

'Students arrive late so generally as to have alerted the president.'

d. women xiaozhang, xuesheng-men chidao-de pubian-dao dou

our president student-PL arrive.late-DE general-to even

yijing jingdong-le.

already alert-ASP

'Our president, students arrive late so generally as to have even alerted.'

- e. xuesheng-men chidao-de pubian-dao yijing jingdong-le de  
 student-PL arrive.late-DE general-to already alert-ASP DE  
 nage xiaozhang  
 that president

'the president that students arrive so late as to have alerted'

Compared with the simple control sentences in (105a-b), using an expanded EV phrase after *V-de* in (105c, d, e) sounds clumsy and unnatural. What matters, though, is that topicalization in (105d) and relativization in (105e) do not show deteriorated acceptability (other than further complicating (105c)).

The SO class exhibits the same friendliness toward extraction:

- 106.a. Runrun congming-de jujue-le.

Runrun smartly decline-ASP

'Runrun smartly declined.'

- b. Runrun jujue-de hen congming.

Runrun decline-DE HEN smart

'Runrun smartly declined.'

- c. Runrun jujue-de congming-dao laoshi budebu chengren

Runrun decline-DE smart-to teacher have.to admit

xiaofang-de yitu.

school's intention.

'Runrun was so smart in his declination that the teacher had to admit the school's real intention.

- d. xiaofang de yitu, Runrun jujue-de congming-dao laoshi  
 school's intention Runrun decline-DE smart-to teacher  
 budebu chengren.

have.to admit

Same as (12c) plus topicalizing the most deeply embedded object.

- e. Runrun jujue-de congming-dao laoshi budebu chengren de  
 Runrun decline-DE smart-to teacher have.to admit DE  
 nage xiaofang-de yitu  
 that school's intention

'that real intention of the school's that Runun was so smart in his declination that the teacher had to admit'

The same unnecessary clumsiness can be perceived in the longer (106c, d, e) but again extraction does not worsen the outcome. As noted previously, SO modifiers like *congming* 'smart' may also have the MA reading given the proper context. From what we can tell, the ambiguity is present throughout (106), an extra bonus that further solidifies the claim that the post-*V-de* modifier does not block movement.

Proving the *X* constituent after the modifier *V-de* to be a complement (= property (101b)) immediately explains another fact (= (101c)): each clause can have only one *V-de* regardless which adverbial class *X* corresponds to; furthermore, the modifier *V-de* is also in complementary distribution with the resultative *V-de* (see (45-46) in Chapter 2). Because *X* is a structural complement and in the current strictly binary branching phrase structure (cf. Kayne 1994) there is only one complement position per VP, hosting one *X* automatically excludes other instances of *X* in the same position. As for the resultative, it has been explicitly argued that the resultative component is structurally the complement of the matrix verb (Huang 1989 and Li 1997 for Chinese, Rizzi 1990 and Levin and Rappaport-Hovav 1995 for English, among others). It follows that each clause may have no more than one *V-de*, whether it is the modifier version or the resultative version.

It is also worth pointing out that the examples of the modifier *V-de*, both the ones in this chapter and those in section 2.3 of Chapter 2, show that in at least two ways, the construction differs from the common clause-final adverbs in European languages (Jackendoff 1972, Larson 1990, Rivero 1992, Bowers 1993, Pesetsky 1995, Alexiadou 1997, Cinque 1999, Ernst 2002, 2004, Engels 2012, among many others). First, what may occur at the end of a clause in European languages are typically a subset of VP-adverbs (see Alexiadou (ibid: 8) for treating them as the “complement-type”). The evaluative and subject-oriented classes are quite uniformly taken to be clausal (modifying constituents of the semantic type *t* rather

than *e* for Ernst) and not in this group. In other words, *V-de* accommodates a much wider range of adverbial types. Second, for those classes of European adverbs that can occur clause-finally, such as MA and FR in English, they may also co-occur at least when said with the right intonations:

107.a. Jeremy drinks his soup noisily regularly. (adapted from LSL)

b. Jill learned Swahili perfectly quickly. (adapted from Bowers 1993).

In sum, the modifier *V-de* is unique per clause due to X being a complement, hosts counterparts of multiple preverbal adverbial classes including structurally higher ones, and thereby differs from typical clause-final adverbs in other languages.

### 3.1.3. X as a predicate

Consider these simple clauses first:

108.a. zhege (hen) congming-de haizi

this HEN smart-DE child

'this smart child'

b. zhege haizi ??(hen) congming.

this child HEN smart

'This child is smart.'

- 109.a. zhege baijing-de haizi  
 this fair-skinned-DE child  
 'this fair-skinned child'
- b. zhege haizi ??baijing/baibaijingjing\*(-de).  
 this child fair.skined/fair-fair.skinned-skinned(-de).  
 'This child is rather fair-skinned.'

Each pair of examples compares an adjective used as a prenominal modifier (in the (a) examples) and as a predicate (in the (b) examples).<sup>12</sup> (108) illustrate the most common scenario, with the degree adverbial *hen* 'very' totally optional for the modifier use but practically required for the predicative use – in natural speech, (108b) minus *hen* has a detectably marked status, typically demanding a contrastive context (e.g., *This child smart, that one foolish.*) or conveying a firm conviction. (109) demonstrates another strategy, with some predicative disyllabic adjectives reduplicated and suffixed with *-de*.<sup>13</sup>

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<sup>12</sup> A major reason for the field of Chinese linguistics to be cautious about labeling certain lexical items as adjectival, in addition to lacking conclusive morphological clues, is the missing copula, making it superficially indistinguishable from, say, stative verbs in a clause when used as a predicate. This is shown in the (b) sentences in (108-109) where the predicates, headed by what would correspond to adjectives in other languages, are copula-less. But this Aspect of Chinese has no effect on our analysis.

<sup>13</sup> See Lü 1984 for a thorough documentation of reduplication patterns in Chinese; see HLL, chapter 1, for correlating the AB→AABB pattern with Case-assignment. Also note that the trailing *-de* is typically required with the reduplication, a fact not fully understood. It has an interesting implication, though. Since the reduplicated form may also be used as preverbal modifiers, also with *-de*, it may

Since adjectival reduplication always carries a “moderate-degree” flavor (cf. *rather A* and *quite A* in English), both Gu 2007 and Li 2013 suggest that *hen* and reduplication+*de* are manifestations of a Degree Phrase above AP. How exactly (108-109) should be analyzed does not concern us here. What does is the fact that the contrast in these examples shares the same pattern with (110) below (as well as all the modifier *V-de* examples in Chapter 2):

110.a. ta pao-de qingsong. ??(wo pao-de jiannan.)

3s run-DE relaxed I run-DE difficult

‘He runs in a relaxed manner. (I run with difficulty.)’

b. ta pao-de hen qingsong.

3S run-DE HEN relaxed.

‘He runs in a relaxed manner.’

c. ta pao-de qingqingsongsong-de.

3S run-DE re-re-laxed-laxed-DE

‘He runs in a rather relaxed manner.’

(110a) sounds natural provided that the second part is present to form a contrast.

In comparison, (110b-c) can stand alone with the help of *hen* or reduplication+*de*.

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be the case that, say, *baibaijingjing-de* ‘rather fair-skinned’ is underlying [[ *baibaijingjing-de* ] -*de* ], with the first -*de* being part of reduplication and the second -*de* for the general modifier use. Deletion under adjacent identity yields the superficial single -*de* form. See Si (2005) for discussions.

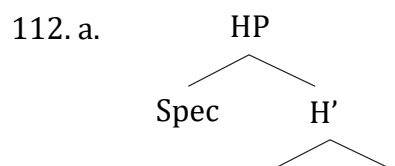
In conclusion, then, *X* in the modifier *V-de* must be the predicate of some clausal structure and not a modifier.<sup>14</sup> However, we will keep calling the construction the modifier *V-de* both to distinguish it from the resultative *V-de* and because there is a fundamental sense in which the entire construction further specifies some part of the clause just as adverbials do.

The immediate question now is what *X* is predicated of or more plainly, what does *X* take as its subject. In the UG framework, there are two logically plausible answers: *X* is the predicate of whatever Cinquean head *H* in the clause that otherwise hosts the corresponding adverbial, or *X* has a phonologically empty subject *e* that is in turn bound (or controlled; we will use binding as the generic term in the rest of this work) by *H*. The two options are summarized in (111):

111.a. ... [<sub>HP</sub> ... H ... [ ... *V-de* [<sub>z</sub> *e* X ]]]

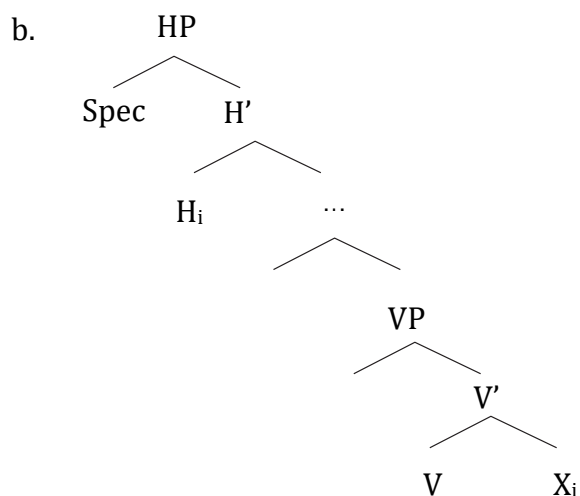
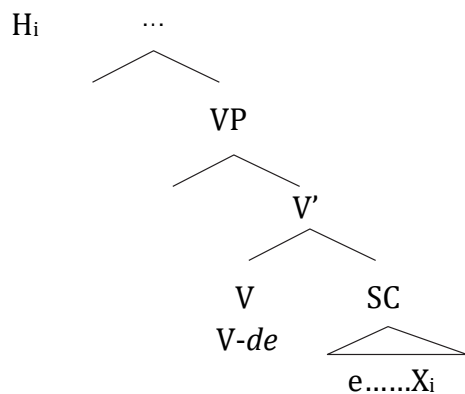
b. ... [<sub>HP</sub> ... H ... [ ... *V-de* X ]]

The tree diagrams are shown below.




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<sup>14</sup> Many thanks to Professor Pan haihua for discussing this with me. Bailyn 2001 shows Russian small clauses, including the depictive type, to be optionally marked with an “overt predicator”.



With *e*, we have a “modifier” small clause Z in (111a); otherwise X is directly predicated of H as in (111b). For instance,

113.a. xuesheng-men chidao-de hen pubian.

student-PL arrive.late-DE HEN general

‘The students generally arrive late.’

b. xuesheng-men pao-de hen kuai.

student-PL run-DE HEN quick

‘The students run quickly.’

In (113a),  $X = \textit{hen pubian}$  'very general', a predicate. The subject of this predicate is a proposition rather than an individual based on its semantic meaning – what is general is the proposition that 'the students arrive late' rather than the individuals 'students'. Suppose we divide Cinque's functional heads into two types as Ernst (2002) suggests – those whose basic semantics is of semantic type  $t$  (for proposition) and those of type  $e$  (for event), with the former located higher and latter lower, then for (111b), the predicate  $X$  takes the functional head  $H$  (with the semantic type  $t$ ) as its subject directly, but for (111a), the subject of  $X$  is an empty category bound by the same head  $H$ , which otherwise hosts the corresponding adverbial *hen pubian* 'generally'. In the case of (113b), the predicate *hen kuai* 'very quickly' describes some properties of the 'running' event, therefore its subject, an empty category  $e$  (111a) or function head  $H$  (111b) has the semantic type  $e$ , an event.

There are multiple reasons, some general and others language-specific, for favoring the small clause representation as the right one. The general consideration is the long-held understanding that the subject and the predicate are in a strictly local relation, or to use Williams' (1980) terminology, must mutually  $m$ -command each other. Along this line of reasoning,  $H$  can be simply too far away from  $X$  for a direct subject-predicate format because at least some higher heads (for Cinque, it is all of them since the heads that license adverbs in his system are all functional and outside VP), such as those associated with the  $Ev$  and  $So$  classes of adverbials, are definitely not dominated by the same phrase that

immediately dominates X in (111b). In addition, Chinese offers two language-specific arguments in favor of (111a)

### 3.1.3.1. Subject- and object depictives in Chinese

In Chapter 2, we elaborated on the two preverbal depictive modifier classes in Chinese: Sd and Od. It was shown then that these classes differ from the corresponding subject-oriented and object-oriented adverbials in being unable to occur as X in the modifier *V-de* construction. Representative examples are given below to help the reader recall this fact. To distinguish these depictives from preverbal adverbials, I simply gloss them as A-DE and with the *-ly* suffix:

#### 114.Sd

a. zhege xuesheng chitiaotiao-de qingli-le najian bangongshi.

this student nude-DE clean.up-ASP that office

'This student cleaned up that office all nude.'

b. \*najian bangongshi, zhege xuesheng qingli-de chitiaotiao-de

that office this student clean.up-DE nude-DE

Intended reading: Same as (a) plus topicalization.

#### 115.Od

a. mama bobo-de pu-le yizhang chuangdan.

mother thin-DE spread-ASP a.sheet bed.sheet

'Mother spread a thin bed sheet.'



also see Harley 2013 for simultaneously having  $vP$  and VoiceP). For instance, Bowers explicitly treats Ma as adjunction to Pred' which is lower than the original position of the subject (as Spec of PredP) and higher than the object (as Spec of VP). In other words, Sd and Od are restricted structurally to where the two corresponding arguments are located, with the object inside VP and the subject originating above VP but moving further up the tree to some functional phrase.

This locality restriction on Sd and Od contrasts with the modifier *V-de* in (111) where X as a predicate can somehow reach a far-away head *H*. If both phenomena internally had a subject-predicate structure with a bound empty subject, it would be unclear why one type is strictly local while the other is not. On the other hand, suppose Sd and Od to have Williams' (1980) structure of small clauses, with a depictive being simply a predicate whose subject is an independently licensed argument of the matrix clause. As such, strict locality is required of the predicate – essentially in the same phrase as the argument it is predicated of, for there being no empty subject (cf. PRO) to mediate the connection between the two. Partial evidence from Chinese is that the most natural instances of Sd and Od also are the reduplicated forms (*chitiaotiao-de* 'nude-DE and *bobo-de* 'thin-DE in (114-115); also see the many examples in section 2.3 of Chapter 2) which have been shown to correlate with the predicative use of adjectives.

A potential complication is the  $\theta$ -criterion since Williams' structure essentially makes, say, the object receive the default  $\theta$ -role from the verb and another one from the depictive predicate. But whether the  $\theta$ -criterion applies to

multiple  $\theta$ -roles from DIFFERENT sources has never had a final verdict. Higginbotham 1985 lets the  $\theta$ -roles of N and AP be thematically “bound” by a single D (with  $\theta$ -binding a thematic operation parallel to  $\theta$ -assignment). Li 1990 shows that allowing two  $\theta$ -roles, each from one component of a resultative compound in Chinese, to be assigned to one argument can account for the ambiguities of the construction. And to reformulate control through movement, Hornstein 1999, 2014 explicitly argues for dispensing with the  $\theta$ -criterion in the minimalist program. While this work will take the binding of the empty subject in the traditional sense, it should be noted that Hornstein’s questioning of the need for the  $\theta$ -criterion stands valid in itself. For instance, the distinction between raising (= a dependency with one  $\theta$ -role) and control (= an apparently similar dependency with two  $\theta$ -roles) forms the empirical foundation for the  $\theta$ -criterion on multiple  $\theta$ -roles from different sources (Ibid: 82-83):

117.a. Jeremy seems [ *e* to be the man in the garden ].

b. There seems [ *e* to be a man in the garden ].

118.a. Jeremy expects [ *e* to be the man in the garden ].

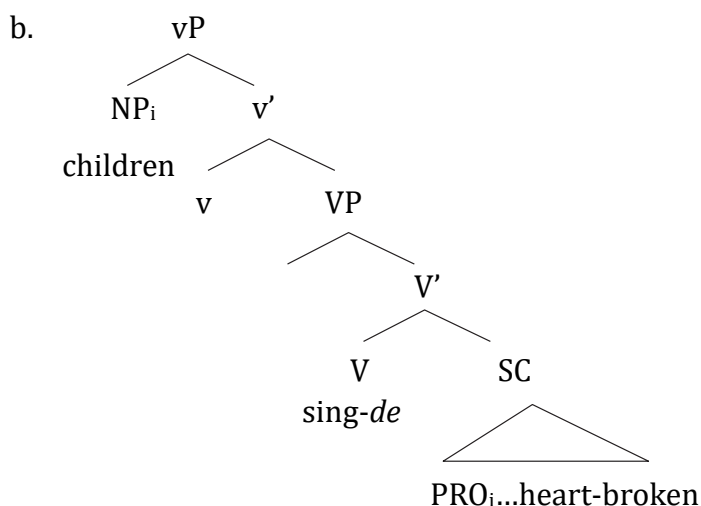
b. \*There expects [ *e* to be a man in the garden ].

But in Hornstein’s account, the number of  $\theta$ -roles is not what is underneath the contrast. Even if *Jeremy* in (118a) moves from *e* to the position of the matrix subject, thereby getting the  $\theta$ -feature checked twice (= receiving two subject  $\theta$ -



predicated of the subject *haizi-men* ‘the children’ of the entire sentence despite the resultative interpretation. To account for this disparity between Chinese and English resultatives, Li suggests that the Chinese version is a real small clause consisting of the subject and the predicate. The subject is a phonologically empty PRO which is bound by the closest c-commanding DP. When the matrix verb is transitive, this DP equals the object but with an unergative verb, the closest DP is the subject, as in the case of (119) with the structure in (120):

120.a.  $children_i \dots [_{VP} \text{sing-DE } [_{SC} PRO_i \text{ heart-broken}]]$



In comparison, English resultatives take the form of Williams' (1980) subject-less rendition that requires a separately licensed local argument to serve as the subject. Since the resultative is in the complement position (Rizzi 1990, Levin and Rappaport Hovav 1995), only the object argument of the matrix clause, located properly inside VP, is close enough to qualify for binding the resultative subject PRO. The subject argument is simply too far away in structure. Hence the DOC.

The essence of (120) is that *children* and the resultative predicate *heart-broken* is linked via PRO in a binding relation, and binding is known for respecting a different type of locality constraint from the strictly local subject-predicate dependency. This is exactly what is needed for the modifier *V-de* to host multiple classes of X. Put differently, (120) is directly comparable to (111a) in structure, and both allow the predicate in the small clause to reach some distance up the tree. In comparison, X as a bare predicate in (111b) would be expected to act on a par with Sd and Od in the same language, which would wrongly prevent X from being predicated of anything beyond the immediately dominating VP.

### 3.2. Interrupted scopes

The previous section establishes the four syntactic traits of the modifier *V-de* construction in (101). In one way or another, these traits have been reported in the existing literature. Furthermore, we also presented two arguments of our own for favoring (111a) as the correct structure of the predicative X. All these lay the foundation for introducing and explaining another fact about the modifier *V-de* that has not yet been documented: that the scope of X in the modifier *V-de* is interrupted by certain preverbal modifiers.

#### 3.2.1. The fact

Consider the following paradigm of examples with Ma and Re modifiers:

## 121.Ma vs. Re

- a. Runrun xunsu-de zhengqi-de baifang naxie hualan.

Runrun quickly tidily arrange those flower.basket

'Runrun quickly arranged those flower baskets tidily.'

- b. naxie hualan, Runrun baifang-de hen zhengqi.

those flower.basket Runrun arrange-DE HEN tidy.

'Those flower baskets, Runrun arranged tidily.'

- c. naxie hualan, Runrun baifang-de hen xunsu.

those flower.basket Runrun arrange-DE HEN fast

'Those flower baskets, Runrun arranged quickly.'

- d. naxie hualan, Runrun xunsu-de baifang-de hen zhengqi.

those flower.basket Runrun quickly arrange-de HEN tidy.

'Those flower baskets, Runrun quickly arranged tidily.'

- e. \*naxie hualan, Runrun zhengqi-de baifang-de hen xunsu.

those flower.basket Runrun tidy-de arrange-de HEN fast

Intended reading: Same as (121d).

(121a, b, c) all serve as controls, demonstrating that the Ma *xunsu* 'fast, quick' and the RE *zhengqi* 'tidy' can simultaneously occur preverbally (as expected from Chapter 2) and that either modifier in itself can occur after *V-de* (though (121b) may be the resultative variant, it has no effect on the data as will become clear shortly). The critical fact is the last two examples. Whereas a preverbal Ma and a

*V-de Re* are totally natural in (121d), reversing them creates a sharp contrast, with (121e) creating the “mind-clogging” effect mentioned before.

The paradigm in (121) spans all adverbial modifier classes in Chinese. Two more sets are given below. See the Appendix 4 at the end for pairing of other classes, all exhibiting the same pattern. To save space, control sentences corresponding to (121b-c) will no longer be included. The particular choices of words in the examples from this point onwards are all meant to make the data as natural as possible when said in isolation.

(122) makes use of the evaluative *pubian* ‘general’ and the manner *xunsu* ‘quick’:

122.Ev vs. Ma

- a. gaoxiao    pubian-de xunsu-de kaishe-le    chuantongwenhua ke.  
 university generally    quickly    offer-ASP cultural.tradition    course  
 ‘Universities generally quickly (start to) offer courses on traditional  
 (Chinese) culture.’
- b. chuantongwenhua ke,            gaoxiao    pubian-de    kaishe-de  
 cultural.tradition    course    university generally    offer-DE  
 hen    xunsu.  
 HEN    fast  
 Same as (122a), plus object topicalization.
- c. chuantongwenhua ke,            gaoxiao            xunsu-de kaishe-de

cultural.tradition course university quickly offer-de

hen pubian.

HEN general

‘Courses on traditional (Chinese) culture, universities quickly make them offered widely.’

Upon first sight, each arrangement of the two modifiers involving *V-de* yields a well-formed easily interpretable outcome, apparently contradicting what is seen in (121). However, (122b-c) actually have different truth values. If the extra semantics such as topicalization is set aside, (122b) describes the same situation as the control sentence (122a), both talking about the majority of universities having a quick response to the demand for a certain type of course. In comparison, (122c) is valid even when only a few universities quickly start to offer such a course as long as they managed to make the course available in most places.

It should be made clear that the different meanings of (122b-c) do not come from *pubian* having multiple meanings. The first morpheme of the word, *pu*, means – or used to mean, when Chinese was at the stage of predominantly having monosyllabic words – ‘general, common’ while the second morpheme, *bian*, means ‘widely spread, in all places’. In modern Chinese, *pubian* describes the state of being general and commonly found and widely spread, all at once. In other words, *pubian* in (122) has a constant meaning; the different interpretations between (122b) and (122c) must have resulted from interpreting *pubian* with different

scopes with respect to the Ma modifier *xunsu* ‘quick’. If we take the preverbal *xunsu-de* ‘quickly’ to occupy the same position, as is typical in syntactic analyses involving adverbs and word order (e.g., Pollock 1989 on English and French word order), then the Ev use of *pubian* in (122a) – and thus the one in (122b) – must be located higher than where Ma is, in full consistency with the adverb hierarchy articulated in Cinque 1999 and in the Chinese hierarchy (116) above. In contrast, the *V-de* use of *pubian* is positioned and interpreted differently in relation to *xunsu-de* ‘quickly’. From what we can tell, it is mostly likely given the result reading, with the meaning of making the course commonly available by offering it. In other words, (122c) does not contradict (121e). Instead, it elevates the latter into a more general pattern: in both cases, the preverbally higher class, Ma in (121) and Ev in (122), runs into trouble when used as X after *V-de* if there is present a preverbal lower class, Re in (121) and Ma in (122), respectively.

Next look at the subject-oriented *congming* ‘smart’ and the Re *zhengqi* ‘tidy’:

### 123. So vs. Re

- a. Runrun congming-de zhengqi-de baifang naxie hualan.

Runrun smartly tidily arrange those flower.basket

‘Runrun smartly arranges those flower baskets tidily.’

- b. naxie hualan, Runrun congming-de baifang-de hen zhengqi.

those flower.basket Runrun smartly arrange-DE HEN tidy

Same as (123a), plus object topicalization.

c. \*naxie hualan, Runrun zhengqi-de baifang-de hen congming.

those flower.basket Runrun tidily arrange-DE HEN smart

Intended reading: Same as (123b).

With (123c) hard to understand, these examples duplicate what is found in (121-122) and schematically summarized as (124):

124.\*... Y ... -de X

where Y is a preverbal adverbial of a lower class than the preverbal counterpart of X.

We used only *-de* rather than *V-de* in order to accommodate the possibility that some adverbial-licensing head is simply V.

The immediate impression from (124) is minimality at work, namely X is blocked by Y when X tries to take the required higher scope than Y. The question is how exactly this is done. One possibility is to combine covert movement with (some versions of) Cinque's (1999) structure for adverbs. Cinque associates each adverb with a unique functional head in the clause. While we are not committed to all adverb-licensing heads necessarily being functional – Ma and Re may well be affiliated with *v* and V, respectively, as Bowers (1993) suggested<sup>15</sup>, it seems like

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<sup>15</sup> Needless to say, Bowers used *Pred* and *v*, an irrelevant detail for us.

an intuitively plausible idea to us that each adverbial is ultimately associated with some head both grammatically and semantically. Then (124) can be restated more specifically:

125.\*... H<sub>X</sub> ... [ Y H<sub>Y</sub> ... -de X ]

where the scope of X is the phrase of H<sub>X</sub>.

If X must move close to H<sub>X</sub> covertly, Y (or H<sub>Y</sub>) could easily induce minimality.

But there are two considerations for which covert movement is not likely to be the right answer. One has to do with comparing X with its *wh*-counterparts in Chinese, a *wh*-in-situ language that, starting with Huang 1982, played a key role in extending May's (1977) LF movement of classical quantifiers to other types of constituents. Briefly, with the exception of *weishenme* 'why', no in-situ *wh*-word in Chinese is sensitive to islands, including *wh*-adverbials and *wh*-predicates:

126.a. ta [<sub>CP</sub> zai zenme chuli duoci shigu zhihou ] huode-le tisheng?

3s P how handle many accident after obtain-ASP promotion

'What is the way *x* such that s/he got promoted after dealing with many accidents in *x*?'

b. tamen xi'ai [<sub>NP</sub>[<sub>CP</sub> yishujia duome zhengqi-de baifang t ] de tu'an ]?

3PL like artist how.much tidily arrange DE pattern

'What is the degree of tidiness *x* such that they enjoy the picture patterns

which the artist arranged with x?’

- c. [NP[CP nimen duome pinfan-de yingde guanjun ] de xiaoxi ]

2PL how.much frequently win championship DE news

yinfa-le zhongnu?

incur-ASP public.anger

‘What is the frequency x such that your winning the championship with x brought out public anger?’

- d. dajia [CP yinwei shigu duome pubian ] er gandao

people because accident how.much wide.spread ER feel

wunai?

helpless

‘What is the degree x such that people feel helpless because accidents are widely spread at degree x?’

- e. [CP ta (jiang hua) jiang-de duome conrong ]

3S talk speech.talk-DE how.much relaxed

geng keneng dedao liangjie?

more likely receive forgiveness

‘What is the manner x such that his giving the speech in x is more likely to receive forgiveness?’

Of these examples, (126a) has a *wh*-Ma adverbial *zenme* ‘how’ in an adjunct clause,

(126b) a *wh*-Re adverbial *duomen zhengqi-de* ‘how tidily’ inside a relative clause,

and (126c) a *wh*-Fr *duome pinfan-de* ‘how frequently’ located in a double-island (complex NP plus the subject). (126d-e) have *wh*-predicates in an adjunct island and a subject island, respectively. Especially significant is (126e) since the *wh*-expression is X inside the modifier *V-de* construction with the Ma or So reading. All of them are perfect.<sup>16</sup>

There have been continual efforts to explain in-situ *wh*-expressions’ immunity to islands. After the initial attempt to utilize LF pied-piping (e.g., Nishigauchi 1986, 1990, Fiengo *et al.* 1988) proved not to work (see Shi 1994, Hu

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<sup>16</sup> We intentionally do not include the *wh*-island in the test, because there is compelling reasons to believe that the commonly used examples for testing an in-situ *wh* inside a *wh*-island are actually the in-situ *wh* forming echo questions that use an entirely different mechanism from the typical *wh*-questions (Liu 1986, Xu 1990, Hu 2002). In effect, this extra factor renders the *wh*-island unreliable for testing movement.

Tsai 1994 argues that the *V-de* manner is the true manner while the preverbal counterpart is in fact instrument, and that only the latter can produce a well-formed in-situ *wh*-form:

- i. [ ta zenmyang jianghua ] bijiao heshi?  
     3S how talk more proper  
     ‘What is the way x such that his talking in x is more proper?’
- ii. \*[ ta jianghua jiang-de zenmeyang ] bijiao heshi?  
     3S talk talk-DE how more proper

Intended reading: Same as (i).

I agree with the judgment, but as Li 2015 points out, the non-*wh* base form of (ii) does not sound good in the first place:

- iii. \*[ ta jianghua jiang-de hen qingchu/kuai/youxian ]bijiao heshi.  
     3S talk talk-DE HEN clear/fast/relaxed more proper  
     Intended reading: ‘His talking clearly/fast/in a relaxed way is more proper.’

In comparison, the base form of our (126e) sounds better than (iii):

- iv. ?[ ta jianghua jiang-de hen congrong ] geng keneng dedao liangjie.  
     3S talk talk-DE HEN relaxed more likely receive forgiveness  
     ‘His talking in a relaxed way is more likely to receive forgiveness.’

2002, Cheng 2003, among other critical reviews), researchers increasingly turn to Baker's (1970) idea of base-generated operator-variable configuration: a question-operator originating inside CP binds an in-situ *wh*-expression functioning as a variable (Cheng 1991, Aoun and Li 1993, Shi 1994, Tsai 1994, Hu 2002; also see Xu's (1990) criticism of covert *wh*-movement and Reinhart's (1997) utilization of choice functions in place of LF movement for in-situ *wh*-arguments). Specific theories vary and not all the details are worked out (see Soh 2005). But the general inclination at the moment is for the lack of island-effects on the part of in-situ *wh*-expressions in Chinese to be linked to no movement, with their scopes from an operator directly generated in or near the C position.<sup>17</sup> We return this topic in Chapter 4 below.

If it is not clear whether in-situ *wh*-adjuncts and predicates move covertly to get their scopes, X in the specifying *V-de* is an even less likely candidate for covert movement. After all, overt *wh*-movement happens in many languages, but we are

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<sup>17</sup> Wei *et al* 2014 attempt to defend a LF-movement account of Chinese *wh*-in-situ by associating the phenomenon with the generic/episodic distinction, on the basis of a claimed contrast below:

- i. [ zenmeyang tiaowu ] de nanren bijiao miren?  
     how       dance   DE man   more attractive  
     'What is the manner *x* such that men who dance in *x* are more attractive?'
- ii. \*zuotian, [ zenmenyang tiaowu ] de nanren qin-le       Yilin?  
     yesterday how               dance   DE man   kiss-ASP   Yilin  
     Intended: 'What is the manner *x* such that men who danced in *x* kissed Yilin yesterday?'

Since we do not find (ii) to deteriorate in acceptability, any theoretical conclusion built on the so-called contrast is not convincing to us.

not aware of any independent indication that a predicate or adjunct moves overtly in order to acquire their DEFAULT scopal interpretations.

The second reason is based on the modifier *V-de* having the structure in (111a), repeated below:

111.a. ... [<sub>HP</sub> ... H ... [ ... *V-de* [<sub>Z</sub> *e* X ]]]

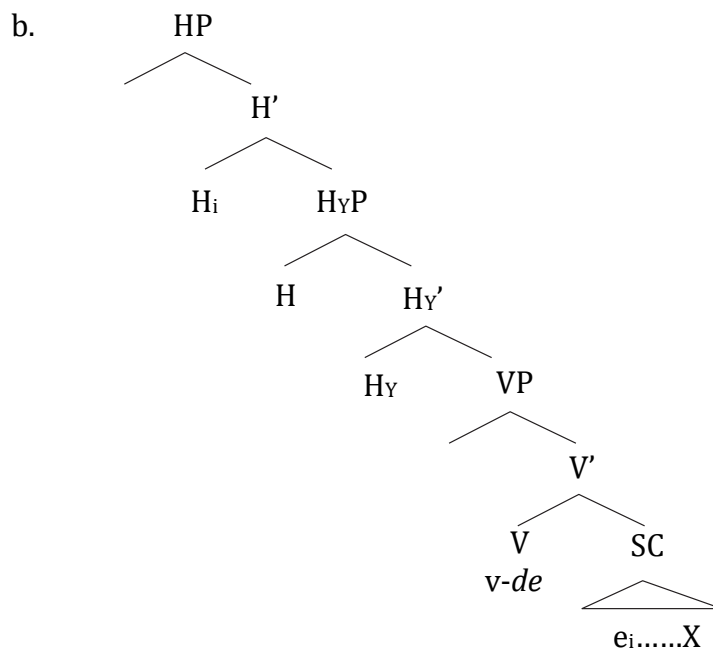
where Z is the small clause composed of X as predicate and a phonologically empty subject *e*. In turn, *e* is bound by H, a Cinquean head that is part of the clausal structure and that licenses/provides host for the corresponding preverbal adverbial. Assuming (111a) to be sufficiently supported, X is perceived to be a “modifier” of the clause (more precisely a modifier of H in Cinque’s system) because it describes a property of *e* via predication and *e* is coindexed with H. Take (102d) for instance. X is fast, and the head H that X is (ultimately) associated with pertains to the running event. By co-indexation, the empty subject *e* refers to the running event as well. Because X describes the property of being fast and it is “predicated of” H via *e*, then H is fast. Thus (111a) is loosely understood as there being a fast H (e.g. the fast running event in (102d)). The immediate consequence of (111) is that there is no motivation for X to raise to the vicinity of H any longer. The perceived scope of X is actually not X projecting its scope to HP but instead via predication between X and *e* plus binding between *e* and H.

In sum, there is no motivation inside Chinese for X to obtain the perceived scope via covert movement, both because the independently establishable small clause structure in (111a) already yields the proper “scope” and because even *wh*-predicates (and almost all *wh*-adjuncts) in the language do not obviously move covertly either. The question is, what is responsible for the interference by some preverbal adverbials in (121) through (123) and summarized in (125)?

### 3.2.2. Toward a solution

Merging the minimality context (125) with the structure of the modifier *V-de* construction (111a) gives (127):

127. a. \*... H<sub>i</sub> ... [ Y H<sub>Y</sub> ... -de [ e<sub>i</sub> X ]]



with Y being the adverbial inducing the blocking effect and H<sub>Y</sub> the head that licenses Y. Logically, either by Y or H<sub>Y</sub> may be the culprit because each of them c-

commands  $e_i$ . But there is reason to believe that the head  $H_Y$  is not the responsible party.

To begin with, we know for certain that structurally in-between heads alone do not block the binding of  $H_i$  and  $e_i$  simply because there may well be other heads between these two elements, considering that  $H_i$  may be the functional head that, say, licenses a structurally very high adverbial class such as  $Ev$ . The point can be made from a different perspective. If one adopts Cinque's (1999) theory so that each adverb class is matched by the corresponding functional head, then one must also accept his logic: functional heads exist and morphologically manifest themselves in some languages independently of adverbs they support (see his chapter 3) – otherwise his pairing of adverbs and functional heads would be circular argumentation and could not be substantiated in the first place. It follows that in Cinque's system, there must be other functional heads, such as  $H_Y$ , between  $H_i$  and  $e_i$  in (127) that are present without adverbs but do not prevent the two from forming a legitimate binding relation.

But more significantly, we found, somewhat unexpectedly, that the  $S_d$  and  $O_d$  depictives also affect the scope of  $X$ :

#### 128.Ev vs. $S_d$

- a. gongren-men    hen buxing-de                    shilinlin-de zou-le.  
 worker-PL        HEN unfortunately                    wet-DE        leave-ASP

'The workers unfortunately left all drenched.'

- b. \*gongren-men      hen buxing-de      zou-de      shilinlin-de.  
 worker-PL      HEN unfortunately      leave-ASP      wet-DE

Intended reading: Same as (128a).

- c. \*/??gongren-men      shilinlin-de zou-de      hen buxing.  
 worker-PL      wet-DE      leave-DE      HEN unfortunate

Intended reading: Same as (128a).

### 129.Evi vs. Sd

- a. Tongtong      hen mingxian-de hanjinjin-de      huida-le      nage      wenti.  
 Tongtong      HEN obviously      sweaty-DE      answer-ASPthat      question

‘Tongtong rather obviously answered that question sweatily.’

- b. nage wenti,      Tongtong      hen mingxian-de huida-de      hanjinjin-de.  
 that question Tongtong      HEN obviously      answer-DE      sweaty-DE

‘Obviously, answering that question made Tongtong sweaty.’

- c. ??nage wenti,      Tongtong      hanjinjin-dehuida-de      hen mingxian.  
 that      question      Tongtong      sweaty-DE      answer-DE      HEN obvious

Intended reading: Same as (129b).

The (a) examples with both Sd and a structurally higher adverbial class in a preverbal position serve as the control. Placing *shilinlin-de* ‘wet-DE’ in the modifier *V-de* in (128b) is not acceptable, proving it to be a depictive and not a subject-oriented adverbial. (128c) keeps Sd preverbal (and therefore well-formed in itself) but expresses the Ev *buxing* ‘unfortunate’ as X in the modifier *V-de*. The outcome

is bad for most native speakers I consulted and highly marginal for a couple of them. The same pattern is observed by pairing Sd with Evi. (129b) is acceptably only when *hanjinjin-de* 'sweaty-DE' acquires a resultative reading,<sup>18</sup> which arguable no longer uses *hanjinjin-de* as the Sd.

A similar paradigm can be constructed with Od:

### 130.Ma vs. Od

a. Runrun jingxin-de      cuicui-de      qie-le      xinxian huanggua.

Runrun meticulously      crisp-DE      cut-ASP fresh      cucumber

'Runrun meticulously cut the fresh cucumbers that were crisp.'

b. xinxian huanggua, Runrun (\*cuicui-de) qie-de      hen jingxin.

fresh      cucumber      Runrun      crisp-DE      cut-DE      HEN meticulous

Intended reading: Same as (130a).

### 131.Fr vs. Od

a. Runrun pinfan-de      cuicui-de      qie xinxian huanggua.

Runrun frequently      crisp-DE      cut fresh      cucumber

'Runrun frequently cut the fresh cucumbers that were crisp.'

b. xinxian huanggua, Runrun (??cuicui-de)      qie-de      hen pinfan.

fresh      cucumber      Runrun      crisp-DE      cut-DE      HEN frequent

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<sup>18</sup> The *V-de* resultative might yield a subject-reading under certain lexical conditions even in the presence of a (semantic) object. I thank Professor Yafei Li for pointing this out to me (also see Li's lecture notes for the syntax seminar in the fall of 2016).

Intended reading: Same as (131a).

132.Ev vs. Od

a. Runrun hen xingyun-de cuicui-de qie-le xinxian huanggua.

Runrun HEN fortunately crisp-DE cut-ASP fresh cucumber

'Runrun fortunately cut fresh cucumbers that were crisp.'

b. xinxian huanggua, Runrun (\*cuicui-de) qie-de hen xingyun.

fresh cucumber Runrun crisp-DE cut-DE HEN fortunate

Intended reading: Same as (132a).

As shown in section 3.1.3.1 above, depictives must stay close to an argument that they are predicated of. What this means is that they are structurally licensed through the subject-predicate relation thus formed, and not by any head H in (127) that is part of the clausal "vertebrae" in Cinque's system. Since Sd and Od also interfere with the scope of X in the modifier *V-de* in the absence of any H, one must conclude that the minimality effect reported so far has to result from the preverbal adverbial or depictive directly.

The task now boils down to the following question in the current framework of syntax: What feature does the preverbal blocking adverbial/depictive carry that gives rise to the interference between  $H_i$  and  $e_i$  in (127)? The feature must be shared, minimally, by these constituents:

133.a. preverbal adverbials

b. preverbal depictives

c.  $H_i \dots e_i$

Also keep in mind that  $e_i$  is related to  $H_i$  presumably since it is the subject of  $X$  that has the same root form and same scopal interpretation as the corresponding preverbal adverbial.

We are not aware of any existing feature that meets the requirement. A seemingly convenient candidate would be some kind of “predicate” feature, say [*pred*], along the line of Davidsonian semantics: adverbials are predicates of events (or propositions; see Ernst 2002), the depictives are predicates of arguments, and  $X$  is the predicate of  $e_i$  and thus can naturally pass its relevant feature to  $e_i$  through agreement (cf. Chomsky’s (2000, 2001) probe-goal theory, to which we return in Chapter 4). But a [*pred*] feature is unlikely to work out here because, if this were the feature that creates a blocker, then the modifier *V-de* construction would never project its scope beyond *vP*. After all, a major function of *v* (or Bower’s (1993) *Pred* or Kratzer’s (1996) *Voice*) is to introduce the subject. This makes *v* the most plausible head carrying [*pred*] in a clause, necessarily causing a problem for  $e_i$  and any head structurally higher than *v* – and for Cinque, MANY adverb-licensing heads are higher than *v*.

I propose that Chinese thinks of all the cases of (133) as expressing syntactic modification no matter how each case is syntactically expressed. The adverbials are straightforward. The depictives are viewed as extra modifiers of DP arguments

somewhat similar to non-restrictive relative clauses. A partial support for this is the fact that depictives are also suffixed with *-de*, the morphological marker for verbal and nominal modifiers alike. As for the binding relation of  $H_i \dots e_i$ , it actually matches the crude perception of Chinese speakers that the *V-de* construction somehow “modifies the verb”, which is in fact why this construction is often called the manner *V-de* and treated as a variant of the preverbal adverbials.

Technically, suppose that modification is implemented in syntax via a [*mod*] feature, with [*mod*] indicating a modifier in use, shared by the modifier and the modified through standard agreement and thus operationally no different from, say, [*wh*]. In particular, a modifier *M* necessarily carries [*mod*] which must agree with the constituent *M* modifies for proper syntactic-semantic interpretation. Consider (127) again:

127. \*...  $H_i \dots [Y H_Y \dots -de [e_i X]]$

The small clause [ $e_i X$ ] is a modifier. Whatever is the structural head of this structure, call it *Z* (where possibly  $Z = X$ ), carries [*mod*]. Spec-head agreement transfers [*mod*] to the Spec of *ZP*, namely the subject  $e_i$ . Since a modifier would not be properly licensed without something to modify,  $e_i$  had better find some  $H_i$  to agree with in the [*mod*] feature (and in other relevant features). This agreement process, which can be phrased in terms of probe-goal in Chomsky 2000, is interrupted by *Y*, a modifier with its own [*mod*] and positioned between  $H_i$  and  $e_i$ .

It is this feature-based interference that makes (127) ungrammatical. One question about the [mod] feature may be what motivates it and why it is needed to be “checked”. A possible explanation bears on the strong analyticality of Chinese: Chinese uses a morpheme to mark out the adjunct grammatical function of a constituent. Similarly, to the fact that some languages use morphological cases to mark out the grammatical functions of arguments (e.g., Japanese), Chinese opts to mark out not the arguments’ functions but adjuncts’. Interestingly, Japanese/Korean use some suffix on adjuncts as well. For instance, the suffix *-ekey* in *kkaykkusha-key* ‘clean-suffix’ in Korean is an adjunct marker.

In this implementation, Y will agree with  $H_Y$  and thus pass [mod] to the latter. But this feature-agreement has no effect on the outcome because  $H_Y$  has [mod] iff Y is present (namely when it is modified by Y). For  $H_Y$ , [mod] comes and goes with Y, effectively making Y the only factor for minimality. Similarly, to the extent that a depictive is regarded as a modifier and thus carries [mod], agreement works in the same way on the argument it “depicts”. [mod] is present either on both the depictive and the corresponding argument or on neither, with its presence blocking the binding of  $e_i$  by  $H_i$ . The only part of this analysis that has been vague is exactly how the blocking effect happens when the [  $H_i$  ...  $e_i$  ] dependency is not formed with movement, a question to be addressed in Chapter 4.

### 3.2.3. More facts about the modifier *V-de*

Recall that this construction forces the object *V* to move away so as to keep *V* and the [ *-de ...* ] linearly adjacent (see 3.1.1). For this purpose, the object can be topicalized or relativized. There is a third strategy, also popular in Chinese: verb-reduplication (VR). Compare the topicalization example (102a) with (134):

- 134.a. na jia            ren    chan   xue    chan-de    hen kuai.  
           that household people shovel snow shovel-DE HEN quick  
           ‘As for shoveling snow, that household shoveled quickly.’
- b. chan xue, na jia            ren    chan-de    hen    kuai.  
           shovel snow that household people shovel-DE HEN    quick  
           Same as (134a).

(134a) is the default form, introducing the object of the verb, *xue* ‘snow’, with another copy of the verb. See Li 1990 for treating the second instance of the verb (i.e., the one suffixed by *-de*) as the matrix verb and the verb-object cluster before it as a phrasal adjunct. This cluster may also move to the front of the sentence in (134b), adding the expected extra prominence.

What we found is that with VR, the minimality effect appears reversed (More examples can be found in Appendix 5):

135.Fr vs. Ma

- a. Runrun pinfan-de    xunsu-de    huibi            jizhe-de    wenti.

Runrun frequently quickly avoid reporter-DE question

'Runrun frequently avoid the reporters' questions quickly.'

b. jizhe-de wenti, Runrun pinfan-de huibi-de hen xunsu.

reporter-DE question Runrun frequently avoid-DE HEN quick

Same as (135a).

c. \*jizhe-de wenti, Runrun xunsu-de huibi-de hen pinfan.

reporter-DE question Runrun quickly avoid-DE HEN frequent

Intended reading: Same as (135a).

d. Runrun pinfan-de huibi jizhe-de wenti huibi-de

Runrun frequently avoid reporter-DE question avoid-DE

hen xunsu.

HEN quick

i. 'As for avoiding the reporters' questions, Runrun frequently does so quickly.'

ii. ??'As for frequently avoiding the reporters' questions, Runrun does so quickly.'

e. Runrun xunsu-de huibi jizhe-de wenti huibi-de

Runrun quickly avoid reporter-DE question avoid-DE

hen pinfan.

HEN frequent

i. \*'As for avoiding the reporters' questions, Runrun quickly does so frequently.'

- ii. 'As for quickly avoiding the reporters' questions, Runrun does so frequently.'

(135a) is the control, with preverbal Fr and Ma adverbials. (135b-c) repeat the familiar minimality pattern when the object of the verb is topicalized. The object is introduced by means of VR in (135d-e). The initial impression of the multiple native speakers I checked is that (135d) detectably harder to process than (135e). On the surface, this is opposite of the topicalization pattern because X after the *V-de* belongs to the lower Ma class in (135d) and corresponds to the good example (135b). Similarly, the post-*V-de* X in (135e) is of the higher Fr class and would be bad when the object is topicalized as in (135c).

At this point, a complication must be addressed. The VR examples in (135d-e) actually have structural ambiguities, depending on whether the adverbial immediately preceding the reduplicated verb-object cluster is affiliated with the cluster or the matrix verbal projection:

- 136.a. ... [[<sub>RedP</sub> adv V obj ] ... *V-de* ... ]  
 b. ... [ adv [<sub>RedP</sub> V obj ] ... *V-de* ... ]

In these structures, RedP stands for the phrase – whatever actual category it has – that contains the reduplicated verb and the object cluster.

An effective way to distinguish these two structural options is a (mental) pause right after the first adverbial. With this pause, *pinfan-de* ‘frequently’ in (135d) is severed from the reduplicated RedP and thus is taken to be part of the matrix clause. The interpretation thus produced is (135d-i) and is actually quite easy to obtain. Without the pause, the adverbial is by default processed as modifying the immediately following verb and thus is part of the reduplicated RedP. This is the reading in (135e-ii) that causes the brain-clogging effect. On the other hand, a pause after the preverbal *xunxu-de* ‘quickly’ in (135e) associates the adverbial with the matrix clause and fails to yield the reading in (135e-i). The no-pause interpretation is (135e-ii). For both (135d) and (135e), the initial judgments result from the default pause-less interpretations.

The same pattern is seen with Ma and So. To avoid repetitive information, only the control and the VR examples are provided:

- 137.a. Runrun congming-de xunsu-de huibi-le jizhe-de wenti.  
 Runrun smartly quickly avoid reporter-DE question  
 ‘Runrun smartly avoid the reporters’ questions quickly.’
- b. Runrun congming-de huibi jizhe-de wenti huibi-de  
 Runrun smartly avoid reporter-DE question avoid-DE  
 hen xunsu.  
 HEN quick
- i. ‘As for avoiding the reporters’ questions, Runrun smartly did so

quickly.'

- ii. ??'As for smartly avoiding the reporters' questions, Runrun did so

quickly.'

c. Runrun xunsu-de huibi jizhe-de wenti huibi-de

Runrun quickly avoid reporter-DE question avoid-DE

hen congming.

HEN smart

- i. Unavailable reading: 'As for avoiding the reporters' questions, it was

smart of Runrun to quickly do so.'

- ii. 'As for quickly avoiding the reporters' questions, it was smart of

Runrun to do so.'

(137b-c) show a perfect match with (137d-e).

Now we can describe the contrastive patterns in (135) and (137) in a clear manner. When the preverbal adverbial is part of the matrix clause (enforced with a pause), RV acts just like topicalization:

138.a. ...*frequently/smartly* ... *V-de quick* (for (135b), (135d-i) and (137b-i))

b. \*... *quickly* ... *V-de frequent/smart* (for (135c), (135e-i) and (137c-i))

But when the preverbal adverbial is treated as part of the reduplicated XP, VR and topicalization depart in opposite directions with respect to acceptability. The

pattern for VR can be schematically represented as follows, irrelevant details omitted:

- 139.a. ??... H ... [<sub>RedP</sub> *frequently/smartly* ... ] V-*de quick*  
 b. ... H ... [<sub>RedP</sub> *quickly* ... ] V-*de frequent/smart*

Half of the explanation for this contrast is straightforward. To the extent that we adopt Li's (1990) analysis that the verb-object cluster is indeed a phrasal adjunct RedP as in (139), the adverbial inside RedP does not c-command the post-V-*de* X. Consequently, it incurs no minimality at all on the latter. This is why the higher-classed *frequent* and *smart* in (139b) may have its normal scope reading via H (see section 3.2.2 above) though the dependency seemingly crosses a structurally lower *quickly* which would cause trouble in the topicalization context (135c).

But the same logic should let *quick* be bound by H in (139a) as well, contrary to fact. The only plausible explanation I can think of is for H in the structure to be necessarily structurally higher than the adjunction location of RedP, as shown in (139a). If so, then *frequently/smartly* is in effect within the scope of *quickly*, directly contradicting the modifier hierarchy in which So/Fr is necessarily higher than Ma and not the other way around. The marginal status (vs. simple unacceptability) could result from the fact that structurally the two modifiers are affiliated with different verbal projections: *quick* with the matrix clause (via H)

and *frequently/smartly* with a separate VP (equal to or inside RedP). At the same time, however, VR does NOT bring in a separate event from the one expressed by the matrix verb. The resulting scenario is a mixed one: syntactically, there is no direct conflict between the two modifiers since they are not positioned in the same verbal projection; but semantically, they are interpreted as modifying the same event in a hierarchy opposite of the normal one. Hence the marginal status.

This analysis of the scope effects of VR also forces VR to have a single adjunction site that is very low in the clausal structure. This is so because the Ma class is among the lowest in the adverbial hierarchy (see (116)), either inside VP or as part of an extremely low functional phrase in Cinque's system. It follows that the obligatory adjunction site of VR must be even lower than whatever head H licenses Ma in order to have the configuration in (139a). This is consistent with treating VR as adjoined to some V' (see Li 1990).

### 3.3. Conclusion

The modifier *V-de* construction is shown to contain a subject-predicate small clause that sits in the complement position and is connected through agreement with the same head that licenses the corresponding preverbal adverbial. An interfering adverbial interrupts the connection in a typical minimality setup except that the connection is "static", not formed with movement. The next chapter will investigate the nature of minimality which will ultimately subsume the particular case of the interrupted modifier *V-de*.

## Appendix 4: Interaction between preverbal and post-verbal adverbials

## 140. Ev&gt;Ma

- a. zhengfu            mangu-de xunsu-de shougou    xin    jishu.  
 government    blindly    quickly    purchase    new technology  
 ‘The government blindly quickly purchased new technologies.’
- b. xin    jishu,            zhengfu    mangmu-de shougou-de    hen xunsu.  
 new technology    government blindly            purchase-DE    HEN quick  
 ‘The government blindly quickly purchased new technologies.’
- c. ??xin    jishu,            zhengfu            xunsu-de shougou-de    hen mangmu.  
 new technology    government    quickly    purchase-DE    HEN blind

## 141. So&gt;Ce

- a. Zhangsan congming-de hen    zao-de    chan-le            menqian-de    xue.  
 Zhangsan smartly            HEN    early    shovel-ASP    doorway-DE    snow  
 ‘Zhangsan smartly shoveled the snow in the doorway early.’
- b. menqian-de    xue,    Zhangsan congming-de chan-de            hen zao.  
 doorway-DE    snow    Zhangsan smartly            shovel-DE    HEN early  
 ‘Zhangsan smartly shoveled the snow in the doorway early.’
- c. ??menqian-de    xue,    Zhangsan hen zao-de chan-de    hen    congming.  
 doorway-DE    snow    Zhangsan HEN early    shovel-DE HEN    smart

## 142. So&gt;Fr

- a. Zhangsan congming-de pinfan-de fashe qiujiu xinhao.  
 Zhangsan smartly frequently send distress signal  
 ‘Zhangsan smartly frequently sent distress signals.’
- b. qiujiu xinhao, Zhangsan congming-de fashe-de hen pinfan.  
 distress signal Zhangsan smartly send-DE HEN frequent  
 ‘Zhangsan smartly sent the distress signals frequently.’
- c. ??qiujiu xinhao, Zhangsan pinfan-de fashe-de hen congming.  
 distress signal Zhangsan frequently send-DE HEN smart

## 143. So&gt;Ma

- a. Zhangsan pingjing-de xunsu-de huiying jizhe-de wenti.  
 Zhangsan calmly quickly answer reporter-DE question  
 ‘Zhangsan calmly quickly answered the reporter’s questions.’
- b. jizhe-de wenti, Zhangsan pingjing-de huiying-de hen xunsu.  
 reporter-DE question Zhangsan calmly answer-DE HEN quick  
 ‘Zhangsan calmly quickly answered the reporter’s questions.’
- c. ??jizhe-de wenti, Zhangsan xunsu-de huiying-de hen pingjing.  
 reporter-DE question Zhangsan quickly answer-DE HEN calm

## 144. Ce&gt;Re

- a. Zhangsan henkuai-de ganganjingjing-de xi-le najian chenyi.  
 Zhangsan quickly cleanly wash-ASP that shirt  
 ‘Zhangsan quickly washed the shirt cleanly.’
- b. najian chenyi, Zhangsan hen kuai-de xi-de ganganjingjing-de.  
 that shirt Zhangsan HEN quickly wash-DE clean-DE  
 ‘Zhangsan quickly washed the shirt cleanly.’
- c. ??najian chenyi, Zhangsan ganganjingjing-de xi-de hen kuai.  
 that shirt Zhangsan clean-DE wash-DE HEN quick

## 145. Fr&gt;Ma

- a. Zhangsan pinfan-de dasheng-de langsong napian wenzhang.  
 Zhangsan frequently loudly read that article  
 ‘Zhangsan frequently read that article loudly.’
- b. napian wenzhang, Zhangsan pinfan-de langsong-de hen dasheng.  
 that article Zhangsan frequently read-DE HEN loud  
 ‘Zhangsan frequently read that article loudly.’
- c. ??napian wenzhang, Zhangsan dasheng-de langsong-de hen pinfan.  
 that article Zhangsan loudly read-DE HEN frequent

## 146. Fr&gt;Re

- a. Zhangsan pinfan-de ganganjingjing-de ca chufang-de diban.  
 Zhangsan frequently cleanly mop kitchen-DE floor

‘Zhangsan frequently mopped the floor of the kitchen cleanly.’

- b. chufang-de diban, Zhangsan pinfan-de ca-de ganganjingjing-de.

kitchen-DE floor Zhangsan frequently mop-DE clean-DE

‘Zhangsan frequently mopped the floor of the kitchen cleanly.’

- c. ??chufang-de diban, Zhangsan ganganjingjing-de ca-de hen pinfan.

kitchen-DE floor Zhangsan cleanly mop-DE HEN frequent

147. Ma>Re

- a. Zhangsan xunsu-de zhengzhengqiqi-de baifang naxie hualan.

Zhangsan quickly neatly place those flower.basket

‘Zhangsan quickly placed those flower baskets neatly.’

- b. naxie hualan, Zhangsan xunsu-de baifang-de zhengzhengqiqi-de.

those flower.basket Zhangsan quickly place-DE neat-DE

‘Zhangsan quickly placed the flower baskets neatly.’

- c. ??naxie hualan, Zhangsan zhengzhengqiqi-de baifang-de

those flower.basket Zhangsan neatly place-DE

hen xunsu.

HEN quick

Appendix 5: Interactions between preverbal and post-verbal adverbials in Verb

Reduplication

## 148. Ev&gt;Ma

a. zhengfu xunsu-de shougou xin jishu shougou-de  
 government quickly purchase new technology purchased-DE  
 hen mangmu.

HEN blind

i. Unavailable reading: 'As for purchasing new technologies, it is blind  
 that the government quickly did so.'

ii. 'As for quickly purchasing new technologies, it is blind that the  
 government did so.'

b. zhengfu mangmu-de shougou xin jishu shougou-de  
 government blindly purchase new technology purchase-DE  
 hen xunsu.

HEN quick

i. 'As for purchasing new technologies, it is blind that the government  
 quickly does so.'

ii. ?? 'As for blindly purchasing new technologies, the government did so  
 quickly.'

## 149. So&gt;Ce

a. Zhangsan hen zao-de chan menkou-de xue chan-de  
 Zhangsan HEN early-DE shovel doorway-DE snow shovel-DE  
 hen congming.

HEN smart

- i. Unavailable reading: 'As for shoveling the snow in the doorway, it was smart of Zhangsan to do so early.'
  - ii. 'As for shoveling the snow in the doorway early, it was smart of Zhangsan to do so.'
- b. Zhangsan congming-de chan menkou-de xue chan-de hen zao.  
Zhangsan smartly shovel doorway-DE snow shovel-DE HEN early
- i. As for shoveling the snow in the doorway, Zhangsan smartly did so early.'
  - ii. ?? 'As for smartly shoveling the snow in the doorway, Zhangsan did so early.'

150. So>Fr

- a. Zhangsan pinfan-de fashe qiujiu xinhao fashe-de hen congming.  
Zhangsan frequently send distress signal send-DE HEN smart
  - i. Unavailable reading: 'As for sending distress signals, it was smart of Zhangsan to do so frequently.'
  - ii. 'As for sending distress signals frequently, it was smart of Zhangsan to do so.'
- b. Zhangsan congming-de fashe qiujiu xinhao fashe-de hen pinfan.  
Zhangsan smartly send distress signal send-DE HEN frequent
- i. 'As for sending distress signals, it was smart of Zhangsan to do so

frequently.'

- ii. ?? 'As for smartly sending distress signals, Zhangsan did so frequently.'

151. So>Ma

- a. Zhangsan xunsu-de huiying jizhe-de wenti huiying-de  
Zhangsan quickly answer reporter-DE question answer-DE  
hen pingjing.

HEN calm

- i. Unavailable reading: 'As for answering the reporter's questions, Zhangsan calmly did so quickly.'
- ii. 'As for quickly answered the reporter's questions, Zhangsan calmly did so.'

- b. Zhangsan pingjing-de huiying jizhe-de wenti huiying-de hen xunsu.  
Zhangsan calmly answer reporter-DE question answer-DE HEN quick

- i. 'As for answering the reporter's questions, Zhangsan calmly did so quickly.'
- ii. ?? 'As for calmly answering the reporter's questions, Zhangsan did so quickly.'

152. Ce>Re

- a. Zhangsan ganganjingjing-de xi najian chenyi xi-de hen kuai.

Zhangsan cleanly wash that shirt wash-DE HEN quick

i. Unavailable reading: 'As for washing the shirt, Zhangsan quickly did so cleanly.'

ii. 'As for washing the shirt cleanly, Zhangsan did so quickly.'

b. Zhangsan hen kuai-de xi najian chenyi xi-de

Zhangsan HEN quick-DE wash that shirt wash-de  
ganggangjingjing-de.

clean-DE

i. 'As for washing the shirt cleanly, Zhangsan quickly did so.'

ii. ?? 'As for quickly washing the shirt, Zhangsan did so cleanly.'

153. Fr>Ma

a. Zhangsan dasheng-de langsong napian wenzhang langsong-de

Zhangsan loudly read that article read-DE

hen pinfan.

HEN frequent

i. Unavailable reading: 'As for reading that article, Zhangsan frequently did so loudly.'

ii. 'As for loudly reading that article, Zhangsan did so frequently.'

b. Zhangsan pinfan-de langsong napian wenzhang langsong-de

Zhangsan frequently read that article read-DE

hen dasheng.

HEN loud

- i. 'As for reading that article, Zhangsan frequently did so loudly.'
- ii. ?? 'As for frequently reading that article, Zhangsan did so loudly.'

154. Fr>Re

- a. Zhangsan ganganjingjing-de ca chufang-de diban ca-de  
Zhangsan cleanly mop kitchen-DE floor mop-DE  
hen pinfan.

HEN frequent

- i. Unavailable reading: 'As for moping the floor of the kitchen, Zhangsan frequently did so cleanly.'
- ii. 'As for moping the floor of the kitchen cleanly, Zhangsan did so frequently.'

- b. Zhangsan pinfan-de ca chufang-de diban ca-de  
Zhangsan frequently mop kitchen-DE floor mop-DE  
ganganjingjing-de.

clean-DE

- i. 'As for moping the floor of the kitchen, Zhangsan frequently did so cleanly.'
- ii. ?? 'As for frequently moping the floor of the kitchen, Zhangsan did so cleanly.'

## 155. Ma&gt;Re

- a. Zhangsan zhengzhengqiqi-de baifang naxie hualan      baifang-de  
 Zhangsan neatly                      place    those flower.basket place-DE  
 hen xunxu  
 HEN quick
- i. Unavailable reading: 'As for placing those flower baskets, Zhangsan quickly did so neatly.'
- ii. 'As for placing those flower baskets neatly, Zhangsan quickly did so.'
- b. Zhangsan xunsu-de baifang    naxie hualan              baifang-de  
 Zhangsan quick-DE place      those flower.basket place-DE  
 zhengzhengqiqi-de.  
 neat-DE
- i. 'As for placing those flower baskets, Zhangsan quickly did so neatly.'
- ii. ?? 'As for quickly placing those flower baskets, Zhangsan did so neatly.'

#### Chapter 4: Two types of minimality

In Chapter 3, minimality is shown to play a critical role in restricting the non-movement-induced dependency between the phonologically empty subject of the postverbal *V-de X* construction and the preverbal adverbials. Minimality is observed among the classes of preverbal adverbials as well. In fact, the data we report about Chinese offers evidence that Chomsky's (1995) Minimal Link Condition (MLC), or the more recent incorporation of it into the probe-goal theory (Chomsky 2000, 2001, Pesetsky and Torrego 2007), is inherently unable to replace the entirety of Rizzi's (1990) Relativized Minimality Condition (RMC). In particular, it will be argued that there exist two separate restrictions each of which yields part of the minimality phenomenon, dependent on whether a dependency is internally homogeneous or not in the sense of Li 1990.

The chapter<sup>19</sup> consists of three sections. Section 1 introduces Li, Shields and Lin's (2012) discovery of a new minimality pattern among English adverbs and the additional factor they proposed to Rizzi's RMC. The English data is shown to be paralleled only partially in Chinese. The contrast in these two languages is investigated in Section 2, resulting in a theory of minimality that differs from the current ones in two ways: deriving the phenomenon from two separate locality

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<sup>19</sup> The central theme of this chapter is inspired by Li's (2015) unpublished paper on bipartite minimality. Some preliminary ideas and Chinese examples are reported in Li and Chen 2016.

mechanisms and implementing a three-way distinction of certain features in syntactic operations. A wider application of this theory constitutes the primary content of section 3, plus a brief comparison of the theory with the existing alternatives (RMC and MLC).

#### 4.1. The Potential Movement Condition: Strengths and weaknesses

Li, Shields and Lin 2012 (hereafter as LSL) reports a new minimality pattern among English adverbs: whether a structurally higher adverb *A* blocks the movement *M* of a lower adverb is sensitive to *A*'s potential ability to undergo *M* itself.

Given the Cinquean adverb hierarchy (see Chapters 2-3 for a brief summary and examples), LSL first notes a systematic division among adverb classes with respect to *wh*-movement: those from frequency (Fr) downward in the clausal structure, i.e. Fr, Ma and Re, generally permit the *wh*-form *how X* (and thus undergo *wh*-movement) while those from subject-oriented (So) upward, of which LSL tested speech act (Sa), evidential (Evi), evaluative (Ev), epistemic (Ep) and subject-oriented (So), are unable to take the *wh*-form (see the adverb hierarchies in English and Chinese in (14) and (69) of Chapter 2). A few representatives of LSL's large set of data are given below, mostly quoted from their Appendix A:

156. Compatible with the *wh*-form:

- a. Re

How perfectly did Mary learn Chinese?/How deeply did Sam plant the seeds?

b. Ma

How skillfully/clumsily/cautiously did John mow his lawn?

c. Fr

How regularly/consistently/frequently did John send his children money?

157. Incompatible with the *wh*-form:

a. So

\*How wisely/stupidly did he buy some flowers?

b. Evi

\*How allegedly/evidently/apparently did she have the weapon in her bag?

c. Ev

\*How luckily/regrettably/surprisingly did John send his children money?

d. Ep

\*How probably/likely/presumably did John mow his lawn?

e. Sa

\*How frankly/honestly/truly is it going to be a nightmare?

LSL argues that this split is not a purely semantic matter since some of the anti-*wh* adverbs are clearly gradable, i.e., can be modified by *very* (p. 225). Li 2016 further points out that most adjectival roots of these adverbs have a legitimate *wh*-form:

158.a. John very luckily/regrettably/surprisingly sent his children money.

b. John very probably/likely mowed his lawn.

159. How probable/likely/regrettable/surprising was it for John to send his children money?

A syntax-based explanation of the contrast in (156-157) is explored in Li 2016 that links the phenomenon with two other exceptions to the regular pattern of *wh*-movement in English. In this dissertation, however, it is the fact itself that constitutes the basis for a Chinese-English comparison.

#### 4.1.1. LSL's Potential Movement Condition (PMC)

The definition is given in (160) and the illustrations, in (161) and (162), all from LSL:

160. The PMC (p. 222)

Where *x* ranges over types of movement (*wh*, focus, ...) and [*X*] over the features that signal a constituent's ability to undergo *x*-movement, then *x*-

movement of an adverb is blocked by a c-commanding [+X] adverb but not by a c-commanding [-X] adverb.

161.a. *wh*-Ma across Fr (LSL, (13a))

How skillfully did John (\*frequently) mow his lawn?

b. *wh*-Re across Fr (ibid, (113a))

How thickly did John (\*frequently) spray the paint?

c. *wh*-Re across Ma (ibid, (114a))

How strongly did John (\*attentively) brew the coffee?

162.a. *wh*-Fr across Evi (ibid, (100a))

How frequently did John (allegedly/evidently) send his children money?

b. *wh*-Ma across So (ibid, (104a))

How carefully has Sonia (cleverly/wisely) been investigating the issue?

c. *wh*-Re across Ev (ibid, (107b))

How perfectly did Silas (luckily/regrettably) learn Chinese?

d. *wh*-Re across Ep (ibid, (109a))

How thickly would you (probably) spray the paint?

The Fr, Ma and Re classes in (161) are all capable of *wh*-movement, and the hierarchy among them is Fr>Ma>Re, where “>” indicates linear precedence and asymmetric c-command (Kayne 1994). Consistently, *wh*-moving a lower adverb over a higher one results in unacceptability. (161) gives only a subset of all the combinations between *wh*-movable and non-movable adverbs, but is sufficient to

illustrate the PMC: a *wh*-adverb can move across any of those adverbs that have no *wh*-form in the first place.

Using  $[\pm W]$  as the feature for *wh*-movability to distinguish these two types of adverbs, LSL points out that neither Rizzi's Relativized Minimality Condition (RMC) nor Chomsky's Minimal Link Condition (MLC) can account for the contrast in (161-162). The RMC is schematically expressed as follows:

163.\*X ... Y ... Z

where the movement from Z to X is prohibited if Y is of the same syntactic type as X.

Take (161a) and (162b) for example. Each one of them is meant to move a *wh*-adverb of the Ma class across Y, namely a higher adverb *frequently* in (161a) and *cleverly* in (162b). The destination of *wh*-movement (= X in (163)) is the Spec of CP, a non-argument position. The interfering adverbs also occupy non-argument adjunct positions. It follows from (163) that *frequently* and *cleverly* ought to equally prevent the intended *wh*-movement, contra the fact that only *frequently* does. Furthermore, a later attempt to revise the original RMC in Rizzi 2001, by way of additional features, does not solve the problem either. For instance, his [quantificational] feature might appear to help derive  $[\pm W]$  since *wh*-expressions act like quantifiers in terms of scope. If so, then *frequently* with  $[+W]$  would be labeled as [quantificational] in Rizzi's enriched RMC, and Y with [quantificational]

would prohibit the movement of a *wh*-quantifier from Z to X in (163). Along this line of reasoning, *cleverly* is not [quantificational] and thus has no blocking effect. But LSL shows the factor of quantification to be irrelevant. *Always and usually* are known to be adverbs with quantificational force, but they behave differently from *frequently* and do NOT incur minimality (LSL, ex. (26a)):

164. How vigorously did John usually/always promote the theory?

Whereas the RMC indiscriminately rules out all the sentences in (161-162), the MLC defined in (165) predicts them to be all acceptable.

165. K ... X

where K attracts the closest X with the relevant feature.

For *wh*-movement, K is C with [+*wh*] and attracts the closest *wh*-constituent. As such, neither the Ma adverb *frequently* in (161a) nor the So adverb *cleverly* in (162b) is [+*wh*] and thus are even visible to the [+*wh*] C. In these examples, C should simply overlook the interfering adverbs and legitimately attract the actual *wh*-adverb (*how skillfully* in (161a) and *how carefully* in (162b)).

Despite the failure of both the RMC and the MLC to correctly distinguish (161) and (162), however, it is noted by LSL that their PMC may be added to the former condition but is inherently incompatible with the MLC. The essence of the PMC is

to have identified an extra factor – the potential for undergoing a specific movement – on the part of an interfering blocker. What this means is that there must be three elements in the calculation of minimality: the two ends of a movement chain plus the blocker with certain qualities. And these three elements are precisely what exist in Rizzi's RMC in (163). In other words, directly add LSL's [+X] to the definition of Y in (163) and the contrast in (161-162) will follow: Since *frequently* is [+W] and sits higher than the original position of *how skillfully* in (161a) but lower than the Spec of CP, it qualifies for being Y in (163) and thus is expected to induce minimality. In comparison, *cleverly* interpreted as a So adverb (see Chapters 2 and 3 for class ambiguities, especially between the So and Ma classes) has no *wh*-form (see (157a)). So there is no Y in (162b) to interrupt the *wh*-movement of *how carefully*.

On the other hand, the MLC yields the minimality effect by making a constituent K in the destination of movement to attract the closest constituent X that is ATTRACTABLE, namely X must be an actual *wh*-expression in order for C to see in the first place. Anything without carrying [+wh] becomes transparent for the operation. Since *frequently* in (161a) is only potentially able to take a *wh*-form but not a *wh*-expression in reality, it is necessarily – and wrongly – skipped by the MLC. At the bottom of it, the PMC's compatibility with the RMC, as well as the lack of it with the MLC, rests on whether a minimality definition accommodates a blocker that does not in itself undergo movement, precisely because LSL's discovery concerns potential movability and not a constituent that actually needs

to move. As will be shown later in this chapter, this “deeper” observation from LSL regarding the existing definitions of minimality will be at the core of formulating a theory of the phenomenon that is factually adequate.

#### 4.1.2. Is Chinese a problem for LSL?

In the previous chapters, it has been demonstrated that other than a couple of adverbial classes whose structural locations seem to differ from Cinque’s (1999) system, Chinese is overall in support of the widely recognized adverbial hierarchy. As expected, preverbal adverbials in Chinese, in the *X-de* format as specified in Chapter 2, also divide into what can take a *wh*-form and what cannot. Below is a sample of this contrast. Keep in mind that Chinese is a *wh*-in-situ language:

#### 166.[+W] classes

##### a. Re

ta	duome	zhengqi-de	baifang-le	hualan?
3s	how.much	tidily	arrange-ASP	flower.basket

‘How tidily did she arrange the flower baskets?’

##### b. Ma

ta	duome	renzhen-de	wancheng-le	nage	renwu?
3s	how.much	carefully	finish-ASP	that	task

‘How carefully did she finish that task?’

##### c. Fr

ta duome pinfan-de kanwang tuiwujunren?

3s how.much frequently caringly.visit veteran

'How frequently does she visit veterans?'

d. more examples of these classes

Re: duome shen-de 'how deeply', duome nong-de 'how strongly', ...

Ma: duome tuotuolala-de 'how dilatorily',

duome qiaomiao-de 'how cleverly', ...

Fr: duome jingchangxing-de 'how regularly',

duome chizhiyiheng-de 'how consistently', ...

167.[-W] classes

a. So

\*ta duome congming-de wancheng-le nage renwu?

3show.much smartly finish-ASP that task

Intended reading: 'How smart was he to have finished that task?'

b. Ev

\*ta duome buxing-de cuoguo-le jihui?

3show.much unfortunately miss-ASP opportunity

\*'How unfortunately did he miss the opportunity?'

c. Evi

\*ta duome xianran-de liaojie wenti-de nandu?

3show.much evidently understand problem-DE difficulty

\*'How evidently does he understand the difficulty of the problem?'

Just as in English, the split is between Fr-and-below and So-and-above (cf. (156) and (157) earlier). And like English, Chinese also exhibits class ambiguities that complicate the judgment of certain examples. To interpret (167a), for instance, one must keep in mind that *duome congming-de* ‘how smartly’ is not about the manner in which the task was accomplished but for questioning the degree of the subject’s own wisdom in finishing the task. Furthermore, (167a) also has an acceptable “exclamatory” reading which is not a question at all.<sup>20</sup> Once these “noises” are excluded, (167a) has no proper interpretation. The same caveat applies to other [-*W*] cases, which is why we have not provided more isolated examples as we do for [+*W*] in (166d).

Also worth noting is that for certain structurally higher adverbial classes in Chinese, such as Ep and Sa, we cannot think of examples that conform to the X-*de* format. A typical Ep adverbial such as *dagai* ‘probably’, for instance, certainly rejects *duome* (cf. *\*duome dagai* ‘how probably’) but it rejects the suffixal *-de* as well (*\*dagai-de*). Also, speech-act expressions in Chinese characteristically adopt a VP or clausal structure (e.g., *shishiqiushi-de shuo* ‘truthful-DE say → to speak truthfully’). As a result, though one may still identify an X-*de* adverbial in the expression, the adverbial is actually not an Sa for the main clause but rather some

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<sup>20</sup> The exclamative *duome* ‘how’ is beyond the topic of this thesis. See Zannuttini & Portner (2003) for a discussion of the differences and similarities between wh-questions and exclamatives, and also a syntax and semantic analysis of exclamatives. I thank Grand Armstrong for bringing this to my attention.

kind of Ma adverbial embedded inside the Sa clause, an obviously irrelevant scenario for assessing the range of the [-W] adverbials in Chinese. These complications explain why (167) does not include the Ep and Sa classes.

Otherwise, Chinese seems to pattern well with English, an expected outcome in the framework of UG. But the similarities stop here. When two adverbial classes co-occur in a single clause to test their interactions, a higher adverbial ALWAYS renders a lower *duome*-adverbial difficult or impossible to interpret regardless of the higher one's own compatibility with *duome*.

168.a. Ma vs. Re

ta (\*renzhen-de/xunsu-de) duome zhengqi-de baifang-le

3s carefully/quickly how.much tidily arrange

hualan?

flower.basket

'How tidily did he (\*carefully/quickly) arrange the flower baskets?'

b. Fr vs. Re

ta (?pinfan-de/\*nande-de) duome shen-dewa-le bushao

3s frequently/rarely how.much deeply dig-ASP many

didong?

hole

'How deeply did she (?frequently/\*rarely) dig many holes?'

c. So vs. Re

ta (\*hen yuchun-de/congming-de) duome kuan-de xiu-le  
 3S HEN foolishly/smartly how.much widely build-ASP  
 daolu?

road

Intended reading: 'How widely was it foolish/smart of him to have  
 built a road?'

d. Ev vs. Re

ta (\*hen buxing-de/chuhuyiliao-de) duome shen-de wa-le  
 3S HEN unfortunately/surprisingly how.much deeply dig-ASP  
 didong?

hole

'How deeply did he unfortunately/surprisingly dig the hole?'

e. Evi vs. Re

ta (\*hen xianran-de) duome zhengqi-de baifang-le hualan?  
 3S HEN evidently how.much tidily arrange flower.basket  
 'How tidily did she (evidently) arrange the flower baskets?'

169.a. Fr vs. Ma

ta (?hen pinfan-de/\*nande-de) duome zixi-de jiancha  
 3S HEN frequently/rarely how.much carefully check  
 menchuang  
 door.window

'How carefully does he (?frequently/\*rarely) check the door and windows?'

## b. So vs. Ma

ta (\*hen yuchun-de/congming-de) duome xunsu-de huida  
 3S HEN foolishly/smartly how.much quickly answer  
 wenti?  
 question

‘How quickly does she foolishly/smartly answer questions?’

## c. Ev vs. Ma

ta (\*hen buxing-de/chuhuyiliao-de) duome cuxin-de chuli-le  
 3S HEN unfortunately/surprisingly how.much carelessly handle-ASP  
 nage shigu?  
 that accident

‘How carelessly did he (unfortunately/surprisingly) deal with that  
 accident?’

## d. Evi vs. Ma

ta (\*hen xianran-de) duome xunsu-de chuli-le nage shigu?  
 3S HEN evidently how.much quickly handle-ASP that accident

‘How quickly did she evidently deal with that accident?’

## 170.a. So vs. Fr

ta (\*hen congming-de/yuchun-de) duome pinfan-de cangan  
 3S HEN smartly/foolishly how.much frequently visit  
 mudi?  
 cemetery

'How frequently does he (smartly/foolishly) visit the cemetery?'

b. Ev vs. Fr

ta (\*hen xingyun-de/chuhuyiliao-de) duome pinfan-de  
 3S HEN luckily/surprisingly how.much frequently  
 kanwang tuiwujunren?  
 caringly.visit veteran

'How frequently does she (luckily/surprisingly) visit veterans?'

c. Evi vs. Fr

ta (\*hen xianran-de) duome pinfan-de chuli jiaotong  
 3S HEN evidently how.much frequently handle traffic  
 shigu?  
 accident

'How frequently does he evidently handle traffic accidents?'

In each set of examples, an in-situ *wh*-adverbial is optionally preceded by every structurally higher class of adverbials. These sentences might sound good upon being initially heard, but become difficult to process when one tries to understand what they mean. However, a different scenario is observed when a higher adverbial is in *wh*-form and followed by a lower class of adverbial: if the higher adverbial has *wh*-form independently (Fr, Ma), it always allows the co-occurrence of a lower adverbial. Compare (168a-b) with (171a-b), (169a) with (171c) below.

171. a. ta duome renzhen-de/xunsu-de zhengqi-de baifang-le

3s how.much carefully/quickly tidily arrange

hualan?

flower.basket

'How carefully/quickly did he arrange the flower baskets tidily?'

b. ta duome pinfan-de/nande-de (shen)shen-de wa-le bushao

3s how.much frequently/rarely deeply dig-ASP many

didong?

hole

'How frequently/rarely deeply did she dig many holes deeply?'

c. ta duome pinfan-de/nande-de zixi-de jiancha

3s how.much frequently/rarely carefully check

menchuang?

door.window

'How frequently/rarely does he carefully check the door and windows?'

Worth pointing out is that the Fr adverbial *pinfan-de* 'frequently' feels noticeably better than others, including its negative counterpart *nande-de* 'rarely'. We have no insight to offer on why this happens, except observing that according to LSL,

the few exceptions to the PMC are *often*, *always* and *usually*, all involving a general sense of frequency (also see the discussion above between (163) and (164)).<sup>21</sup>

Since the data seem highly consistent, one must conclude that LSL's [ $\pm W$ ] has no effect on structurally lower *wh*-adverbials in Chinese. This is especially odd given the popular assumption since Huang 1982 that in-situ *wh*-expressions move covertly at LF to yield scope interpretations. By this logic plus the PMC, the indiscriminate blockage of *wh*-adverbials should not happen.

#### 4.2. Looking into the factual motivations of the minimality conditions

The data in Chinese indicates that whatever mechanism generates the phenomenon of minimality is not as straightforward as envisioned by the current theory of syntax. Partly following the lead by LSL as well as Li 2015 and partly prompted by the behaviors of Chinese adverbials examined in Chapter 3 and the previous section of this chapter, we will raise a series of questions in this section with a view to sorting out both the facts and the ideas in the literature on minimality. In the process, we hope to be better prepared for formulating a theory of minimality that accurately captures all the relevant facts in English and Chinese.

##### 4.2.1. Question 1: How to remove the redundancy between [*wh*] and [*W*]?

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<sup>21</sup> It is interesting, then, that Rizzi's (2001) [quantificational] feature appears to have an opposite effect: the few English adverbs that are most likely quantificational actually are the most lenient in terms of blocking the "quantificational" *wh*-movement.

LSL (p. 226) asks “whether [*wh*] and [*W*] can be reduced to one feature”, and briefly contemplates that an adverb may have “one of the three ‘[*wh*] states’: [+*wh*], [-*wh*] and [∅], with the last characterizing those adverb classes that cannot under *wh*-movement.” This line of reasoning will be developed and become an integral part of the minimality theory in this dissertation.

Let us begin with, LSL’s concern with having both [*wh*] and [*W*] in the theory of syntax is justified. After all, a [+*wh*] constituent is necessarily [+*W*]. For instance, the fact that *how frequently* is well-formed means that *frequently* must have the potential to take a *wh*-form and move accordingly. When one value of a feature entails a value of another feature, it is legitimate to worry about redundancy. With respect to English *wh*-questions, [*wh*] is indispensable for basic operations and the PMC has robust factual backing, effectively leaving us with the only reductive option of adopting LSL’s suggestion: To recast the binary-valued [ $\pm wh$ ] feature through a 3-way implementation so as to rid the theory of the potentiality feature [*W*] while still keeping the essence of the PMC. (172) spells out this idea:

- 172.a. [+*wh*] = in actual *wh*-form (e.g., *how frequently*);
- b. [-*wh*] = not in *wh*-form but capable of being so (e.g., *frequently*);
- c. no [*wh*] = inherently incompatible with *wh* (e.g., *evidently*).

Because (172) departs from the field-wide assumption about the binary implementation of the [*wh*] feature, a couple of clarifications would be helpful.

First, for a grammatically significant feature to be not carried by certain types of constituents and/or lexical items is not a new concept. To my knowledge, no work in syntax has assumed the  $\phi$ -features to be present in all constituents. In this respect, whether  $[\phi]$  is present or not is drawn with a categorial line of division – present for nominals and absent otherwise. There is no *a priori* reason why such a division must not be based on other standards or on finer classifications than categories. See Li 2016 for an attempt to explain why the adverb classes in the upper region of the clausal structure reject *wh*-movement. In this dissertation, I will simply accept their inability to take a *wh*-form as a fact and express this trait with (172c).

Second, talking about a 3-way division for  $[wh]$  might cause confusion for another reason:  $[\phi]$  is (or can be) multi-valued as well.  $[\text{person}]$ , for instance, has three values. It is important to understand the difference between a 3-valued  $[\text{person}]$  feature and our three-way representation of  $[wh]$ . For constituents that have  $[\text{person}]$ , the value of this feature can be 1, 2 or 3. And for constituents that have  $[wh]$ , the value of the feature can be + or -. Either feature may be entirely absent in a constituent. For instance, a verb or preposition does not carry  $[\text{person}]$  as part of its lexical content. Similarly, verbs, prepositions and certain classes of adverbs have no  $[wh]$  in their lexical content. Or to put it differently, if  $[wh]$  divides constituents into three groups,  $[+wh]$ ,  $[-wh]$  and absent, then  $[\text{person}]$  divides constituents into FOUR groups,  $[1^{\text{st}}]$ ,  $[2^{\text{nd}}]$ ,  $[3^{\text{rd}}]$  and absent. Equally worth keeping in mind is that how a feature is valued is a purely empirical decision no matter

how intuitive it initially appears. Prior to LSL, splitting constituents into those with an actual *wh*-form (= [+*wh*]) and the rest (= [-*wh*]) seemed sufficient. Once the factor of potential movability is identified, however, the theory of UG must have an explicit way to accommodate this fact. As noted above, one must choose between adding a new feature [ $\pm W$ ] and separating [-*wh*] from no [*wh*]<sup>22</sup>. Taking the latter option not only removes the redundancy already noticed by LSL, but also makes use of a fact about (certain) other features as well, namely not every feature is present in every lexical item or constituent.

#### 4.2.2. Question 2: Can the (PMC-enriched) RMC replace the MLC, or vice versa?

Since Chomsky's (1986) initial exploration of "rigid" minimality in the barriers-context, research in this direction has generally shifted toward investigating and formulating the precise locality constraint on movement-related dependencies, with Rizzi 2001 trying to utilize extra features on the part of the blocker constituent and Chomsky 1995 proposing the attraction of the closest constituent. This latter approach is further built into the probe-goal model and extended to operations other than movement (Chomsky 2000, 2001, Pesetsky and Torrego

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<sup>22</sup> Two main feature systems are claimed in the literature (see Adger 2003 and references there): the binary feature system and the privative system, with the former including features with binary values while the latter including features with presence/absence of a value. The 3-way implementation of [*wh*] appears like merging both systems, though the minimality computation only needs to refer to the plus-minus values. The key point is that the *wh*-feature must be considered together with [-*wh*] and [+*wh*], by the same principle. I am grateful to Professor Grant Armstrong for bringing this to my attention.

2007, Haegeman and Lohndal 2010, Zeijlstra 2010, Wurmbrand 2011 among others, also see Chapter 3 of this work on the Chinese post-verbal *V-de X*). The overall trend, then, is to follow Chomsky's route of identifying the initiator I of a given operation and letting I act on the closest actable candidate. On the other hand, there is also LSL's PMC which, as they point out, is inherently incompatible with the MLC approach. It is the goal of this chapter to sort out the empirical foundation of each minimality-related definition (i.e., RMC, MLC and PMC) and suggest a model of minimality that include both the initial facts and the English-Chinese disparity in section 4.1 above.

#### 4.2.2.1. What the RMC and PMC can account for

One of the key facts motivating Rizzi's (1990) original RMC, summarized in (163) above, is pseudo-opacity:

173.a. Combien de livres a-t-il (beaucoup) consultés t?

how.many of book has- $\emptyset$ -he much consulted

b. Combien a-t-il (\*beaucoup) consulte t de livres?

how.many has- $\emptyset$ -he much consulted of books

Such data determines that the RMC must have two properties: applying to adjunct movement only (in order to distinguish (173a-b)) and identifying the blocker in addition to the movement link (for *beaucoup* does not move in itself). As noted by

LSL, the second property is precisely why potential movability can be incorporated into the RMC. (174) lists the types of movement that the RMC can account for either by itself or after incorporating the PMC:

174.a. A'-movement of adjuncts

- i. *wh*-movement of adjuncts blocked by some adverbs (e.g. (173b))
  - ii. *wh*-movement of adjuncts not blocked by some adverbs
  - iii. *wh*-island for *wh*-adjuncts
- b. A-movement (superraising)
  - c. head-movement (Travis' (1984) Head Movement Constraint)

Of the A'-movement category, the RMC by itself can account for (174a-i) but wrongly rules out (174a-ii) with it. In other words, it is correct about the first type without understanding why. Once merged with the PMC, essentially by adding the movability factor into the blocker qualification (= Y in (163)), the two types of adjunct movement can be accurately separated and explained. For instance, *beaucoup* 'many/much' in (173) blocks the non-argument *wh*-movement because it is [-*wh*] with the [+*wh*] counterpart *combine* 'how many/much'.

The RMC, even further constrained by the PMC, also has inherent limitations.

(A) The fact that the *wh*-island also blocks the A'-movement of arguments must be attributed to some entirely different principle.

- 175.a. \*How<sub>i</sub> did Chris ask [<sub>CP</sub> what<sub>k</sub> Sam repaired t<sub>k</sub> t<sub>i</sub> ]?  
 b. ??/\*What<sub>i</sub> did Chris ask [<sub>CP</sub> how<sub>k</sub> Sam repaired t<sub>i</sub> t<sub>k</sub> ]?

(175a) follows from the RMC because *what* is in an A'-position (= Spec of CP) and *how* is an adjunct moving to an A'-position (= another Spec of CP). But *what* in (175b) is an argument and given (173a), it should not be sensitive to the interfering *how*. In the government-binding model that Rizzi adopted, (175b) must be banned by the Subjacency Condition that blocks movement with bounding nodes or barriers. The same island phenomenon having to result from totally different UG mechanisms generally receives meta-theoretical concerns. In addition, more recent development in syntax no longer uses bounding nodes (see Chomsky 1981) or the particular version of barriers in Chomsky 1986, so that the embedded CP in (175), as the complement of the matrix verb *ask*, is not treated to be a barrier. If we simply adopt the RMC as the sole minimality mechanism in UG, it is not even clear why (175b) is not a perfect sentence.

(B) The example below represents the typical superiority phenomenon:

- 176.a. Who<sub>i</sub> t<sub>i</sub> studies what?  
 b. \*What<sub>i</sub> does who study t<sub>i</sub>?

While the similarity between the *wh*-island and superiority was not fully appreciated at the time, Chomsky 1995 brought it to attention that both

phenomena amount to moving a *wh*-phrase across another. In (175b) and (176b) alike, the sentence-initial *what* moves across a *wh*-word, *how* in the former and *who* in the latter. Because (176b) is A'-movement of an argument, it is by definition outside the domain of the RMC.

(C) Rizzi noticed from the onset that explaining superraising with the RMC constitutes a superficial self-contradiction:

177.a. It seems [ that the alien plant<sub>i</sub> is expected [ t<sub>i</sub> to whither ]].

b. \*The alien plant<sub>i</sub> seems that [ it is expected [ t<sub>i</sub> to whither ]].

In both cases, *the alien plant* moves from an embedded subject position, marked with *t<sub>i</sub>*, to a higher subject position, the typical scenario of A-movement. On one hand, the RMC can successfully rule (177b) out because the movement crosses an intermediate A-position, occupied by the expletive pronoun *it*. But on the other hand, A-movement necessarily involves arguments and is not supposed to be restricted by minimality. Rizzi suggested that this is because the entire A-chain counts as one argument and only a “complete” argument is immune to the RMC. The logic is acceptable, but neither self-evident nor derivable from any part of UG at the time of Rizzi’s writing.

Later in this chapter, we will argue that these limitations actually reflect an intrinsic factual split with respect to the minimality type of locality and cannot be avoided. What needs to be done, at least with our current understanding of the

human language faculty, is to integrate them into the theory in an explicit and principled manner.

#### 4.2.2.2. What the MLC can account for

As a replacement of the RMC, Chomsky's MLC (see (165) in 4.1 above) is designed with two advantages in mind: to make movement a fully myopic operation by getting rid of the reference to the blocker, and to be responsible for all instances of the *wh*-island as well as superiority. A simpler theory with a wider coverage of facts is obviously favored by Occam's Razor. The MLC delivers the following outcomes:

#### 178.a. A'-movement

- i. *wh*-island for both adjuncts and arguments
  - ii. superiority
  - iii. *wh*-movement not blocked by interfering non-*wh* adjuncts
- b. A-movement
  - c. head-movement

Taking the superiority case in (176) for example, the [+*wh*] attracts the closest [+*wh*] constituent, which is necessarily the subject *who* and never the object *what*. Hence (176b) has no chance to be formed. Similarly, T in the matrix clause of (177b) sees only the closest DP, *it* in the middle embedded clause, for the relevant

feature (Case, EPP). *The alien plant* inside the most embedded clause is too far to be visible for the matrix T, making (177b) an impossible derivation. In addition, one of Rizzi's original concerns – why A-movement is subject to minimality – disappears now because no reference is made in the MLC to the argument-adjunct distinction (or any distinction provided that there is a feature match).

Where the MLC obviously does not work is the entire type of *wh*-movement that is blocked by something carrying no [+*wh*] feature, from Pseudo-opacity in (173) to the typical LSL examples as in (162). Examples of this kind were known way before the MLC came up (Jackendoff 1972, Schlyter 1974, Koster 1978 are some earlier works; also see the references in LSL), though LSL was the first to compare them with those covered by (178a-iii) in a systematic manner and to pinpoint potential movability as the deciding factor.

Overall, the MLC performs better than the RMC. It is also worth noting that, when looked at in isolation, not being able to account for (162) and (173) is not automatically a problem for the MLC. After all, it could be the case that these “exceptions” are due to extra factors at work which are not yet well-understood at the moment. But once potential movability is identified as the culprit, the extra factor is now known and can no longer be simply put aside. That is, both the unacceptable examples in (162) and (173) and the acceptable ones summarized in (178a-iii), shown in (163), become predictable through minimality. Since the MLC is formulated to capture UG's locality requirement on movement, its evaluation should be conducted with the PMC facts in mind.

As LSL points out (recounted in 4.1.1), it is in the nature of the MLC to exclude the PMC-style data because the MLC makes reference only to the head and tail of a movement and not to the blocker that does not move in itself. This non-movement blocker is precisely what is needed to host the information on potential movability. What this means is that part of the RMC-PMC's facts is inherently outside the domain of the MLC even though it is still movement restricted by locality. Since A'-movement of arguments is excluded by the RMC by definition, neither of the two approaches to minimality is able to totally replace the other as they are currently conceptualized. In fact, one can even prove that the situation is unresolvable, which leads us to the next subsection.

#### 4.2.2.3. Homogeneous dependencies

The single defining character of the MLC is for the instigator of a movement to attract the closest movable constituent (via features). But there does not seem to be a clear understanding, either in the literature or even by Rizzi himself, what trait unifies all the facts covered by the RMC. What is in common, for instance, between the insistence in applying only to adjunct *wh*-movement and the somewhat obscure inclusion of A-movement but not *wh*-movement of arguments? I contend that figuring out the answer to this question is not only at the heart of understanding the general phenomenon of minimality and thereby formulating a theory thereof, but also critical for understanding the contrast between English and Chinese in how potential movability works to yield the data in 4.1.

LSL suggests that the underlying factor for all the RMC facts is chain-homogeneity, a concept that, to my knowledge, was first explicitly articulated in Li 1990. Originally aiming to constrain Baker's (1988) head-movement in the derivation of verb-incorporation (VI), Li notices that Baker's theory over-generates by predicting that any clause-taking verb would be able to yield VI. In reality, however, only a small set of verbs (causative verbs, modals and ASPECTual verbs) are known to be associated with this phenomenon. What is shared by these verbs is that they all have some analytic forms in one language or another that clearly take a bare VP complement (e.g., Chris made the students (\*to) work on a new project.). Li reasons that this is due to head-movement unable to move from a lexical position (e.g., the embedded V position) to another lexical position (the matrix V position) via an intermediate functional position (embedded T and C), the scenario which he calls a "sandwiched" chain: [lexical, functional, lexical]. This was further paralleled with Chomsky's (1981) explanation of super-raising in which A-movement must not be allowed to go through an intermediate A'-position (such as Spec of some embedded CP) in order to move long-distance. Observing that both an argument and lexical head are typically  $\theta$ -related, either as a  $\theta$ -role receiver or a  $\theta$ -role assigner, Li postulates a feature [+ $\theta$ ] for being  $\theta$ -related, and defines a homogeneous chain of which all the members have the same value for the feature.

What unites RMC-PMC's restriction on A-movement and wh-movement of adjuncts, then, is Li's chain homogeneity: A-movement creates a chain containing



adverb *frequently* have the potential for *wh*-movement and thus are [-*wh*]. But this is irrelevant for the [*what, t*] chain because the latter is non-homogeneous. Such a chain is blocked only by an actual *wh*-expression, *who* in (180b).

#### 4.2.3. Question 3: What about Chinese?

In appearance, Chinese is more compliant with Rizzi's RMC than English because of its indiscriminating minimality effect seen in 4.1.2: an adjunct undergoing *wh*-movement is always blocked by an interfering adjunct. I suggest that in a sense to be made clear shortly, this is indeed the case. The immediate concern, though, is why the two languages differ in this way. An alternative way to raise the question is what else separates these two languages so that the minimality difference between Chinese and English adverbs/adverbials is no longer an isolated fact.

The first step toward answering this question is to recall chain-homogeneity. Viewing the RMC-MLC distinction through this homogeneity lens actually allows us to see the nature of these conditions in a deeper sense. Rizzi's original insight lies in emphasizing the similarities of the structural properties of the blocker position and the landing site of movement. Given chain-homogeneity, the landing site and original site of a movement are of the same structural type as well. It follows that the RMC is at work when all the three elements involved, the two ends of a chain and the blocker, have the same structural qualities. This suggests that the interruption of the movement is ultimately due to a constituent that is structurally non-distinguishable from the actual members of a chain but is

nonetheless not a member in itself. Provided that this “fake member” carries the same feature (e.g, [wh] of any value) that is related to the movement, it is viewed by UG to resemble the actual members of the chain enough to mess up the computation. In comparison, a non-homogeneous chain has its two ends belong to different types of syntactic entities. There is no way for an interfering constituent to resemble both of them at the same time. Apparently, a stronger presence is required to actually interrupt the chain, namely the actual feature value that participates in the movement (e.g., [+wh] for wh-movement, in *who* of (180b)).

With this in mind, I propose that what correlates with the Chinese-English disparity in adverbial behaviors, call it  $D_{adv}$ , is a well-documented fact: English has overt *wh*-movement while Chinese is a *wh*-in-situ language. In Chapter 3, we briefly reviewed the literature on Chinese *wh*-in-situ and argued that with the exception of *weishenme* ‘why’, Chinese *wh*-adverbials can all occur inside a subject- or adjunct-island with the scope over the main clause (i.e., making the entire sentence a question). This fact was interpreted as no covert movement to such adverbials, which in turn forms the foundation for the probe-goal analysis of the specifier *V-de* construction. If *wh*-in-situ adverbials in Chinese indeed stay put throughout the derivation without any kind of movement, then there is a plausible connection between *wh*-in-situ and  $D_{adv}$ , described in (181):

- 181.a. English has *wh*-movement and [wh] is responsible for it; hence [wh] participates in identifying the blocker.

- b. Chinese has no *wh*-movement, with the operator-variable chain formed by directly generating an operator inside CP; since every part of the chain is computed *in-situ*, any in-situ interfering element that is structurally non-distinguishable from the members of the chain qualifies as the blocker.

In brief, the homogeneous *wh*-dependency  $D_H$  in English is constructed with movement, and *wh*-movability, signaled by [*wh*], is part of what makes a blocker non-distinguishable from the elements of  $D_H$  in the eyes of UG. But *wh*-movement is systematically missing in Chinese. A *wh*-dependency consists of in-situ components, making general structural non-distinctness the sole factor for minimality. In particular, a chain headed with a base-generated operator in CP and tailed by the *duome*-adverbial is interrupted by any adverbial in between, as shown in 4.1.2.

(181a) is straightforward from LSL. A few points in (181b) need elaboration. First, (181b) obviously extends the RMC to dependencies not formed with movement. Pending applications of this extension to other types of dependencies in a later section, the immediate implication is the need for generating, say, a *wh*-operator  $O$  in the spec of CP to bind the in-situ *duome*-adverbial so as for the chain thus formed to be  $A'$ -homogeneous:

182.[<sub>CP</sub>  $O_i$  C [<sub>TP</sub> ... *duome*-adverbial<sub>i</sub> ... ]]

This is exactly the proposal in Tsai 1994, which divides languages in accordance with where the *wh*-operator is generated, with English being word-internal (e.g., *wh-at*) and Chinese inside CP in syntax (also see Cheng 1991 for separating Chinese “*wh*-words” from the various operator functions, and see Cheng 2003 for a comprehensive summary of the literature on *wh*-in-situ). A compatible analysis is found in Chomsky 1995 where C carries [+*wh*] but not the quantificational force in itself.

Indirect support for *Op* inside CP comes from the use of the sentence-final question particles *-ma* and *-ne*:

183.a. tamen zhong-guo shu ma?

3PL plant-ASP tree Q

‘Did they plant trees (as a past experience)?’

b. tamen zhong-guo shenme shu (ne)?

3PL plant-ASP what tree Q

‘What kinds of trees did they plant (as a past experience)?’

Yes-no questions in Chinese are typically ended with *-ma* (or with a rising intonation on the last word). But a *wh*-question cannot use *-ma*. Instead, *-ne* alternates with nothing (without intonational change). This pattern can be analyzed as follows: the C or clause-typing head *Ct* (see Cheng 1991 and Li 2005)

are head-final in Chinese (so C in (182) above should be placed at the end of the structure); *-ma* is the directly manifestation of [+*wh*] in this C/Ct head. For in-situ *wh*-questions, an operator is present in the Spec of CP which turns C into *-ne* or  $\emptyset$  via Spec-head agreement (or feature-checking/probing in the Minimalist Program), comparable to the well-studied *que-qui* alternation in French or the *that-t* phenomenon (Kayne 1976, Chomsky 1981; Rizzi 1990, Taraldsen 2001, Sportiche 2008 among others) in which some movement-induced constituent in the Spec of CP affects the form of C.

Another question regarding (181b) is the only island-sensitive *weishenme* ‘why’ in Chinese. Though assuming *weishenme* to move at LF is a simple and convenient solution, one wonders nonetheless why this unique exception exists among all *wh*-expressions in Chinese. Reinhart 1998 proposes to use choice functions that map a non-empty set to an individual member. Proving choice functions to be able to yield wide scope readings and taking *wh*-adverbials such as *why* to define no non-empty sets, Reinhart claims to derive the argument-adjunct asymmetry reported on *wh*-in-situ contexts without appealing to overt movement.

Reinhart’s non-movement solution is questioned on the basis of Chinese. Both Hu 2002 (p. 35) and Cheng 2003 (p. 132) point out, for instance, that it is not obvious how her theory applies to the *wh*-adverbials in Chinese that are well-formed in an island. The following example is quoted by Hu from Xu 1990 (the bracketing is mine):

184.[<sub>DP</sub> [<sub>CP</sub> zenme shao t]] de dan ] zui haochi?  
 how cook DE egg most delicious  
 'Eggs that are cooked HOW are most delicious?'

Our examples of *duome*-adverbials in Chapter 3 show the same pattern ((See page 103-104, example (126)). What is interesting to note, however, is that translating *zenme* as 'how' might be misleading.<sup>23</sup> Strictly speaking, this word is composed of two bound morphemes, *zen* and *me*, the first of which is more or less interpreted as *how* while the second is semantically obscure and morphologically suffixes to a determiner or quantificational morpheme:

185.zhe-me 'this-ME → this (way)'  
 na-me 'that-ME → that (way)'  
 zen-me 'how-ME → how'  
 shen-me 'what-ME → what'  
 duo-me 'many-ME → how'

Keeping in mind that both the translation of the first morpheme and that of the entire *X-me* word are only approximate, we want to bring it to the reader's attention that the simplest answer to the so-called *how*-interpretation of *zen-me*

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<sup>23</sup> My thanks to Professor Yafei Li for a productive discussion of Reinhart's theory applied to Chinese.

(see (184)) is actually either *zhe-me* ‘this way’ or *na-me* ‘that way’. What this means, it seems, is that *zen-me* as a “manner *wh*-adverbial’ is after all able to define a non-empty set of manners or whatever “oblique factor” of an event that it describes. This immediately opens the door to Reinhart’s choice function analysis as long as there is no corresponding non-empty set for *weisheme* ‘why’.

This line of reasoning also lets us look at *duo-me* in a different light. For one thing, it is possible, though not always preferred, to answer *duo-me X* with *zhe-me X*:

- 186.a. cunmin-men duo-me shen-de wa-le yikou jing?  
 villager-PL many-ME deeply dig-ASP a well  
 ‘How deeply did the villagers dig a well?’
- b. cunmin-men feichang shen-de wa-le yikou jing.  
 villager-PL extremely deeply dig-ASP a well  
 ‘The villagers dug a well extremely deeply.’
- c. (?)cunmin-men zhe-me shen-de wa-le yikou jing.  
 villager-PL this-ME deeply dig-ASP a well  
 ‘The villagers dug a well this deeply.’

(186b) is clearly the most natural answer to (186a). But in the right context, (186c) is fine too, especially when used deictically with a hand gesture or in a contrastive context (Q: *duo-me shen?* ‘how-ME deep?’ A: *zhe-me shen, bushi na-me shen.* ‘this-

ME deep, not that-ME deep.'). Furthermore, the fact that the first morpheme of *duo-me* is independently the one in Chinese meaning 'many/much' also gives it the constant flavor of demanding a value from a degree-measurement. Again, the semantics is compatible with multiple choices involved and thus with the type of answer in (186c).

All in all, what Chinese appears to exhibit as problems for Reinhart's choice function theory may not be problematic at all. Instead, the word-internal structure of Chinese *wh*-expressions, with the exception of *weishenme* 'why', can be argued to allow each of them with a proper non-empty set in its semantics, regardless of the argument-adjunct distinction. As such, a non-movement analysis of Chinese *wh*-questions is not only empirically motivated (due to lack of island effects from all arguments and most adjuncts) but also theoretically feasible and coherent, an obviously welcome result both for the probe-goal account of the *V-de X* construction and for the minimality analysis of the Chinese-English disparity in (181b).

#### 4.3. Defining minimalities

The considerations so far collectively paint the following picture of minimality:

187.a. The MLC in (165) yields minimality in the process of derivation; this is accomplished by attracting the closest movable constituent.

b. The RMC should be merged with the PMC to form a constraint on

homogeneous dependencies; since such a dependency is not always formed with movement, this constraint must be representational.

We provide the definition for the RMC+PMC first and then elaborate on some technical details of (187).

#### 4.3.1. The definition and the discussion

The following definition summarizes the content of section 4.2:

##### 188. The Minimality Condition (MC)

Let [ X ... Y ] be a homogeneous dependency D. D is well formed iff there is no Z such that

- a. Z is of the same structural type as X and Y;
- b. X c-commands Z and Z c-commands Y; and
- c. Z carries [f] if D results from movement triggered by [+f].

To illustrate, consider the chain, a form of syntactic dependency, resulting from moving *how quickly* of the Ma class across a higher adverb Z:

189. [CP how quickly ... Z ... t]      -- cf. (161-162)

The chain is [ *how quickly ... t* ], a homogeneous A'-dependency according to 4.2.2.3. Since Z is an adverb, it is also in an A'-position and thus satisfies (188a). The c-command requirement in (188b) is also met (see Kayne 1994). Since the chain is the result of *wh*-movement, [+*wh*] is the triggering feature under (188c). The intermediate adverb Z will “ruin” the chain if it carries [*wh*] regardless of the feature's value. If Z = *frequently*, it carries [-*wh*] and is sufficient to act as the blocker. But for Z to be *luckily* and thus without [*wh*] at all produces no blocking effect. The Chinese counterpart has the structure (190):

190.[<sub>CP</sub> Op ... Z ... *duome* adv ]

where the dependency is [ Op ... *duome* adv ]. Since it is formed without movement, (188c) simply does not apply for the reason stated in (181b) earlier. As long as Z is in an A'-position, which it is, the dependency is indiscriminately blocked. We postpone the application of the MC to other cases of minimality till 4.3.2, focusing for now on the relation between the MC and the MLC.

The primary concern with their relation is redundancy. It is obvious, for instance, that both conditions rule out *wh*-movement of adverbs out of a *wh*-island:

191.\*How quickly did Jeremy wonder [ who dealt with the accident t ]?

For the MLC, the matrix C cannot see beyond the closer *who* and thus *how quickly* could not be attracted to derive (191). For the MC, the outcome of moving *how quickly* to the matrix Spec of CP yields the A'-chain [ *how quickly ... t* ] but *who* with [+*wh*] qualifies as the blocker according to (188c). Since theory-optimization has always been a major driving force in the development of syntactic theory, the overlapping power of the MLC and the MC must be addressed.

The chart below shows what types of bad outcomes from *wh*-movement that each of these conditions can successfully rule out:

192.

MLC	MC	The phenomena that each minimality condition can rule out...
Yes	No	1. Superiority 2. <i>Wh</i> -island for <i>wh</i> -arguments
No	Yes	1. <i>Wh</i> -adverbs across non- <i>wh</i> -adverbs-of [- <i>Wh</i> ] 2. In-situ <i>wh</i> -adverbs with higher non- <i>wh</i> -adverbs
Yes	Yes	<i>Wh</i> -island for <i>wh</i> -adverbs
No	No	Irrelevance

Strictly speaking, superiority may also involve adjuncts (see Lasnik and Saito 1993). But its typical cases are constructed around *wh*-arguments and thus form non-homogeneous chains outside the domain of the MC. Of the two phenomena listed for the MC only, the first is for English with overt *wh*-movement while the second is for Chinese with *wh*-in-situ. The overlap with two “yes” is shown by (192) above.

But given the way the MLC and our MC are formulated, this functional redundancy is only apparent in the sense that (191) is never “doubly ruled out”.

Much of the development of syntactic theory has been accompanied by whether syntactic principles are derivational (= constraining the process) or representational (= evaluating the outcome). See Browning 1987 for a dedicated early work on this topic. While most of the government-binding theory is representational, the minimalist program is generally derivationally constrained, with built-in locality requirements. The MLC is a prime example. In contrast, the MC in (188) can only be representational, constraining the outcome of operations. This is best proven with (189), reduplicated below:

189.[<sub>CP</sub> how quickly ... Z ... t ]

Movement (under the MLC) can attract *how quickly* to the Spec of CP since Z is not [+*wh*]. It is the resulting structure, namely the chain [ *how quickly*, *t* ], which is subject to the MC assessment, ruled in or out depending on whether Z is [-*wh*] or totally [*wh*]-less.

This derivational-vs.-representational disparity is explicitly stated in (187). With this in mind, consider the “problematic” (191) again. The structure below reflects the point of derivation prior to moving *how quickly* out of the *wh*-island:

193. \_\_ did Jeremy wonder [ who dealt with the accident how quickly ]?

The matrix C, in the position of *did*, looks for a [+wh] constituent to attract and only sees the closer *who*. The fact that *who* is in its own Spec of CP and not available to satisfy the matrix C's demand is sufficient to crash the derivation. As *how quickly* is too far to be attracted in the first place, there is no A'-chain [ *how quickly ... t* ] ever formed throughout the derivation of the example, which in turn means there is no dependency involving *how quickly* that is subject to assessment by the MC. In other words, the relation between the two minimality constraints is such that the ungrammatical (191) is always banned by the MLC and never by the MC.

The situation may also be expressed in a more intuitive way through the examples below, each representing a construction type in chart (192):

194.a. Superiority (176b)

\*What did who study t?

b. *Wh*-argument blocked by *wh*-island (175b)

??/\*What did Chris ask [ how Sam repaired t ]?

c. *Wh*-adverb blocked by *wh*-island (175a)

\*How<sub>i</sub> did Chris ask [<sub>CP</sub> what<sub>k</sub> Sam repaired t<sub>k</sub> t<sub>i</sub> ]?

d. *Wh*-adverb blocked by non-*wh*-adverb of [-*wh*] (161c)

\*How strongly did John attentively brew the coffee t?

e. In-situ *wh*-adverbial blocked by all non-*wh*-adverbials (168-170)

\*ta hen congming-de duome kuan-de xiu-le daolu?

3S HEN smartly how.much widely build-ASP road

Intended reading: 'How widely was it smart of him to have built a road?'

The MLC will directly prevent (194a, b, c) from completing their derivations, leaving no task for the MC to take care of. The MLC will indeed allow *how strongly* in (194d) to move to the Spec of the matrix clause, but the MC conducts the representational check and rules out the A'-chain because of the interfering [-*wh*] *attentively*. (194e) is from the *wh*-in-situ Chinese, which we argued in 4.2.3 to have no *wh*-movement even covertly. Since the dependency between a directly generated *Op* and the *duome*-adverbial is not created with movement, the MLC is not even activated and the MC is the only principle responsible for its assessment. These two conditions collaborate to prevent all the bad possibilities in (194) by cleanly splitting the responsibilities and never by ganging up on a single derivation. Hence no real redundancy exists between them.

To complete the discussion on this topic, we also note that the two conditions indeed both allow a type of examples that are part of the minimality data. The example below is repeated from (162a):

195. How frequently did John allegedly t send his children money?

The structurally interfering *allegedly* has no [wh] at all, allowing the MLC to simply attract the only wh-expression *how frequently*. The outcome is the chain [ *how frequently ... t* ] that is well-formed by the MC since there is no [-wh] blocker around. But (195) is not a case of redundancy for the same reason that *John sent his children money* is not – both examples are good for the purpose of minimality because there is nothing in them to activate any minimality condition.

#### 4.3.2. Can there be only one minimality condition?

While it is meta-theoretically comforting to see no redundancy between the MLC and the MC, it is nonetheless a fact that both of them prevent some farther-away constituent from entering a dependency. In fact, it is precisely in this sense that we are using the single term of minimality to cover the data produced by them. One naturally wonders, therefore, whether it is possible to merge the two conditions into one, another question bearing on theory-optimization.

The answer is “yes” with two caveats. First, the MLC must be converted into a representational constraint and second, the single definition thus reached is not really simpler either in form or in concept. The proof is straightforward.

That the MC has to be representational was mentioned in 4.3.1 and can be elaborated on further. The ultimate reason for the MC to be confined to homogeneous dependencies is examples like (173) and (196):

196. What did Jack frequently devour t?

We know from LSL that Fr adverbs acts like a blocker in certain context. To the extent that this is to be taken care of by the MC, the latter must distinguish between a *wh*-argument and a *wh*-adverb. This is the original insight from Rizzi 1990. Since *wh*-movement is the operation at issue and *frequently* is NOT *wh* in form, any reference to this adverb cannot be part of the *wh*-operation (i.e. derivational) and may only evaluate how *frequently* interferes with the result of movement (i.e. representational). But if the MC does not budge out of the representational ground, any hope to unify it with the MLC has to make the latter adapt, namely to turn it from derivational to representational.

The unified definition of the minimality condition is as follows:<sup>24</sup>

197. Let [ X ... Y ] be a dependency D. D is well-formed iff there is no Z such that

X c-commands Z and Z c-commands Y and

- a. either D is homogeneous and
  - i. Z is of the same structural type as X,
  - ii. Z carries [*f*] if D results from movement triggered by [*f*];
- b. or D is not homogeneous and Z carries [*f*] if D results from movement triggered by [*f*].

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<sup>24</sup> See Li 2015 for discussing the pros and cons of a singular definition of minimality vs. what he calls a “bipartite” approach.

(197a) is the MC composed of Rizzi's original RMC in (197a-i) and LSL's PMC in (197a-ii). (197b) is the representational reformulation of Chomsky's MLC. Rather than "blindly" applying to all instances of *wh*-movement as the original definition does, (197b) limits itself to argument-movement to A'-positions and thus maximally removes any possible overlapping between clause (a) and clause (b).

In terms of data coverage, (197) is identical to the MLC plus the MC. For instance, (196) contains a non-homogeneous chain, [ *what ... t* ]; according to (197b), the chain is legitimate because there is no other [+*wh*] anywhere in the sentence. In comparison, a similar chain spanning the two sides of a *wh*-island is bad because the embedded *wh*-expression (= the one that creates the island; see (194b)) is [+*wh*] and thus a blocker. The same logic rules out superiority as well. If what is moved is a *wh*-adverb such as *how quickly*, the resulting chain is the A'-homogeneous [ *how quickly ... t* ]. Anything carrying [ $\pm wh$ ] and structurally in between will block. If [+*wh*], the standard scenario is a *wh*-island; if [-*wh*], we have LSL's minimality data, etc.

But just as obvious, (197) essentially merges two conditions into one without really optimizing the theory. So there is little compelling reason to favor (197) over its alternative. In addition, there is also the factor that coding locality requirements into strictly local operations such as "attracting the closest" seem to have both conceptual and computational advantages (Chomsky 1995, 2000, 2001) that deserve further exploration. Out of these considerations, this dissertation will keep the MC and the MLC as separate conditions.

### 4.3.3. The MC applied to other constructions

A-movement and head-movement are also among those phenomena that appear to show redundancy between the MLC and MC but in fact do not. Take super-raising for instance:

198.  $T_2$  seems [ that  $T_1$  is expected [ the alien plant to whither ]]. (cf. (177))

For the embedded  $T_1$  to attract the DP *the alien plant* due to whatever feature is relevant ([Case], [D], [EPP], [T]; see Hornstein, Nunes and Grohmann 2005 for a recount of the various proposals; see Pesetsky and Torrego 2004, 2007 for reducing Case to tense), the operation is strictly local under the MLC. But when the expletive *it* is inserted in the Spec of the embedded TP, the matrix  $T_2$  can only see *it*, the closest DP, and never *the alien plant*. The latter ends up without a Case and causes the derivation to crash. As *the alien plant* never reaches the matrix TP in (198), there never exists a chain [ *the alien plant ... t* ] with an intervening expletive *it*. Hence there is no need to activate the MC.

The MC is meant to accommodate minimality in a movement-less language such as Chinese. So it is defined to include dependencies not formed through movement. A logical expectation is for the MC to apply to other non-movement dependencies. The first to come to mind is control:

- 199.a. Chris tried [ PRO to look ].
- b. Chris told Sam [ PRO to look ].

Hornstein 1999, 2014 explores the possibility that control is actually A-movement. In this approach, where PRO stands is but a trace of the raised DP (*Chris* in (199a) and *Sam* in (199b)) to another  $\theta$ -position. In chapter three, we adopted the more traditional analysis in which PRO is bound by the closest c-commanding DP. But even with this latter option, both PRO and its antecedent are in A-positions and thus they form an A-homogeneous dependency [ DP ... PRO ]. Since movement is not part of this dependency, (188c) becomes irrelevant and any structurally intervening DP (i.e. whatever satisfies (188a-b)) would ruin the dependency. This is correct since in (199b), PRO must not be bound by *Chris* across *Sam*. See Hornstein's works and Manziji 1983 for proposals on how to deal with the apparently problematic verb *promise* (as in *Jeremy promised (his friends) to go to the party.*).

Another theoretical consideration regarding the MC has to do with how it reconciles with Chomsky's (2000, 2001) more recent probe-goal theory, which has been suggested to cover a wide range of facts of which the initial domain of the MLC is but a subset (see Haegeman and Lohndal 2010, Zeijlstra 2010, Wurmbrand 2011 and references there). In particular, a probe P is a constituent with a feature [*f*] which scans the existing structure for the closest goal G with [*f*] for agreement (as well as subsequent operations if called for). In essence, the P-G

relation represents the generic form of syntactic dependencies that do not have to be formed with constituent movement, which is why it has been used on binding, control, NPI licensing, Spec-head agreement, etc. (Fox and Nissenbaum 1999, Landau 2000, 2004, Reuland 2001, 2005, 2011, Fischer 2004, 2006, Hicks 2009, Zeijlstra 2010, Wurmbrand 2011 and references therein). This trait of P-G makes it easy to unify the definitions of minimality in this chapter and our account of the interaction patterns between the preverbal adverbials and the *V-de* construction in Chapter 3, since the latter phenomenon has been shown not to result from movement. In fact, I specifically demonstrated that the dependency between the empty subject *e* of the modifier *V-de* construction and the corresponding head H resembles binding/control. With this in mind, the MLC in (165) can be restated as follows:

#### 200. Revised MLC

L probes the closest K with [*f*] for the operation(s) O, where [*f*] is the feature with whatever value is relevant for O.

A quick note is in order. While (200), call it RMLC, is defined in highly general terms, it is not meant to necessarily capture all the applications of the P-G theory in the literature. Nor is it my interest to adopt any particular proposal regarding the direction of scanning (upward, downward, mixed; see Zeijlstra 2010 and Wurmbrand 2011 for upward probing, Baker 2008, Baker and Willie 2010, and



Furthermore, whether  $[mod]$  needs a 3-way value expression or not does not seem to affect the outcome. Suppose that it is a two-value feature, with a constituent either carrying it or not. Without  $Y$  in (201),  $[mod]$  is simply missing in the head  $H_Y$  and thus  $e$  counts as the closest goal with  $[mod]$  for  $H$  the probe. If  $Y$  is present, there is a local P-G relation between  $Y$  and  $H_Y$  with (presumably) the Agree operation. But since  $[mod]$  is the feature for Agree, it is equally relevant for agreement between  $H$  and  $e$ . When  $H$  probes in the structure, both  $Y$  and  $H_Y$  are closer than  $e$ , effectively breaking the  $H$ - $e$  dependency under (201). Alternatively, let  $[mod]$  have a 3-way representation:  $[+mod]$ ,  $[-mod]$  or nothing. Then the very presence of  $Y$  as a modifier for  $H_Y$  is enough to assign  $[+mod]$  to these two constituents. And  $[+mod]$  is sufficient to blocking the non-homogeneous dependency between  $H$  and  $e$ . If  $Y$  is not around,  $H_Y$  is at most  $[-mod]$  (i.e., modifiable but not actually modified) and from the previous discussion of the MLC,  $[-mod]$  is invisible for a dependency (= [  $H \dots e$  ]) with  $[+mod]$ .

The RMLC in (200) also retains the MLC's ability to restrict movement-based dependencies because of its general reference to any operation based on features. If a feature results in movement, e.g., some implementation of  $[wh]$  or the EPP feature, an interfering constituent with that feature will incur minimality. Technical details may vary among individual works, but the essence of this locality constraint is expressed in (200). What has not been addressed, and will not be, is minimality in head-movement. This is so because the adverbials in Chinese and English, the exclusive concern of this dissertation, offer no relevant data bearing

on head-movement. It is not hard to see, however, that our theory of minimality has the capacity to handle this type of dependencies. As a quick example, consider the well-known Germanic verbal movement to C (Travis 1984):

- 202.a. Chris should have borrowed the lawn mower.
- b. Should Chris t have borrowed the lawn mower?
- c. \*Have Chris should t borrowed the lawn mower?

Moving a non-lexical verbal head (ASPECTUAL auxiliary or modal) to C produces a homogeneous head chain [ C ... t ]. Within the theory of feature-motivated movement, there must be some feature [*f*] to trigger this operation, and the modal *should*, even when not actually moving, at least has the potential to move to C. Minimally, then, *should* in (202) carries [-*f*], which is enough to block a homogeneous dependency according to clause (c) of the MC defined in (188).

#### 4.4. In place of a conclusion

This chapter investigated how Chinese preverbal adverbials interact and find that a higher class blocks a lower class of the *duome*-form regardless whether the higher one is itself compatible with *duome*. Linking this to the fact that *duome*-adverbials can occur inside islands while still producing a wide scope interpretation, it is concluded that contra the popular view, there is no covert *wh*-movement in Chinese, which in turn makes movability irrelevant for evaluating

the dependency of a base-generated operator and the in-situ *wh*-expression in Chinese, as is summarized in the Minimality Condition in (188).

Another factor influencing the actual form of minimality is the homogeneity of a dependency. Drawing on Li's initial idea which is also made use of in LSL, this chapter explored and confirmed the division of minimality according to whether a dependency is homogeneous or not. Another way to put my conclusion is that both Rizzi and Chomsky are correct in their respective versions of minimality, provided that the applicational domains of their conditions are defined with respect to dependency-homogeneity. Once this factor is made clear, dependencies can also include both those created with movement and those without. The following chart summarizes the facts covered by the minimality theory of this dissertation:

203. Dependency types that each minimality condition applies to:

Via movement	Homogeneous	Due to RMLC	Due to MC
Yes	Yes		English <i>wh</i> -adjuncts NP-movement Head-movement Control (PRO)
Yes	No	English <i>wh</i> -arguments	
No	Yes		Chinese <i>duome</i> -adjuncts
No	No	Chinese <i>wh</i> -arguments Chinese modifier <i>V-de</i>	

Of the cases in the right two columns, the only one not discussed in this chapter is in-situ *wh*-arguments which are known, since Huang 1982, to be immune to islands. If *duome*-adverbials are computed with base-generated operators in the Spec of CP though Reinhart's choice functions, it is only logical that the *wh*-arguments are analyzed in the same way – in fact, this is exactly what Reinhart proposed in the first place. What remains to be tested is how such in-situ arguments interact with structurally higher *wh*-expressions. But as noted in Xu 1990 and Hu 2002 (see note 16 of Chapter 3), the original examples with a *wh*-argument inside a *wh*-island typically act like echo-questions and thus add an extra layer of complication. I take it that a similar scenario is the concern the Chinese counterpart of superiority:

204. shei xuexi-le shenme?

Who study-ASP what

Without overt movement, the only sure way to assign a prominent reading to the “inferior” *shenme* ‘what’ is to have it bear stronger stress. But this strategy also seems to help create an echo question flavor. Since this dissertation is concerned with adverbials and not arguments, I will leave this topic as it is. It should be noted, though, that the echo question reading on the part of the inferior *wh*-argument is consistent with the chart in (203). An operator Op in the Spec of CP and an in-situ *wh*-argument (such as *shenmei* ‘what’ in (204)) constitute a non-homogeneous

dependency subject to the RMLC. This is where a [+wh] is needed for interference. It follows that the superior in-situ *wh*-argument, *shei* in (204), is closer to Op and will block any further probing. Lacking a proper Op leaves *shenme* 'what' uninterpretable as a normal *wh*-argument. Then an echo-question reading seems like an expected way to keep *shenme* interpreted without using the normal semantics of *wh*-quantifiers. I refer the reader to Hu 2002 for a detailed discussion on this topic.

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