

The Syntax and Semantics of Event Quantifiers in Mandarin Chinese

By

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ACKNOWLEDGEMENTS

My understanding of this part of a dissertation is that this is the place where one can write subjective and personal stuff without worrying about the defense. The personal stuff I'm going to provide below is heavily dependent on familiarity with the works of Jin Yong (金庸), one of the greatest Chinese novelists in the 20th century. Save time and skip this part if you have never read Jin. By the way, if you are learning Chinese and want to know more about the Chinese culture, you should read Jin's works. It's like getting to know the American culture by reading Stan Lee, to some extent.

Yafei is like Zhou Botong. I got this impression on the first day when he met me in his office, where he told me to *xuehui gen ziji taigang* (learn to argue against yourself). Who is better at self-fighting than Laowantong, who developed a boxing technique out of self-fighting? Later I found out that self-fighting beforehand can save me a lot of time fighting against reviewers. Laowantong is not among the Famous Five (*dongxie, xidu, nandi, beigai* and *zhongshentong*), but he is no bad at Kungfu than any of the five. Laowantong practices Kungfu for the sake of both Kungfu and fun but not for fame. I see Laowantong in Yafei and I will try my best to follow suit.

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Lastly, I'd like to use the following lyrics to the theme song of the 1983 Hong Kong TVB version of *She Diao* to express my gratitude to my family:

論武功 俗世中不知邊個高

或者 絕招同途異路

但我知 論愛心找不到更好

待我心 世間始終你好

ABSTRACT

This dissertation investigates the syntax and semantics of so-called “verbal classifiers” (Zhu 1982:50-51) in Mandarin Chinese, which are words listed in traditional grammars like Chao (1968:615-620) as “measures for verbs”. These “verbal classifiers” are usually used with numerals to function as event quantifiers counting the eventualities denoted by the predicate of a sentence, in parallel to counting adverbials in English such as *three times* in *Pat watched that movie three times*. The dissertation chooses nine representative “verbal classifiers” for discussion. Based on their syntactic behavior, I argue that the nine words can be divided into two groups in terms of structural positions. The first group of words, represented by *xia* ‘time’, is claimed to be underlying classifiers for an event noun when used in event quantifiers. The classifier and the numeral used with it form a compound to sit in the Spec of the NP projected by the event noun, which may or may not appear on the surface. The projection of the event noun occupies the complement of the verb and drives the thematic internal argument of the verb, if it has one, to sit in the Spec of the VP. The second group, which includes *hui* ‘time’ and *ci* ‘time’ under one of its many readings, is claimed to be not classifiers when used in event quantifiers. I argue that a word from this group and the numeral used with it form a constituent which functions as a VP-internal adjunct. The two structures identified for the Chinese event quantifiers shed light on general issues in syntax and semantics. I argue that the word *xia* ‘time’, when used in event quantifiers to count the events denoted by a verb, is the classifier for the cognate object of the verb. Based on the fact that the head noun in a noun phrase with a numeral and a classifier can be null in Chinese whereas the head noun in a noun phrase with a numeral and a modifier cannot be null in English, I

claim that the PF pronunciation of cognate objects is a last resort, which explains why cognate objects must appear on the surface in English but cannot be overtly present in Chinese. By examining the type(s) of events each of the nine event quantifiers count and replying on the two structures identified for the event quantifiers, I claim that cross-linguistically event quantifiers for atomic events occupy a lower structural position than those for plural events, assuming Bach's (1986) definition for atomic and plural events. I show that the claim is attested in Chinese, English and the Mayan language Kaqchikel (cf. Henderson 2012). The dissertation also discusses verb reduplication in the language to argue that the three Chinese verb reduplication patterns fall into two types, one of which expresses event-internal pluractionality and the other of which expresses event-external pluractionality (cf. Cusic 1981). By using *xia* 'time' as a probe to identify semelfactives (cf. Comrie 1976 and Smith 1991) in Chinese and based on facts about verb reduplication, I claim that semelfactives are atelic and denote minimal activities with no linguistically relevant internal structures, contra Rothstein's (2004, 2008) proposal that semelfactives are telic and interval predicates which involve a trajectory. Based on Chinese facts about counting in both the verbal and the nominal domain, I revise and defend Bach's (1986) classic view on the noun-verb parallel against Rothstein's (1999, 2004) proposal that the parallel to the mass-count distinction is not in the verbal domain but should be the distinction between verbs and adjectives.

Key words:

classifiers, "verbal classifiers", event quantifiers, cognate object, pluractionality, verb reduplication, semelfactive, counting, noun-verb parallel, Mandarin Chinese

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ABBREVIATIONS USED IN THE GLOSS

BA = a particle used to introduce the internal argument of certain verbs

BEI = passive marker *bei*

Cl = classifier

DE = prenominal modification marker *de*

de = post-verbal resultative suffix *de*

GEI = preverbal particle *gei*

GUO = experiential aspect marker *guo*

PERF = perfective aspect marker *le*

PROG = progressive aspect marker *zai*

RS = resultative suffixes in resultative verb compounds

SFP = sentence-final particle

Zhe = durative aspect marker *zhe*

ZHI = prenominal modification marker *zhi* (remnant of classic Chinese)

CHAPTER 1

INTRODUCTION

This dissertation investigates the syntax and semantics of event quantifiers in Mandarin Chinese. By event quantifiers, I refer to expressions that count the eventualities denoted by the predicate of a sentence. Languages such as English seem to be quite impoverished in their variety of event quantifiers. This is shown by the example below where the word *time* is used with a numeral to count different kinds of eventualities:

- (1) a. Pat sneezed **three times** just now.
 b. Pat cried **three times** today.
 c. Pat watched that movie **three times**.
 d. Pat fell **three times** this morning.
 e. Pat secretly loved a friend **three times**.

Mandarin Chinese is different from English in that it has quite a few words that can be used with numerals to count eventualities. The fact is illustrated below:

- (2) a. Xiaobao ti le Aobai san **xia**.
 Xiaobao kick PERF Aobai three time
 ‘Xiaobao gave Aobai three kicks.’
 b. Xiaobao gangcai ke le san **sheng**.
 Xiaobao just now cough PERF three sound
 ‘Xiaobao coughed three coughs just now.’
 c. Xiaobao jintian ku le san **hui**.
 Xiaobao today cry PERF three time

‘Xiaobao cried on three occasions today.’

d. Xiaobao du le na ben fo-jing san **bian**.

Xiaobao read PERF that Cl Buddhist scripture three time

‘Xiaobao read that Buddhist scripture three times.’

e. Xiaobao shang ge yue qu le san **tang** jing-cheng.

Xiaobao last Cl month go PERF three time capital city

‘Xiaobao went to the capital city three times last month.’

f. Xiaobao chi le yi **kou** Ake zuo de na dao cai.

Xiaobao eat PERF one mouth Ake make DE that Cl dish

‘Xiaobao took a bite of that dish Ake made.’

In each of the six sentences in (2), there is an event quantifier composed of a numeral and a boldfaced word that counts some kind of eventuality. For example, *san xia* ‘three times’ in (2a) counts kicks and *san sheng* ‘three sounds’ in (2b) counts coughs. *San hui* ‘three times’ in (2c) counts the occasions where the crying activities took place. *San bian* ‘three times’ in (2d) and *san tang* ‘three times’ in (2e) both count accomplishments denoted by the predicate. *Yi kou* ‘one mouth’ in (2f) counts single bites inside the eating event. These sentences show that unlike English where the word *time* is used across the board, Chinese has a number of words that can appear in its event quantifiers.

The superficial variety of event quantifiers in Chinese raises questions for investigation. A central question this dissertation asks is: what types in terms of syntactic behavior and semantic function do all the event quantifiers fall into? The problem is approached in the following way: several common event quantifiers are picked and their syntactic behaviors are examined. Based on their structural positions, the event

quantifiers under examination are put in different groups. Then we see what kind(s) of eventualities each group counts, and discuss the semantic implications of the counting fact.

Given the strategy spelled out above, the dissertation starts out by discussing the syntax of the event quantifiers. The first question involved in the syntactic task one may ask is presumably this: what syntactic category do those words used with numerals in the event quantifiers belong to? Traditional grammarians have already provided an answer to the question: they are classifiers. In influential Chinese grammars such as Chao (1968) and Zhu (1982) (the first is in English and the second is in Chinese), all the boldfaced words in (2) are listed as some kind of classifier. The words belong to two subtypes in Chao's (1968:584-620) classification system of classifiers (Chao uses the term "measures" as the generic name): "Classifiers Associated with V-O" and "Measures for Verbs of Action". In Zhu's (1982:48-51) system, the term *liang-ci* (literally quantity-word) is used as the generic name for all the classifiers in the language. The words in question are referred to as *dong liang-ci* (*dong* means verbal, i.e., verbal classifier) by him, which form one of the two subtypes of classifiers. The other subtype is called *ming liang-ci* (nominal classifier) and includes classifiers such as *tou*, which is the classifier for non-event nouns like *niu* 'cow', *zhu* 'pig' and *daxiang* 'elephant'.

For a theoretical linguist, especially one who does not speak the language, at first blush, Zhu's term "verbal classifier" does not seem accurate given the fact that all the boldfaced words illustrated above do not seem to be associated with a noun. All the sentences in (2) seem to suggest that the traditional term *verbal classifier* is nothing but a poorly chosen name for words that form event quantifiers with numerals. In the chapters

that follow, I will provide empirical evidence to argue for the insight provided and shared by native-speaker grammarians like Chao and Zhu. It will be shown that the words in question can function as classifiers for event nouns. An example is given below and more can be found in later texts:

- (3) a. san **xia** penti
 three CL_{time} sneeze
 ‘three sneezes’
- b. san **sheng** kesou
 three CL_{sound} cough
 ‘three coughs’
- c. san **hui** bianlun
 three CL_{time} debate
 ‘debates on three occasions’
- d. san **bian** pailian
 three CL_{time} rehearsal
 ‘three rehearsals’
- e. san **tang** wang-fan
 three CL_{time} go-return
 ‘three round trips’
- f. san **kou** siyao
 three CL_{mouth} bite
 ‘three bites’

It will also be argued that all the boldfaced words above except *hui* ‘time’ are underlying classifiers even in cases where there are no overt event nouns on the surface associated with them such as the sentences given in (2). I will also provide a reason for the fact why the event noun cannot appear overtly on the surface (see discussion in Chapter 2). Given the claim and for ease of reference, from now on I will adopt Zhu’s (1982) term “verbal classifier” to refer to the words in question. In places where a distinction needs to be made, I will borrow his term “nominal classifier” to refer to the classifiers for non-event nouns such as *tou* for *niu* ‘cow’ and *daxiang* ‘elephant’.

Having decided the syntactic category of verbal classifiers, next we turn to figuring out the syntactic position(s) event quantifiers occupy. I focus on event quantifiers formed by *xia* ‘time’ and *hui* ‘time’ to locate their structural positions.

One striking fact that distinguishes the event quantifiers with *xia* and those with *hui* is the interpretation of V-O idioms such as *bao fo-jiao* (clasp Buddha-foot, literally ‘to clasp the feet of a Buddha statue’ and idiomatically ‘to make a hasty last-minute effort’). The fact is this: a V-O idiom, when used with an event quantifier formed by *xia* as the predicate of a sentence, always loses its idiomatic meaning. By contrast, both the literal and idiomatic meaning of the idiom is available if it is used with an event quantifier with *hui*. The fact is illustrated by the following example:

- (4) a. ta changchang bao fo-jiao.
 he often clasp Buddha-foot
 ‘He often makes a hasty last-minute effort.’
 ‘He often clasps the feet of a Buddha statue.’

b. ta bao le san **xia** fo-jiao.

he clasp PERF three time Buddha-foot

‘He gave the feet of a Buddha statue three clasps.’

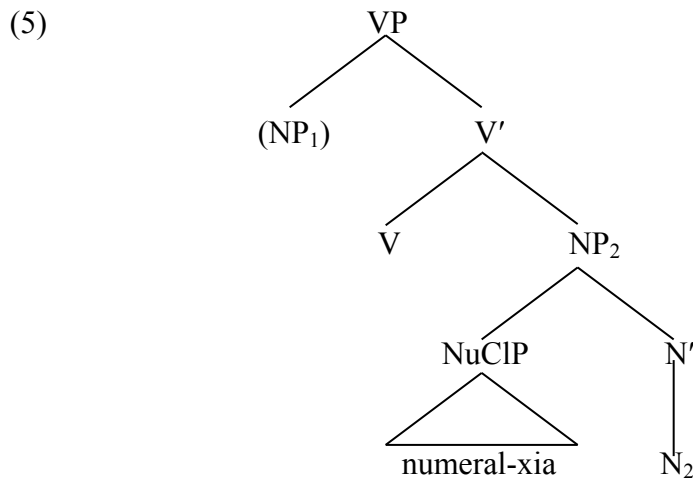
c. ta bao le san **hui** fo-jiao.

he clasp PERF three time Buddha-foot

‘He clasped the feet of a Buddha statue on three occasions.’

‘He made a hasty last-minute effort on three occasions.’

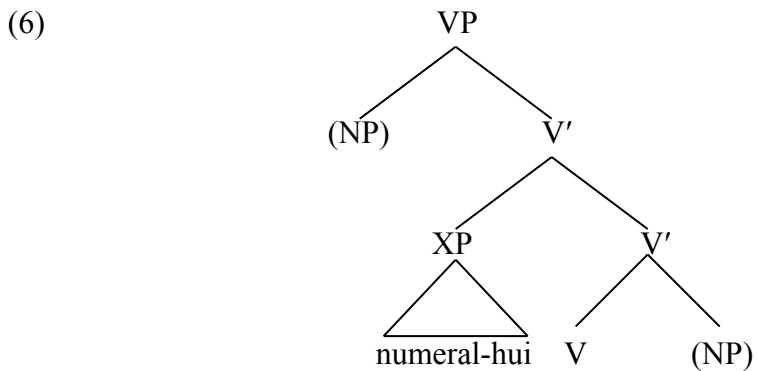
Assuming that a V-O idiom forms a constituent on some level of syntactic representation and that the constituent is the source of the idiomatic reading, the absolute absence of the idiomatic meaning of a V-O idiom when it is used with an event quantifier with *xia* indicates that the event quantifier breaks the idiom structurally. Based on the fact as illustrated by (4) and the assumption, I propose the following structure for the event quantifiers with *xia*, with irrelevant details omitted:



As can be seen above, the word *xia*, when used with a numeral to function as an event quantifier in a sentence, is a classifier (Cl) for an event noun (N_2 above) that is null on the surface. The classifier *xia* and the numeral form a compound (NuCl), whose projection

(NuCIP) sits in the Spec of the NP projected by the null event noun. The projection of the event noun is in the complement position of the verb and the theme of the verb (NP₁), if it has one, is forced to occupy the Spec of the VP. In the syntactic set-up in (5), the verb and its thematic object (namely NP₁) do not form a constituent, which explains why the idiomatic reading of a V-O idiom is always lost with the presence of an event quantifier with *xia*.

The structure in (6) below is proposed to account for the event quantifiers with *hui*:



As shown above, the word *hui* and the numeral used with it form a constituent XP, which all by itself functions as a VP-internal adjunct just like English adverbials formed by *time* like *three times* in *John fell three times today*. The internal thematic argument(s) of the verb, if present, sit(s) in canonical argument positions: the complement and/or the Spec of the VP. Since the verb and its object still form a constituent (V') in the structure in (6), it is no surprise that a V-O idiom keeps its idiomatic reading with those event quantifiers formed by *hui*.

Besides the fact about the interpretation of idioms, other kinds of facts are also provided in the text to support the two structures, which include the selectional restriction

between an event quantifier and the verbs it can co-occur with and the distribution of null head nouns in noun phrases. It will be shown that these two structures can account for all the contrasting distributions of the two event quantifiers.

The syntax of the event quantifiers formed by *xia* ‘time’ sheds light on two general issues in syntax. The first issue is about deriving verbs in the syntax through noun incorporation (cf. Baker 1988 and Hale and Keyser 1993). Based on the fact about the interpretation of idioms, I show that this influential idea cannot be adopted to derive the verbs which can take an event quantifier formed by *xia*. The second issue is about the PF pronunciation of cognate objects across languages. I assume that *xia* in event quantifiers is the classifier for the cognate object of the verb. In languages like English, cognate objects must occur overtly on the surface whereas in Chinese cognate objects can never appear overtly on the surface. Based on the distribution of null nouns in noun phrases, I propose the following universal constraint on the PF pronunciation of cognate objects:

(7) PF Pronunciation of Cognate Objects as a Last Resort

Do not pronounce the cognate object of a verb in the PF unless you have to.

With the two structures above in place, we then examine the syntax of event quantifiers formed by other verbal classifiers such as *bian* ‘time’, *tang* ‘time’, *kou* ‘mouth’ etc. I will show that these event quantifiers, despite the difference in terms of the verbal classifier they contain, behave syntactically much the same as the event quantifiers with *xia* ‘time’. We thus generalize the structure in (5) to cover these event quantifiers.

The structures in (5) and (6) put the event quantifiers under examination in two groups. For ease of reference, let us call the event quantifiers which have the structure in

(5) the first group and those that have the structure in (6) the second group. The next task is to see what kind(s) of eventualities each group counts.

Some event quantifiers in the first group count atomic events and all the event quantifiers in the second group count plural events. I follow Bach's (1986) definitions for the two notions "atomic event" and "plural event". According to Bach, atomic events are singular events denoted by telic predicates whereas plural events are sums of atomic events. Event quantifiers with the verbal classifier *bian* 'time', for example, have the structure in (5) and always count accomplishments:

(8) a. ta du le san **bian** na pian wenzhang.

he read PERF three time that Cl paper

'He read that paper three times.'

b. ta du le san **hui** na pian wenzhang, yi **hui** jielian du le

he read PERF three time that Cl paper one time in succession read PERF

liang **bian**.

two time

'He read that paper on three occasions. On one occasion he read it twice in a row.'

The event of reading that paper is an atomic event. As shown by (8a), the event quantifier *san bian* 'three times' is used to count the atomic event. Event quantifiers containing the verbal classifier *hui* 'time' have the structure in (6) and always count occasions. As shown by the second clause of (8b), an occasion can be viewed as the sum of two atomic events and therefore is a plural event.

The Chinese facts show that event quantifiers for plural events are VP-adjuncts and event quantifiers for atomic events are in the complement position of the verb. Based

on the fact that VP-adjuncts are higher than verb complements, I propose the hypothesis in (9) below:

(9) Hypothesis about Structural Heights of Event Quantifiers

The structural position of an event quantifier for plural events is higher than that of an event quantifier for atomic events.

The hypothesis above is supposed to be a generalization that is true across languages. It is based on Chinese and will be shown to be also true in English, as shown by the following example:

(10) Pat played tennis twice three times.

The sentence above may not sound perfect to some native speakers due to the presence of two event quantifiers. But there are native speakers who accept it without problem. Despite this issue about different judgements, a fact is true for all native speakers of English: the sentence can only be interpreted as Pat played two games of tennis on three occasions but not that Pat played three games of Tennis on two occasions. Playing a game of tennis is an atomic event and an occasion where several games were played can be viewed as the sum of the atomic events, namely a plural event. The fact indicates that the outer event quantifier is for plural events whereas the inner one is for atomic events. Assuming a binary branching structure and a right-sided VP-internal adjunct status for the two event quantifiers, the outer event quantifier is higher than the inner one. Except Mandarin and English, I will also show that the hypothesis in (9) holds for the Mayan language Kaqchikel, based on Henderson's (2012) study of pluractional suffixes in the language, which can be reasonably treated on a par with event quantifiers.

Besides event quantifiers for atomic events, the first group also includes event quantifiers for subevents. Subevents are events as internal parts of an atomic event (see Krifka 1998). As shown by (11) below, event quantifiers with the two verbal classifiers *bi* ‘stroke’ and *kou* ‘mouth’ count subevents:

(11) a. Xiaobao xie le san **bi** Fu zi.

Xiaobao write PERF three stroke Fu character

‘Xiaobao wrote three strokes of the character for the word Fu.’

b. Xiaobao chi le san **kou** na ge pingguo.

Xiaobao eat PERF three mouth that Cl apple

‘Xiaobao took three bites of that apple.’

The event of writing the character for the word *fu* ‘blessing, happiness’ is an atomic event. Since a Chinese character is composed of strokes, an event of writing a Chinese character is composed of subevents of writing each of the strokes of the character. These subevents are counted by an event quantifier with the word *bi* ‘stroke’ as shown by (11a). Similarly, the event of eating that apple is an atomic event. An eating event is composed of single bites as subevents. To count these subevents, an event quantifier with the verbal classifier *kou* ‘mouth’ is used as shown by (11b).

Note that event quantifiers for atomic events and those for subevents share the structure in (5), which means that the Chinese grammar does not distinguish subevents and atomic events structurally. It is an empirical issue if there is a language which makes a structural distinction between subevents and atomic events and it is not surprising that languages such as Chinese do not. This is because an atomic event and its subevents are of the same type in terms of event description and telicity. Take (11b) for example. All

the subevents in the atomic eating event are eating events: a bite is just an event of eating a piece of that apple, which is also a telic accomplishment like the whole eating event.

Besides event quantifiers for atomic events and subevents as illustrated above, there is a very special event quantifier in the first group which consists of a numeral and the verbal classifier *xia* ‘time’. This event quantifier always counts single actions like knocks, coughs, jumps etc. This is shown below:

(12) a. Xiaobao qiao le san **xia** men.

Xiaobao knock PERF three time door

‘Xiaobao made three knocks on the door.’

b. Xiaobao ke le san **xia**.

Xiaobao cough PERF three time

‘Xiaobao coughed three coughs.’

c. jingtou shan le yi **xia**.

camera lens flash PERF one time

‘The camera flashed once.’

The term *semelfactive*, which comes from the Latin *semel* ‘once’, is used in the literature of aspect to refer to the single action reading of verbs like *shan* ‘flash’ illustrated above (cf. Comrie 1976, Smith 1991). Semelfactives are generally ignored in the literature and there is debate about the aspectual properties of these predicates and the events denoted by them (see Smith 1991 for discussion of these verbs in different languages and see Rothstein 2004, 2008 for a different view).

Bach (1986) lists *flash once* along with *recognize* and *notice* as examples of what he calls happenings, which is one of the two types of momentaneous events (the other

being what he calls culminations such as *die* and *reach the top*). He does not even bother to argue for the claim in his paper, suggesting that he treats events like single flashes as atomic events on a par with atomic events denoted by telic predicates like *recognize* and *notice*. Bach's view is picked up by Rothstein (2004) who claims that semelfactives are telic and argues against Smith (1991) who proposes that semelfactives are atelic and different from achievements.

Facts about verb reduplication will be provided to show that semelfactives are different from achievements, contrary to what Bach and Rothstein claim. The difference between the two is that semelfactives can whereas achievements can not be reduplicated in the same pattern, which is shown by the example below:

(13) a. qiao-(le)-qiao

knock-(PERF)-knock

'knock(ed) a couple of times'

b. shan-(le)-shan

flash-(PERF)-flash

'flash(ed) a couple of times'

c. *si-(le)-si

die-(PERF)-die

'di(ed) a couple of times'

d. *jin-(le)-jin

enter-(PERF)-enter

'enter(ed) a couple of times'

Given its importance for the argument here and its own theoretical significance, I discuss verb reduplication in Chinese in detail, and the discussion is placed against the background of pluractionality, a phenomenon where verbs are morphologically marked by reduplication, affixation etc. to express the grammatical meaning of iteration or pluralization of events. Despite the fact that pluractionality is quite common across languages, it is little studied, especially in the model-theoretical framework due to the fact that it is not marked in Indo-European languages such as English (see discussion in Wood 2007). There are quite a few typological studies of pluractionality in the literature. These works, illuminating as they are, are restricted by the limitation and accuracy of the data available to their authors. As far as I can tell, Chinese is investigated in two typological studies (Wood 2007 and Xrakovskij 1997). Presumably because neither author is a native speaker of the language, they both claim that there are no pluractional categories in Chinese. I will show that the claim is empirically wrong. Chinese is a language where pluractionality is overtly marked by verb reduplication.

I report that there are in total three verb reduplication patterns in Chinese, depending on the number of syllables in the base and how the base(s) is/are reduplicated. The three patterns are illustrated by the example below:

(14) a. The X-X pattern (with a monosyllabic base X):

qiao-qiao

knock-knock

‘to knock a couple of times’

b. The XY-XY pattern (with a disyllabic base XY):

taolun-taolun

discuss-discuss

‘to discuss for a short while’

c. The XX-YY pattern (with two monosyllabic bases X and Y):

jin.jin-chu.chu

enter.enter-exit.exit

‘to enter and exit repeatedly’

For each of the three patterns, I report the distributions of the reduplicated form and point out what kinds of verbs are prohibited in the pattern. Based on the distributional facts, I show that the three reduplication patterns fall into two types: X-X and XY-XY belong to the same type while XX-YY forms the other type. I argue that the contrast between the two types is the overt manifestation of the semantic distinction between two kinds of pluractionality, i.e., event-internal and event-external pluractionality (cf. Cusic 1981), which has been reported to be morphologically marked in different languages such as Chechen (see Yu 2003 and Wood 2007), Kaqchikel (see Henderson 2012) and Yurok (see Garrett 2001, Garrett and Wood 2002 and Wood 2007).

I then provide a formal semantic account for the two kinds of pluractionality in Chinese. I argue that event-internal pluractionality involves both event pluralization and a group formation operation (cf. Link 1983 and Landman 1996) that forms a singular event out of pluralities, whereas event-external pluractionality only involves pluralization of events. The account makes it possible to explore the interaction between pluractionality and Aktionsart and explain why achievement verbs in the language are prohibited in the two event-internal reduplication patterns (i.e., X-X and XY-XY).

Based on the fact about verb reduplication and a detailed analysis of Rothstein's (2004, 2008) arguments, I argue that semelfactives denote minimal activities, which are different from achievements because the latter always involves a change of state whereas the former does not (see Henderson (2012) for facts about Kaqchikel pluractional suffixes that display the difference between semelfactives and achievements; also see Marín and McNally (2010) for a list of tests for telicity that can be used to show the semelfactives in Spanish are atelic; and also see Smith (1991) for facts from English, Russian and French that show semelfactives are atelic).

Lastly, I discuss the noun-verb parallel, which has been an intriguing topic since the early days of model-theoretical semantics. I will both revise and defend Bach's (1986) influential proportion "events: processes:: things: stuff". Based on Chinese facts, I argue that semelfactives are like count nouns in terms of counting. I argue that we need to make a distinction between two kinds of activities: those that are sums of iterated semelfactive events like knocking and those that do not have minimal parts like chatting. The latter is like mass nouns because neither has grammatically accessible atoms in their denotation. However, the former is not like mass nouns since they do have grammatically accessible atoms in their denotation. Despite the revision, I will defend Bach's overall view against the proposal made by Rothstein (1999) which claims that all verbs including stative ones like *know* have their denotations in the count domain and that the parallel to the mass-count distinction should be the verb-adjective distinction. Her arguments will be analyzed and evidence will be provided to show that statives are not like count nouns.

Besides this introduction chapter, there are five more chapters to follow. A roadmap is provided below for the rest of this dissertation:

Chapter 2 tackles the syntax of two event quantifiers: one formed by a numeral and the verbal classifier *xia* ‘time’ and one composed of a numeral and the verbal classifier *hui* ‘time’. I show that both *xia* and *hui* independently can function as the classifier for event nouns and propose a structure for the noun phrases with *xia* or *hui* as the classifier. When *xia* is used with numerals in event quantifiers to count the number of events denoted by the predicate of a sentence, the proposal is that *xia* is the classifier for the cognate object of the verb. *Xia* forms a compound with the numeral used with it and sits in the Spec of the projection of the cognate object, which is in the complement position of the verb and forces the thematic internal argument of the verb, if it has one, to the Spec of the VP. By contrast, the event quantifier formed by *hui* is claimed to be a VP-internal adjunct and *hui* is not associated with a noun inside the adjunct. The two structures will be shown to be able to account for different kinds of facts about the contrasting distributions of the two verbal classifiers. I then reply on the syntax of *xia* to discuss two issues in syntax. I first examine the influential idea by Hale and Keyser (1993) that English denominal verbs are derived through noun incorporation in syntax. I show that their view cannot be used to derive the Chinese verbs under discussion. I then discuss the difference between Chinese and English in terms of the surface appearance of cognate objects. I propose that the PF pronunciation of cognate objects is a lost resort, which explains the difference.

Chapter 3 discusses the syntax of two groups of verbal classifiers to see if there are more structures that can be identified for event quantifiers than the two proposed in Chapter 2. The two groups of verbal classifiers include six words: *bi* ‘stroke’, *bu* ‘step’, *kou* ‘mouth’, *sheng* ‘sound’ form the first group and *bian* ‘time’ and *tang* ‘time’ form the

second. After examining their distributions carefully, the conclusion is that these verbal classifiers have the same structure as *xia* ‘time’. I also discuss an issue about a syntax-semantic mismatch in this chapter that involves all the verbal classifiers under discussion. A solution replying on a null gerundive verb is proposed to account for the mismatch.

Chapter 4 investigates verb reduplication in the language from the perspective of pluractionality. I introduce all the three verb reduplication patterns in the language and discuss their distributional and semantic properties. I show that two of the three patterns fall into the same type that stands in contrast to the third pattern. I argue that the contrast between the two types of patterns is the overt manifestation of the event-internal versus event-external distinction (cf. Cusic 1981). I provide a formal account for both types of reduplication. The crucial difference between the two types is that the event-internal type involves both pluralization and a group formation operation (cf. Landman 1996) that turns the plurality generated by pluralization into a singular event, whereas the event-external type only triggers pluralization and does not necessarily involve the group formation operation. Based on the semantic difference between the two types, some facts about verb reduplication are explained such as why achievement verbs cannot be reduplicated in the event-internal reduplication patterns. I also discuss noun reduplication to show that there is a parallel between verb reduplication and noun reduplication.

Chapter 5 explores the semantic implication of Chinese event quantifiers for the verbal domain. I first make a generalization about structural heights of event quantifiers based on the two structures identified for Chinese event quantifiers. I propose that event quantifiers for plural events are higher than those for atomic events, and show that this generalization holds for Chinese, English and the Mayan language Kaqchikel. I then

discuss the verb-noun parallel. I use Chinese event quantifiers to show that semelfactives are like count nouns in terms of counting: both have two counting options. I argue against Rothstein's (1999, 2004) proposal that all verbs including stative ones like *know* have their denotations in the count domain. Lastly, I discuss the aspectual properties of semelfactives. Relying on event quantifiers formed by *xia* as a probe to identify Chinese semelfactives and verb reduplication as a formal test, I show that semelfactives are atelic and denote minimal activities that involve no linguistically relevant internal structure, in contrary to Rothstein's (2004, 2008) claim that they are interval predicates that involve a trajectory.

Chapter 6 concludes the whole dissertation and points out a couple of remaining issues for future research.

CHAPTER 2

THE SYNTAX OF *XIA* ‘TIME’ AND *HUI* ‘TIME’

0. Introduction

In this chapter, we deal with the syntax of event quantifiers consisting of a numeral and one of the two verbal classifiers: *xia* ‘time’ and *hui* ‘time’. When *xia* ‘time’ is used with a numeral to function as an event quantifier in sentences such as the ones below:

- (1) a. Xiaobao ti le Aobai san **xia**.

Xiaobao kick PERF Aobai three time

‘Xiaobao gave Aobai three kicks.’

- b. Xiaobao dou le san **xia**.

Xiaobao tremble PERF three time

‘Xiaobao had three trembles.’

The proposal is that *xia* is the classifier for a null event noun, which is the cognate object of the verb. I claim that the classifier *xia* and the numeral used with it form a compound that occupies the Spec of the NP projected by the null event noun. The projection of the null event noun is in the complement position of the verb and forces the thematic internal argument of the verb (like *Aobai* in (1a)), if the verb has one, to sit in the Spec of the VP.

By contrast, when *hui* ‘time’ is used with a numeral to function as an event quantifier in sentences such as the ones below:

- (2) a. Xiaobao ti le Aobai san **hui**.

Xiaobao kick PERF Aobai three time

‘Xiaobao kicked Aobai on three occasions.’

b. Xiaobao dou le san **hui**.

Xiaobao tremble PERF three time

‘Xiaobao trembled on three occasions.’

The proposal is that the projection of the event quantifier like *san hui* ‘three times’ in (2) all by itself is a VP-internal adjunct. The word *hui* is not associated with a noun inside the projection. The two proposals will be shown to be able to explain lots of facts about the distributions of the two verbal classifiers.

This chapter is organized as follows: in Section 1 I show that both *xia* and *hui* can be the classifier for event nouns. I discuss the structure of Chinese NPs and make a proposal for the NPs that have either *xia* or *hui* as the classifier. Starting from Section 2 to Section 6, I discuss the syntax of the event quantifiers formed by *xia* and *hui*. In Section 2 I first point out the distributional difference between the two event quantifiers: those formed by *xia* can only co-occur with verbs that denote single punctual actions such as coughs and kicks whereas those formed by *hui* have no selectional restrictions on the verb. I then propose two different structures for the two event quantifiers. The essence of the proposal is: *xia* is the classifier for the cognate object of the verb whose projection sits in the complement position of the verb, whereas, by contrast, *hui*, along with the numeral used with it, is a VP-internal adjunct and not associated with a noun. In Section 3 I defend the proposed structure for event quantifiers formed by *xia* when they co-occur with intransitive verbs. Based on facts about post-verbal arguments and resultative verb compounds, I show that unaccusatives cannot take event quantifiers with *xia* and argue that intransitive verbs that can co-occur with *xia* are all unergatives. In Section 4 I make use of facts about the interpretation of idioms, especially V-O ones such as *to kick the*

bucket, to argue for the proposed structure for event quantifiers with *xia* when they co-occur with transitive verbs and also the structure proposed for event quantifiers with *hui*. In Section 5 I discuss some remaining issues related to the structures proposed for the two event quantifiers. I provide evidence to solve word order issues and some other related problems. Section 6 discusses the theoretical implications of the syntax of *xia*. I rely on the syntax of *xia* to examine the theory of deriving verbs in the syntax through noun incorporation (cf. Baker 1988 and Hale and Keyser 1993) and propose a constraint on the PF pronunciation of cognate objects across languages. Section 7 concludes the chapter. An appendix of the idioms used in Section 4 is attached at the end of the chapter.

1. *Xia* and *hui* as the classifier for event nouns and the structure of the Chinese NP

In this section, I provide facts to show that both *xia* ‘time’ and *hui* ‘time’ independently can function as the classifier for event nouns. The facts will be introduced in section 1.1. Section 1.2 spells out the internal structure of the NPs where either *xia* or *hui* is used as the classifier.

1.1 *Xia* and *hui* as the classifier for event nouns

To argue that *xia* and *hui* are classifiers, we first need to know how to identify Chinese classifiers in general. A classifier is a word which appears between a numeral and a noun in a nominal phrase to provide some kind of unit or measurement for the denotation of the head noun. Consider the fact in (3) below to see some concrete examples:

(3) a. Numeral + *(**Classifier**) + Noun

b. *san pingguo

three apple

‘three apples’

- c. san **ge** pingguo
 three Cl apple
 ‘three apples’
- d. san **pian** pingguo
 three Cl_{piece} apple
 ‘three pieces of apples’
- e. san **dai** pingguo
 three Cl_{bag} apple
 ‘three bags of apples’
- f. san **bang** pingguo
 three Cl_{pound} apple
 ‘three pounds of apples’
- g. san **zhong** pingguo
 three Cl_{kind} apple
 ‘three kinds of apples’

The underlined spot in the syntactic frame given in (3a) is occupied by classifiers, which are required as shown by (3b). Since numerals form a self-explanatory class and nouns can be identified through means which are independent of classifiers such as being able to directly appear in argument positions but unable to take arguments directly (see Huang, Li and Li 2009 for discussion of categorical issues related to nouns), the frame in (3a) can be used to identify classifiers in Chinese. Some concrete examples of classifiers are given in boldface in (3c) through (3g). The classifiers for the same noun *pingguo* ‘apple’ have

different lexical meanings and semantic functions, which motivates linguists to put them into different groups. For a descriptive list of different subtypes of classifiers, see Chao (1968:584-620) and Zhu (1982:48-51). For a semantic-feature based classification of classifiers, see X. Li (2011).

Given the syntactic frame in (3a), the word *xia* ‘time’ can be identified as a classifier for certain event nouns due to the fact in (4) below:

- (4) a. san **xia** duosuo/erguang/ge/kesou/lengzhan/penti
 three Cl_{time} tremble/slap on the face/burp/cough/shiver/sneeze
 ‘three trembles/slaps on the face/burps/coughs/shivers/sneezes’
- b. san **sheng** kesou/penti
 three Cl_{sound} cough/sneeze
 ‘three coughs/sneezes’
- c. san **ge** duosuo/erguang/ge/lengzhan/penti
 three Cl tremble/slap on the face/burp/shiver/sneeze
 ‘three trembles/slaps on the face/burps/shivers/sneezes’
- d. wo tingjian le san **sheng/xia** kesou/penti.
 I hear PERF three Cl_{sound}/Cl_{time} cough/sneeze
 ‘I heard three coughs/sneezes.’
- e. ta da le san **ge/xia** duosuo/ge/lengzhan/penti.
 s/he do PERF three Cl/Cl_{time} tremble/burp/shiver/sneeze
 ‘S/he had three trembles/burps/shivers/sneezes.’

The fact in (4a) shows that *xia* ‘time’ can function as the classifier for event nouns such as *duosuo* ‘tremble’. Note that besides *xia*, these event nouns may be able to take other

classifiers, depending on the lexical semantics of the noun and the classifier. (4b) illustrates that the two event nouns *kesou* ‘cough’ and *penti* ‘sneeze’ can also have the word *sheng* ‘sound’ as the classifier, which is generally used with nouns denoting sounds such as *hu-xiao* ‘tiger growl’, *jinglei* ‘thunder’, *koushao* ‘whistle’, *lang-hao* ‘wolf howl’ etc. (4c) shows that many of the event nouns in (4a) can also take the general classifier *ge*¹, which usually co-occurs with non-event nouns such as *pingguo* ‘apple’ as shown by (3c). The fact is that the choice between *xia* and another classifier such as *sheng* ‘sound’ or *ge* does not make a semantic difference in terms of truth conditions. Two sentences with the phrases in question are given in (4d) and (4e). Note that *xia* is interchangeable with the other classifier, making no difference in the truth conditions of the sentence.

Next I will provide facts to show that *xia* ‘time’ behaves like typical nominal classifiers in terms of distribution. Consider first the following example:

- (5) a. na san ge (pingguo) hen da.
 that three Cl (apple) very big
 ‘Those three (apples) are very big.’
- b. na san xia (penti) hen xiang.
 that three Cl_{-time} (sneeze) very loud
 ‘Those three (sneezes) are very loud.’
- c. wo mai le san ge (pingguo).
 I buy PERF three Cl (apple)
 ‘I bought three (apples).’

¹ *Ge* is called the general or universal classifier by Chinese linguists due to the fact that it can co-occur with the widest range of nouns.

d. wo tingjian le san xia (penti).

I hear PERF three CL_{time} (sneeze)

‘I heard three (sneezes).’

e. ta mai le san ge pingguo. ge-ge/mei-ge dou hen da.

s/he buy PERF three CL apple CL-CL/each-CL all very big

‘S/he bought three apples. Each one of them is very big.’

f. ta da le san xia penti. xia-xia/mei-xia dou hen xiang.

s/he do PERF three time sneeze time-time/each-time all very loud

‘S/he had three sneezes. Each one of them is very loud.’

The nominal phrase *na san ge pingguo* ‘those three apples’ functions as the subject of the sentence in (5a) and the head noun *pingguo* ‘apple’ can be null on the surface. The same fact also holds for the phrase *na san xia penti* ‘those three sneezes’ in (5b). The nominal phrase *san ge pingguo* ‘three apples’ functions as the object in (5c) and the head noun *pingguo* ‘apple’ can be null. Again, the fact also applies to the phrase *san xia penti* ‘three sneezes’ in (5d). The fact in (5e) shows that classifiers like *ge* can be reduplicated and the reduplicated form means the same as the string consisting of the word *mei* ‘each’ and the classifier. This fact also holds for the word *xia* ‘time’ as shown by (5f).

Next let us turn to facts about *hui*. Like *xia*, *hui* can also be used as the classifier for event nouns. Four phrases are given below where *hui* is used as the classifier for the head noun:

(6) a. san hui bianlun

three CL_{time} debate

‘three debates’

b. san hui dadou

three CL_{time} fight

‘three fights’

c. san hui jingong

three CL_{time} attack

‘three attacks’

d. san hui di-zhen

three CL_{time} earth-quake

‘three earthquakes’

Now let us look at the distribution of the phrases where *hui* is used as the classifier. These phrases can be used in argument positions with or without the head noun, just in parallel to the situation where *xia* is used as the classifier. First consider some sentences where the phrase in question functions as the subject:

(7) a. na san hui (bianlun) hen jilie.

that three CL_{time} (debate) very fierce

‘Those three (debates) were very fierce.’

b. na hui (dadou) jingdong le dangdi jingfang.

that CL_{time} (fight) alert PERF local police

‘That (fight) alerted the local police.’

c. na san hui (jingong) dou yi shibai gaozhong.

that three CL_{time} (attack) all with failure end

‘Those three (attacks) all ended with failure.’

d. na san hui (dizhen) dou hen qiangle.

that three CL_{time} (earthquake) all very violent

‘Those three (earthquakes) were all very violent.’

Next consider some sentences where the phrase in question functions as the object:

(8) a. ta shu le na san hui (bianlun).

s/he lose PERF that three CL_{time} (debate)

‘S/he lost those three (debates).’

b. ta zhi-jin reng jide na liang hui (dadou).

s/he till now still remember that two CL_{time} (fight)

‘S/he still remembers those two (fights) till today.’

c. ta-men da-tui le liang hui (jingong).

they fight-retreat PERF two CL_{time} (attack)

‘They fought back two (attacks).’

d. shang ge yue zheli fasheng le san hui (dizhen).

last CL month here happen PERF three CL_{time} (earthquake)

‘Three (earthquakes) happened here last month.’

The classifier *hui* can also be reduplicated just like *xia* and nominal classifiers (cf.

5e, f):

(9) diren zonggong faqi le san hui jingong. hui-hui/mei-hui dou yi

enemy in total launch PERF three CL_{time} attack time-time/each-time all with

shibai gaozhong.

failure end

‘The enemy launched three attacks in total. Each of them ended with failure.’

So far, we have seen facts that show both *xia* and *hui* can function as the classifier for event nouns. Before we move on to discussing the internal structure of the NPs where *xia* or *hui* is used as the classifier, a few remarks about the difference between the two verbal classifiers are in order (more discussion of the difference will be given in Section 2).

When *xia* functions as the classifier for event nouns, the numeral used with it denotes the number of single actions denoted by the event noun. By contrast, when *hui* is used as the classifier, the numeral denotes the number of occasions on which the denotation of the event noun takes place. The following example illustrates this fact:

(10) a. wo gandao le san **xia** di-zhen.

I feel PERF three CL_{time} earth-quake

‘I felt three quakes of the earth.’

b. shang ge yue fasheng le san **hui** di-zhen.

last Cl month happen PERF three CL_{time} earth-quake

‘Last month three earthquakes happened.’

c. shang ge yue fasheng le san hui di-zhen, zuihou yi **hui** zhi

last Cl month happen PERF three CL_{time} earth-quake last one time only

zhen le san **xia**.

quake PERF three time

‘Last month three earthquakes took place. During the last one the earth quaked only three times.’

The event noun *di-zhen* ‘earthquake’ can take both *xia* and *hui* as the classifier. When *xia* is used as the classifier, the reading of the object phrase in (10a) is three single quakes of the earth. By contrast, with *hui* as the classifier, the reading of the object phrase in (10b)

is earthquakes on three occasions. The number of the quakes of the earth is unspecified in (10b). It is possible that during each earthquake the earth quaked only once, in which case the number of quakes in (10a) and (10b) is the same. But that is just one possibility. It can be that during the earthquakes the earth quaked quite a few times before it came to a stop, in which case the number of quakes in (10a) and (10b) will be different. As shown by (10c), the earthquake on the last occasion has three quakes as specified by the event quantifier *san xia* ‘three times’.

The point of the discussion about (10) is that counting invoked by *hui* is associated with occasions, which is made explicit when there is a contrast between *hui* and another verbal classifier like *xia*. Sometimes there may be more than one contrasting classifier, which is shown below by the example with the event noun *bianlun* ‘debate’:

(11) a. san **hui** bianlun

three CL_{time} debate

‘three occasions of debates’

b. san **chang** bianlun

three CL_{field} debate

‘three sessions of debates’

c. san **lun** bianlun

three CL_{ring} debate

‘three rounds of debate’

d. shang-zhou ta-men juxing le san **hui** bianlun, mei **hui** liang **chang**,

last week they hold PERF three CL_{time} debate each time two field

mei **chang** san **lun**.

each field three ring

‘Last week they held debates on three occasions. On each occasion they had two sessions, and in each session they had three rounds.’

As shown by the example above, besides *hui* ‘time’, the noun *bianlun* ‘debate’ can also take *chang* ‘field’ and *lun* ‘ring, wheel’ as its classifier. Each of the three classifiers gives a different unit specification for the denotation of the noun. As shown by the translation, *hui*, *lun* and *chang* specify occasions, rounds and sessions as units respectively. When all of the three are used in the same sentence to contrast each other as in (11d), the difference between them can be seen very clearly. When there are no contrasting classifiers present, even if the denotation of the head noun has an internal structure which specifies the unit of the event, the number of those units will be unspecified. For instance, if the phrase in (11a) appears in a context where no further information about the debates is given, the phrase only tells that the debates are on three occasions and it is unspecified how many rounds, sessions etc. of debate there are on each of those three occasions.

Facts reported so far show that the classifier *xia* always picks out single punctual events for counting whereas *hui* always invoke occasion-counting. Some more verbal classifiers will be discussed in Chapter 3 and like *xia* and *hui*, each of them has its own specification about the unit of the events denoted by the event nouns it co-occurs with. This fact can be attributed to the lexical semantics of the verbal classifier: each verbal classifier has its idiosyncratic unit-specification about events. The fact also holds for classifiers of non-event nouns, each of which has its idiosyncratic specification about some property of the entities denoted by the nouns such as shape. We noted in the introduction that there is a general classifier for non-event nouns, i.e., *ge*, which has the

least idiosyncrasy and can co-occur with the widest range of nouns (including certain event nouns as illustrated by (4c) above). Similarly for event nouns, there is a general verbal classifier, i.e., *ci* ‘time’, which has little, if any, unit-specification for events. To a large extent, *ci* ‘time’ is like the English word *time* as in *three times*. To see this more clearly, consider the fact below:

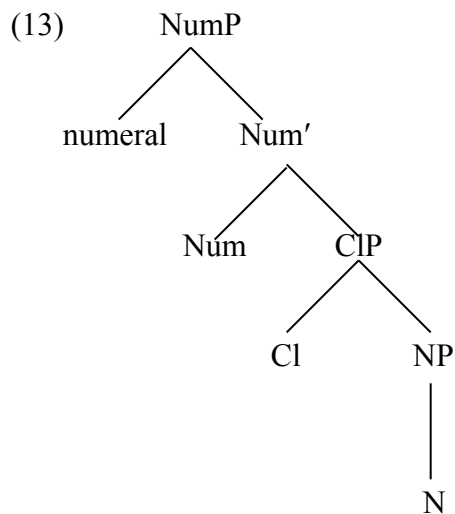
- (12) a. ta qiao le san **ci** men.
 s/he knock PERF three time door
 ‘S/he knocked on the door three times.’
- b. ta qiao le san **xia** men.
 s/he knock PERF three time door
 ‘S/he made three knocks on the door.’
- c. ta qiao le san **hui** men.
 s/he knock PERF three time door
 ‘S/he knocked on the door on three occasions.’

The sentence in (12a) is ambiguous between what (12b) means and what (12c) means, which makes *ci* resemble *time* since the English word is ambiguous in the same way. One has to rely on the context to decide what the intended meaning is with *ci*. Despite the fact that *ci* is frequently used, I will deliberately ignore it in the discussion below because many interesting phenomena are blurred by the ambiguity of the word.

In the rest of this section, we will discuss the internal structure of NPs where *xia* or *hui* is used as the classifier. I will use *xia* as the representative of the two in the discussion.

1.2 The structure of Chinese noun phrases

Given the facts provided above, I assume that noun phrases such as *san xia kesou* ‘three coughs’ in (4a) that use *xia* as the classifier for an event noun have the same syntactic structure as a typical noun phrase like *san ge pingguo* ‘three apples’ in (3c). Different proposals have been advanced in the literature for the structure of Chinese noun phrases. The following one is from A. Li (1999) (also see Huang, Li and Li 2009: Ch 8. Num in the tree stands for grammatical number. Irrelevant details about DP are omitted):



Under A. Li’s (1999) proposal, classifiers project a phrase CIP (the same idea can also be found in, for example, Cheng and Sybesma 1998, 1999). NumP is proposed to account for facts about the suffix *-men*, which seems to produce a plural reading for certain nouns (see the original work for details).

Several aspects about the structure in (13) are under debate. The first is about the position of all the heads. The structure in (13) is uniformly head-initial, which, as pointed out and discussed by Y. Li (2012), seems to conflict with facts. Consider the following example:

(14) a. tansuo yuzhou

explore universe

‘to explore the universe’

b. shengming tanpan zhongzhi

state negotiation suspend

‘to state that the negotiation is suspended’

c. yuzhou de tansuo

universe DE exploration

‘exploration of the universe’

d. tanpan zhongzhi de shengming

negotiation suspend DE statement

‘statement that the negotiation is suspended’

e. jinxing yuzhou de tansuo

carry out universe DE exploration

‘to carry out exploration of the universe’

f. fabiao tanpan zhongzhi de shengming

issue negotiation suspend DE statement

‘to issue a statement that the negotiation is suspended’

As shown by (14a, b), Chinese is head-initial in the verbal domain since the object of the verb, whether it is phrasal or clausal, appears after the verb. The fact in (14c, d) illustrates that the semantic object of a noun has to appear before the noun, suggesting that Chinese is head-final in the nominal domain. An example is provided in (14e, f) where each of the

two noun phrases in (14c, d) is used as object. A head-initial structure cannot account for the facts in (14c-f).

Another problem of the structure in (13) pointed out by Y. Li (2012) is about the position of relative clauses inside the noun phrase. Consider the example below:

(15) a. xuesheng-men

student-men

‘students’

b. *san ge xuesheng-men

three Cl student-men

‘three students’

c. san ge meiyou xue guo daishu de xuesheng

three Cl not learn GUO algebra DE student

‘three students who haven’t learned algebra’

d. *xuesheng-men meiyou xue guo daishu de

student-men not learn GUO algebra DE

‘students who haven’t learned algebra’

e. meiyou xue guo daishu de xuesheng-men

not learn GUO algebra DE student-men

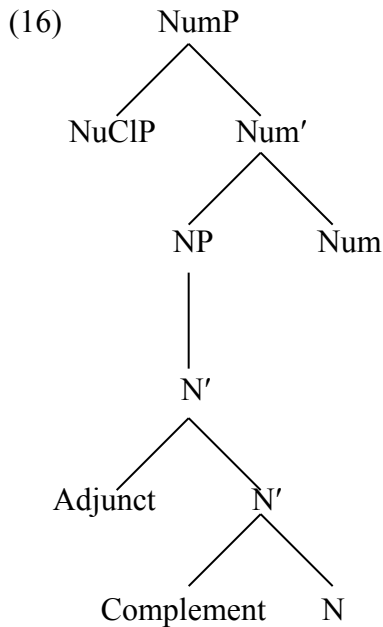
‘students who haven’t learned algebra’

According to A. Li (1999), the alleged plural marker *-men* is in Num, which is above N.

To generate the correct word order where the noun precedes *-men* as shown by (15a), the noun needs to move up to Num to merge with *-men* when Cl is empty. When Cl is filled, the upward movement of the noun will be blocked by the classifier in Cl due to Rizzi’s

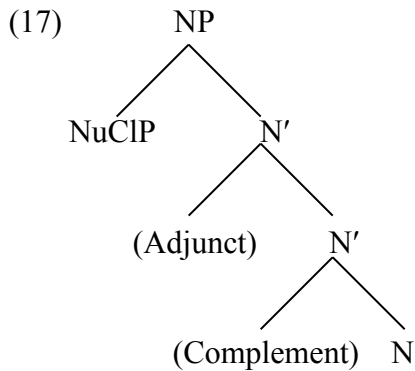
(1990) Relativized Minimality, which explains the ungrammaticality of examples such as (15b). Now consider facts where there is a relative clause in the phrase. According to A. Li's theory, the noun has to stay in situ when Cl is filled. Given the structure in (13), the relative clause in (15c) must be part of the NP. For cases such as (15d) where there is a relative clause and *-men* but no classifier, since the noun has to move up to merge with *-men*, a prediction of A. Li's theory is that the phrase in (15d) where the relative clause is stranded behind should be possible. Unfortunately, the prediction is not correct. The fact in (15e) shows that the relative clause must precede the noun.

Based on the facts illustrated above and a fact about the suffix *-men* which is irrelevant to the topic here, Y. Li (2012) proposes the structure below for Chinese noun phrases (again, details about DP are omitted):



The structure above is head-final. Also, a classifier does not have its own projection in the structure but forms a compound NuCl with the numeral used with it, which sits in the

Spec of the NumP. Following the spirit of Y. Li (2012) and omitting irrelevant details, we propose the structure below for the NPs where *xia* or *hui* is used as the classifier:



There is no projection of Num in the structure. The motivation to propose Num in both A. Li (1999) and Y. Li (2012) is to explain facts about *-men*. The fact is that *-men* can only attach to nouns referring to humans in certain contexts. Also, the semantics of *-men* is not only about pluralization but also involves definiteness and vague quantity (see A. Li 1999 and Y. Li 2012 for facts and discussion). It may be reasonable to propose NumP in (13) and (16) to account for facts about *-men*, but it is an open issue whether a number phrase (NumP) is required for all the noun phrases in the language. Given the fact that the suffix *-men* has a very restricted distribution and a special semantics that make it different from typical plural markers such as the English *-s*, a reasonable assumption is that NumP does not exist across the board. For our concern here, all the event nouns we are dealing with can never co-occur with the suffix *-men*, which is why we do not posit NumP in (17).

NuCIP in (17) stands for the projection of a compound formed by a numeral and the word *xia* ‘time’, which is used as a classifier for the event noun. It has long been observed by grammarians such as Chao (1968) that a numeral-classifier cluster such as *san kuai* ‘three pieces’ behaves like a compound (Chao explicitly treats the cluster as compounds). The evidence behind the intuition shared by authors like Chao (1968) and Y.

Li (2012) is that in general nothing can be inserted between the numeral and the classifier in such a cluster except several adjectives like *da* ‘big’, *xiao* ‘small’ and *zheng* ‘whole’. In those limited number of cases where these adjectives can be inserted, there is a lot of idiosyncrasy and no syntactic expansion is ever possible².

Two examples for the structure above are given below where there is an optional adjunct AP in the phrase. Note that there is no morphological marking anywhere to indicate the plural number (*de* is the marker for modification). Also note that the suffix *men* causes ungrammaticality if it is attached to the two head nouns:

- (18) a. san xia (hen xiang de) kesou
 three Cl_{time} (very loud DE) cough
 ‘three (very loud) coughs’
- b. san ge (hen da de) pingguo
 three Cl (very big DE) apple
 ‘three (very big) apples’
- c. *san xia (hen xiang de) kesou-men
 three Cl_{time} (very loud DE) cough-men
 ‘three (very loud) coughs’
- d. *san ge (hen da de) pingguo-men
 three Cl (very big DE) apple-men
 ‘three (very big) apples’

In cases where the head noun of a noun phrase is not overtly present, the NuCl compound appears directly in argument positions. Consider the example below:

² Whether *xia* or *hui* as a classifier has its own projection or not does not make a significant difference for the syntactic proposal made for event quantifiers below. The choice made here is due to other independent facts such as the ones mentioned here (also see Y. Li 2012).

(19) a. na san ge hen da.

that three Cl very big

‘Those three are very big.’

b. na san xia hen xiang.

that three Cl_{time} very loud

‘Those three are very loud.’

c. wo mai le san ge.

I buy PERF three Cl

‘I bought three.’

d. wo tingjian le san **xia**.

I hear PERF three time

‘I heard three.’

e. wo tingjian le san **hui**.

I hear PERF three time

‘I heard (something) three times.’

In both (19a) and (19b), the NuCl compound *san-ge* ‘three-Cl’ and *san-xia* ‘three Cl_{time}’ appear in the subject position. One has to go to the context to retrieve what the compound refers to. In the case of (19a), the compound refers to objects like apples, pears, oranges etc. In the case of (19b), the compound refers to certain event entities such as coughs, sneezes, burps etc. In (19c) and (19d), the two compounds appear in the object position. Again, the context will help to recover the referents. The contrast between (19d) and (19e) is intended to show that *xia* behaves like *ge*. Just like *san-ge* ‘three-Cl’ in (19c), *san-xia* ‘three Cl_{time}’ in (19d) counts the number of entities denoted by a null noun in the object

but not events denoted by the verb. By contrast, *san hui* ‘three times’ in (19e) counts the number of the hearing events and the thing heard is denoted by the null object. For more facts and examples that show a NuCl compound is nominal, see Chao (1968:552-563). I assume that Cl is the head of the the NuCl compound. This is not surprising because (19) shows that the compound is nominal in nature and as shown by (14) Chinese is head-final in the nominal domain.

In this section, we see facts that show both *xia* and *hui* can function as the classifier for event nouns. We discuss the internal structure of Chinese NPs and make a proposal for the NPs that contain either *xia* or *hui* as the classifier. In the rest of this chapter, we will focus on the syntax of event quantifiers formed by *xia* and *hui*, and discuss the theoretical implications of the syntax of the event quantifiers.

2. A proposal for the syntax of event quantifiers formed by *xia* ‘time’ and *hui* ‘time’

Starting from this section, we discuss the syntax of event quantifiers formed by a numeral and *xia* or *hui*. These event quantifiers are used in a sentence to count the eventuality denoted by the predicate of the sentence. First thing to note is that the event quantifiers formed by *xia* can only co-occur with predicates formed by certain verbs whereas event quantifiers with *hui* has no such selectional restriction.

I did a survey with the verb dictionary compiled by Meng et al. (1999) that has more than 2100 verb entries. Typical examples of the verbs that can co-occur with event quantifiers formed by *xia* are given below. For ease of illustration, the verbs are put in three groups according to their lexical semantics:

(20) Typical examples of the verbs that can co-occur with *xia* ‘time’

(i) Verbs denoting actions involving body parts:

beng ‘to skip; to leap’; *cai* ‘to tread/step on’; *che* ‘to jerk; to pull’; *chuan* ‘to gasp; to pant’; *chui* ‘to blow; to puff’; *chuo* ‘to poke’; *da* ‘to hit; to beat’; *ding* ‘to hammer’; *dou* ‘to tremble’; *duo* ‘to chop’; *duo* ‘to stamp (the foot)’; *en* ‘to press (with hand or finger)’; *gua* ‘to scrape’; *han* ‘to yell; to cry out; to shout’; *hua* ‘to paddle; to row’; *jiao* ‘to chew’; *jiao* ‘to stir’; *jiao* ‘to make a noise; to scream’; *kan* ‘to cut; to hack’; *kesou* ‘to cough’; *mo* ‘to touch’; *nie* ‘to pinch’; *ning* ‘to screw; to twist’; *pai* ‘to pat; to clap’; *peng* ‘to touch’; *pi* ‘to split/chop with an axe/knife’; *po* ‘to splash’; *qia* ‘(using fingers) to pinch; to nip; to clutch’; *qiao* ‘to knock’; *qiao* ‘to pry (with a lever etc.)’; *qin* ‘to kiss’; *reng* ‘to toss; to cast’; *shan* ‘to slap’; *shu* ‘to comb’; *ta* ‘to step/tread/stamp on’; *tan* ‘to flip’; *ti* ‘to kick’; *tian* ‘to lick’; *tiao* ‘to jump; to hop’; *tong* ‘to stab; to poke’; *tu* ‘to spit’; *tui* ‘to push’; *wen* ‘to kiss’; *xiao* ‘to laugh’; *yao* ‘to shake’; *yao* ‘to bite’; *za* ‘to pound’; *zao* ‘to chisel’; *zha* ‘to wink’; *zhao* ‘to wave (hands)’; *zhan* ‘to dip’; *zhua* ‘to scratch’; *zhuang* ‘to bump against’; ...

(ii) Verbs denoting movements of inanimate objects

bai ‘(pendulums etc.) to sway; to swing’; *dong* ‘(leaves etc.) to (slightly) move’; *huang* ‘(boats etc.) to rock’; *pen* ‘(water, fire etc.) to rush/dash out; to squirt; to spurt’; *piao* ‘(stones in ducks and drakes etc.) to bounce across the surface of water’; *shan* ‘(lights, stars etc.) to flash; to flicker; to gleam’; *tan* ‘(balls, rubber bands etc.) to bounce’; ...

(iii) Verbs of sound emission:

di ‘(cars) to honk’; *ding* ‘(bells) to ring’; *du* ‘(clarion etc.) to toot’; *en* ‘to hum (to express agreement)’; *gazhi* ‘to creak; to squelch’; *guangdang* ‘to bang’; *gunong* ‘to grunt; to grumble; to mumble; to mutter’; *honglong* ‘to rumble; to thunder’; *ji* ‘(chicks) to yicker; to twitter’; *miao* ‘(cats) to meow’; *weng* ‘(bees etc.) to drone; to hum; to buzz’; *xiang* ‘(inanimate objects like phones etc.) to sound’; ...

Since event quantifiers formed by *hui* place no restriction on the verbs they can co-occur with, all the verbs above can also co-occur with event quantifiers containing the word *hui*. But there is a sharp semantic difference caused by the choice between these two event quantifiers, which has already been mentioned when we discuss the two words in nouns phrases. Take the verb *tui* ‘push’ for example:

(21) a. Xiaobao tui le na liang che san **xia**.

Xiaobao push PERF that Cl cart three time

‘Xiaobao gave three pushes to that cart.’

b. Xiaobao tui le na liang che san **hui**.

Xiaobao push PERF that Cl cart three time

‘Xiaobao pushed that cart on three occasions.’

The two sentences in (21a, b) have a different boldfaced word in the event quantifier. The difference in meaning induced by the choice of the two words is given by the English translation. The generalization about the fact is as follows: whenever a verb from the lists above co-occurs with event quantifiers with *xia* ‘time’, the numeral used with *xia* always denotes the number of punctual instances of the event denoted by the verb such as knocks, kicks, coughs etc. If *hui* ‘time’ is used in the event quantifier, the numeral denotes the number of occasions on which the denotation of the verb takes place. In the literature of aspect (see for example Comrie 1976 and Smith 1991), the reading of a verb illustrated by (21a) is referred to by the term *semelfactive*. For ease of reference, from now on I will call the Chinese verbs in (20) *semelfactives*.

Another fact worth noting is that ditransitive verbs such as *fa* ‘to fine (someone money)’; *gei* ‘to give’; *song* ‘to give (as a present)’ and *shang* ‘to award’ cannot co-occur with *xia* ‘time’. There are both transitive and intransitive verbs in the lists above. The majority of the verbs in (20i) are transitive except a few intransitive ones such as *kesou* ‘to cough’ and *xiao* ‘to laugh’. All the verbs in (20ii, iii) under the given meanings are intransitive. Note that sentences like the one below in (22a) with the ditransitive verb *gei* ‘to give’ are not counter-examples to the fact pointed out here:

(22) a. wo gei le ta san **xia**.

I give PERF s/he three time

‘I gave her/him three (something).’

b. wo gei le ta san **hui**.

I give PERF s/he three time

‘I gave her/him (something) three times.’

c. wo gei le ta san **xia** erguang.

I give PERF s/he three time slap on the face

‘I gave her/him three slaps on the face.’

d. wo gei le ta san **hui** liwu.

I give PERF s/he three time present

‘I gave her/him presents three times.’

e. wo gei le ta san **ge** (pingguo).

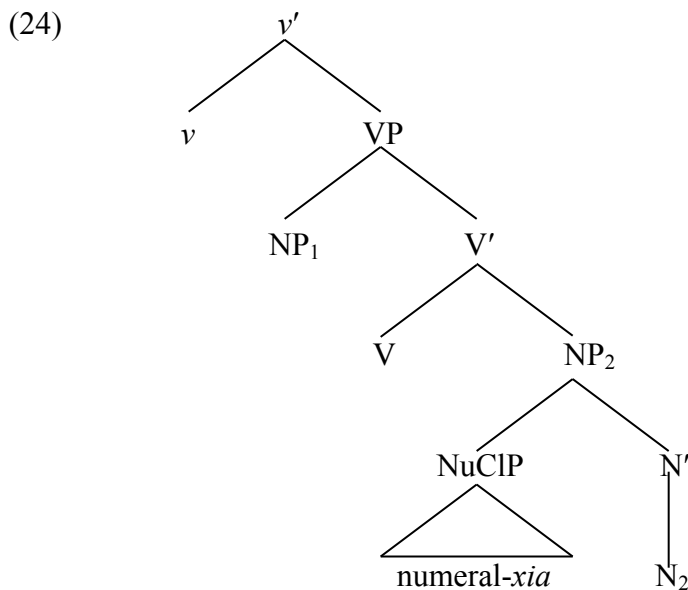
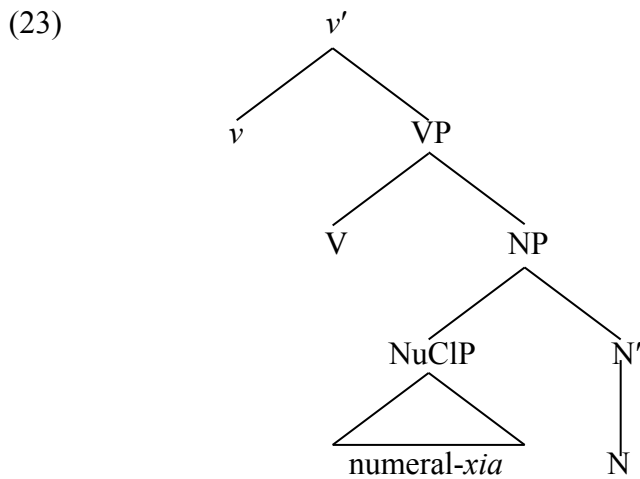
I give PERF s/he three CI (apple)

‘I gave her/him three (apples).’

The sentence in (22a) superficially shows that the ditransitive verb *gei* ‘to give’ appears in the same sentence with the event quantifier *san xia* ‘three times’. But given the meaning of the sentence, *san xia* does not count giving events denoted by the main verb. Since Chinese allows null objects, that reading is possible but has to be expressed by using *hui* in the event quantifier, as shown by the sentence in (22b). The meaning of (22a) suggests that *san xia* counts what I gave to her/him, which is unspecified and has to be recovered from the context. In other words, *san xia* is part of the direct object whose head noun is null and can be present as shown by the sentence in (22c). The meaning of the sentence in (22b) suggests that *san hui* counts the giving events and the thing I gave to her/him is unspecified due to the null object, which can be recovered from the context or

overtly present as in (22d). The sentence in (22e) illustrates that the head noun of a typical noun phrase that functions as the direct object can be null too. The similarity between (22a, c) and (22e) shows that *san xia* behaves like *san ge* ‘three Cl’.

Now the question is: what is the underlying property that defines those verbs in (20) as a natural class? My answer from the syntactic point of view is that all the verbs that can co-occur with *xia* ‘time’, when they do co-occur with *xia*, have the following structure (the one in (23) is for intransitive verbs and the one in (24) is for transitive ones. Irrelevant details are omitted):



The little *v* in both (23) and (24) is responsible for introducing the external argument (the subject) of the verb (see Kratzer 1996). The only difference between (23) and (24) is that (24) is for transitive verbs that have an internal argument sitting in the Spec of the VP (i.e., NP₁ in the tree). The key part of the proposal is that these verbs, when co-occurring with *xia*, take a complement NP (NP₂ in (24)) that is the projection of an event noun. The event noun is the cognate object of the main verb. Since Chinese is a classifier language where nouns can combine with numerals only through classifiers, the word *xia* functions as the classifier for the event noun and it forms a compound with the numerals used with it. The projection of the compound, namely NuCIP, is in the Spec of the NP projected by the event noun. Two sentences are provided below to illustrate the two structures above:

(25) a. Xiaobao xiao le san **xia**.

Xiaobao laugh PERF three time

‘Xiaobao laughed three laughs.’

b. Xiaobao qiao le na shan men san **xia**.

Xiaobao knock PERF that CI door three time

‘Xiaobao made three knocks on that door.’

First consider (25a). Under the structure given in (23), there are two differences between the Chinese sentence and its English translation: first, the event noun *laugh* appears in the object position in English but it is null in Chinese; second, there is a classifier *xia* in Chinese for the event noun whereas there is no such thing in English. As for the sentence in (25b), the claim is that the main verb takes a null cognate object which denotes knocks made in the door-knocking event. *San xia* ‘three times’ is in the projection of the cognate

object with *xia* as its classifier. There are sentences that overtly realize every node of the VP in the two proposed structures. Consider the following example:

(26) a. Xiaobao *da* le san *xia/ge* *pent*i.

Xiaobao do PERF three time/Cl sneeze

‘Xiaobao sneezed three sneezes.’

b. Xiaobao *shan* le Aobai san *xia/ge* *erguang*.

Xiaobao slap PERF Aobai three time/Cl slap on the face

‘Xiaobao gave Aobai three slaps on the face.’

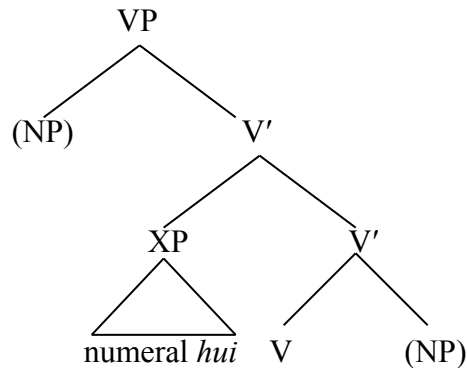
The main verb *da* in (26a), which literally means ‘to hit’, is a light verb that has bleached lexical semantics in the sentence. The event noun *pent*i ‘sneeze’ is in the object position with the numeral *san* ‘three’ and a classifier, which can be *xia* or the general classifier *ge*. The choice between *xia* and *ge* makes no difference in the interpretation of the sentence. Note that the sentence overtly realizes every node of the VP in (23). The sentence in (26b) illustrates the same point: every node of the VP in (24), namely the verb *shan* ‘to slap’, its internal argument *Aobai* and the NP projected by the event noun *erguang* ‘slap on the face’, is realized on the surface. After the verb raises to little *v*, the surface word order is derived. Again, the choice between *xia* and *ge* makes no semantic difference.

The proposal explains the fact that event quantifiers with *xia* has a selectional restriction on the verb. Under the claim here, *xia* is the classifier for the cognate object of the main verb. It is a fact in Chinese that every classifier has a selectional restriction on the nouns it can co-occur with (see Chao 1968 for examples). The classifier *xia* is no exception in this respect. If *xia* has a selectional restriction on the event noun which is the

cognate object of the main verb, it is no surprise that there is a selection between *xia* and the main verb.

The following structure is proposed for a verb phrase where there is an event quantifier containing *hui* ‘time’:

(27)



As shown above, the event quantifier consisting *hui* and the numeral has a projection, i.e., XP, which is a VP-internal adjunct. The thematic internal argument(s) of the verb is/are in the canonical argument positions, namely the complement and/or Spec of the VP. XP attaches to the projection consisting of the verb and its complement if the verb has one. Note that *hui* is not associated with a noun and the event quantifier all by itself functions as the adjunct.

As already noted above, unlike event quantifiers with *xia*, event quantifiers with *hui* can co-occur with any predicate as long as that predicate can take event quantifiers in the first place.³ I already pointed out above that all the verbs that can take event quantifiers with *xia* can also take event quantifiers with *hui*. For verbs that cannot take event quantifiers with *xia*, they may be able to take event quantifiers with *hui*. This is illustrated below:

³ Counting presupposes boundedness (cf. Bach 1986), which means that unbounded eventualities are not countable and therefore cannot co-occur with event quantifiers. For example, individual-level (cf. Carlson 1977) stative predicates cannot co-occur with event quantifiers because they denote unbounded states.

(28)a. na ge wenti ta-men taolun le san hui/*xia, rengjiu mei-you jiejie-banfa.

that CI problem they discuss PERF three time still not-have solution

‘(As for) that problem, they discussed it three times, still did not have a solution.’

b. Xiaobao qi-ku le Ake san hui/*xia.

Xiaobao annoy-cry PERF Ake three time

‘For three times, Xiaobao annoyed Ake and made her cry.’

c. Xiaobao jintian shuaidao le san hui/*xia.

Xiaobao today fall PERF three time

‘Xiaobao fell three times today.’

d. Xiaobao toutou hen-guo ta shifu san hui/*xia.

Xiaobao secretly hate-GUO he master three time

‘Xiaobao secretly hated his master three times.’

The eventuality denoted by each of the sentences above is an activity, accomplishment, achievement and state respectively. In all the sentences, the word in the event quantifier cannot be *xia* but has to be *hui* (more will be said about this in later chapters).

From the syntactic point of view, the fact here can be explained as follows: first note that under my proposal event quantifiers containing *hui* such as *san hui* ‘three times’ in all the sentences above are not associated with an underlying event noun (evidence for the claim is given in Section 5.2). *San hui* ‘three times’ in (28) all by itself is an adverbial that modifies the predicate of the sentence. If event quantifiers formed by *hui* are VP-internal adjuncts in the syntax all by themselves, the promiscuity of these event quantifiers is explained since selectional restriction does not exist between an adverbial and the main verb.

In the next three sections, I will provide evidence to defend the three structures proposed in this section. In Section 3, I defend the structure in (23), which is for event quantifiers with *xia* when they co-occur with intransitive verbs. In Section 4, I defend the structures in (24) and (27). The one in (24) is for event quantifiers with *xia* when they co-occur with transitive verbs and the one in (27) is for event quantifiers with *hui*. Section 5 does some house-cleaning work to clear up some remaining issues related to the three structures that are not discussed in Section 3 and 4.

3. Defending the proposed structure for *xia* with intransitive verbs

Under my claim, the intransitive verbs that can co-occur with *xia* must be unergatives and cannot be unaccusatives. There are two reasons for this: first, the little *v* in the proposed structure is there to license the external argument of the verb; second, the NP projected by the event noun is in the complement position of the verb. The generally-accepted and well-established distinction between unergatives and unaccusatives is that the argument of an unergative verb is the external argument whereas that of an unaccusative is the internal argument (see for example Levin and Rappoport 1995; Perlmutter 1978 among others). An unaccusative verb is never compatible with an external-argument-introducing little *v*. Also, given Burzio's (1981) generalization, an unergative verb has the ability to assign Case to its complement, which means Case-wise there is no problem for the NP projected by the event noun to sit in the complement position of an unergative verb. But for an unaccusative verb, this is a problem because an unaccusative verb cannot provide Case for both its internal argument and the NP in question. In this section, I will show that the prediction made by my claim that all the intransitive verbs that can co-occur with *xia* are unergatives is borne out.

The list below provides some typical examples of Chinese unaccusatives:

- (29) *chen* ‘to sink’; *dao* ‘to fall down’; *diao* ‘to fall off’; *duan* ‘to break’; *huai* ‘to break down’; *lai* ‘to come; to arrive’; *lan* ‘to rot’; *lie* ‘to crack; to split’; *po* ‘to break’; *si* ‘to die’; ...

The following fact shows that these verbs cannot co-occur with *xia*:

- (30) a. shui-guan lie le san ***xia/hui**.

water pipe crack PERF three time

‘The water pipe cracked three times.’

- b. chuanghu po le san ***xia/hui**.

window break PERF three time

‘The window broke three times.’

- c. dianhua huai le san ***xia/hui**.

phone break down PERF three time

‘The phone broke down three times.’

- d. yizi dao le san ***xia/hui**.

chair fall down PERF three time

‘The chair fell down three times.’

Take (30d) for example. Imagine the scenario where the chair fell down and was held up.

The same situation happened three times. To count the three fallings of the chair using an event quantifier, it is ungrammatical to use *xia* in the event quantifier. *Hui* or the general verbal classifier *ci* ‘time’ has to be used. The same fact applies to the other sentences in (30) and all the verbs in (29).

There are at least two facts that show the verbs in (29) are unaccusative. The first one is that they allow a post-verbal indefinite argument, which is illustrated below:

(31) a. *chen le yi tiao chuan.*

sink PERF one Cl boat

‘A boat sank.’

b. *lai le san wei keren.*

come/arrive PERF three Cl guest

‘Three guests came/arrived.’

c. *di-shang diao le san tiao yu.*

ground-top fall off PERF three Cl fish

‘Three fish fell off on the ground.’

d. *si le san zhi mao.*

die PERF three Cl cat

‘Three cats died.’

Four sentences are given in (32) below which form minimal pairs with the ones in (31).

The verbs in (32) are all from the lists in (20) above. As shown by the sharp contrast in terms of grammaticality, the verbs in (32) that can co-occur with *xia* do not allow a post-verbal argument.⁴

(32) a. **huang le yi tiao chuan.*

rock PERF one Cl boat

‘A boat rocked.’

⁴ To express the intended meanings in (32), the existential construction with the verb *you* ‘to have’ has to be used. (40a) below provides an example that uses the existential construction with the verb *tiao* ‘to jump’.

b. *kesou le san wei keren.

cough PERF three CI guest

‘Three guests coughed.’

c. *di-shang tiao le san tiao yu.

ground-top jump PERF three CI fish

‘Three fish jumped on the ground.’

d. *miao le san zhi mao.

meow PERF three CI cat

‘Three cats meowed.’

The contrast between (31) and (32) can be explained by the assumption that the verbs in (31) are unaccusatives whereas those in (32) are unergatives. As already noted above, the sole argument of an unaccusative is the internal argument whereas that of an unergative is the external argument. Since Chinese is SVO, the post-verbal position is for the object (the internal argument) but not the subject (the external argument). If the verbs in (32) are unergatives, it is natural that the sentences are ungrammatical because there is no way for the external argument to appear in the object position. As for the grammatical sentences in (31), I assume that the internal argument of the unaccusative verbs stays in the base position and will not go into the question how it is possible.⁵

The second fact suggesting that the verbs in (29) are unaccusatives is that they can all function as the second morpheme inside a so-called resultative verb compound (cf. Li and Thompson 1981 and Li 1990). Such a verb compound consists of two verbal morphemes, the first of which denotes an event/activity and the second of which denotes

⁵ The post-verbal argument in these sentences has to be indefinite. A definite argument cannot stay in the post-verbal position and has to move before the verb. So the question why the internal argument can stay in situ involves the issue of (in-)definiteness, which is irrelevant to the topic here.

the resultant state/event caused by the eventuality denoted by the first morpheme. For example, to express the meaning of the English transitive verb *break*, a resultative verb compound has to be used in Chinese where the second morpheme of the compound is the verb *po* ‘to break’ in (29) and the first one is a verb such as *qiao* ‘to knock’ that denotes an event or activity leading to the breaking. The closest counterpart to the English transitive *break* is the compound *da-po* ‘do-break’, where the first morpheme *da* is a light verb that literally means ‘to beat; to hit’ but has bleached lexical semantics in the compound. These facts are illustrated below:

(33) a. *po le yi shan chuanghu.*

break PERF one Cl window

‘A window broke.’

b. **Xiaobao po le yi shan chuanghu.*

Xiaobao break PERF one Cl window

‘Xiaobao broke a window.’

c. *Xiaobao da-po le yi shan chuanghu.*

Xiaobao do-break PERF one Cl window

‘Xiaobao broke a window.’

d. *Xiaobao qiao-po le yi shan chuanghu.*

Xiaobao knock-break PERF one Cl window

‘Xiaobao knocked on a window and as a result it broke.’

The sentence in (33a) illustrates that the verb *po* ‘to break’ allows a post-verbal argument.

The sentence in (33b) shows that *po* ‘to break’ cannot be used transitively. To express the meaning of the English transitive *break*, a resultative compound has to be used such as

the one in (33c), where the light verb *da* functions as the first morpheme. If one wants to specify the event that leads to the breaking of the window, a verb denoting that event can be used to replace the light verb *da* such as *qiao* ‘to knock’ in (33d) and other ones like *chui* ‘to hammer’, *za* ‘to pound’, *zhuang* ‘to bump against’ etc.

All the verbs in (29) behave like *po* ‘to break’ in that they can function as the second morpheme inside a resultative verb compound. By contrast, all the intransitive verbs that can co-occur with *xia* cannot function as the second morpheme inside such a compound (but see the discussion of a complication below). Below we will illustrate the contrast by minimal pairs, where the two verbs *dou* ‘to tremble’ and *tan* ‘to bounce’ from the lists in (20) and the two verbs *duan* ‘to break’ and *si* ‘to die’ from (29) are compared.

First of all, the two ones from the lists in (20) that can co-occur with *xia* do not allow a post-verbal argument and the two from (29) can have a post-verbal argument, which is shown below:

(34) a. **dou* *le* *yi* *ge* *qigai*.

tremble PERF one Cl beggar

‘A beggar trembled.’

b. **tan* *le* *yi* *gen* *pijinr*.

bounce PERF one Cl rubber band

‘A rubber band bounced.’

(35) a. *si* *le* *yi* *ge* *qigai*.

die PERF one Cl beggar

‘A beggar died.’

b. duan le yi gen pijinr.

break PERF one CI rubber band

‘A rubber band broke.’

Now let us focus on the fact about resultative verb compounds. The two verbs in (34) cannot function as the second morpheme in a resultative compound whereas those in (35) can. The sentences in (36) below form minimal pairs with those in (37):

(36) a. *yanhan dong-dou le na ge qigai.

severe cold freeze-tremble PERF that CI beggar

‘The severe cold froze that beggar and as a result he trembled.’

b. *wo la-tan le na gen pijinr.

I pull-bounce PERF that CI rubber band

‘I pulled that rubber band and as a result it bounced.’

(37) a. yanhan dong-si le na ge qigai.

severe cold freeze-die PERF that CI beggar

‘The severe cold froze that beggar and as a result he died.’

b. wo la-duan le na gen pijinr.

I pull-break PERF that CI rubber band

‘I pulled that rubber band and as a result it broke.’

There is nothing implausible about the scenarios the ungrammatical sentences in (36) are intended to express. It is just ungrammatical to express those meanings with a resultative compound. To express the intended meanings, a bi-clausal sentence has to be used, as can be seen from (38):

(38) a. yanhan dong-de na ge qigai butingde dou.

severe cold freeze-de that CI beggar non-stop tremble

‘The severe cold froze that beggar and as a result he trembled non-stop.’

b. wo la-de na tiao pijinr lai-hui tan.

I pull-de that CI rubber band back and forth bounce

‘I pulled that rubber band and as a result it bounced back and forth.’

Take the sentence in (38b) for example. In that sentence, *la* ‘to pull’ is the matrix verb followed by the post-verbal resultative particle *de*. Another clause is embedded under the matrix clause where there is an empty pronoun before *tan* ‘to bounce’ (see Huang, Li and Li 2009 and references cited therein for more discussions on the structure of sentences like (38b)). The facts in (36) and (38) clearly show that there is nothing wrong about the intended readings. It is just that some grammatical rule dictates that the intended readings cannot be expressed through a mono-clausal sentence with a resultative verb compound. They have to be expressed by a bi-clausal sentence using the same morphemes involved. The question is why it has to be like this for the two verbs *dou* ‘to tremble’ and *tan* ‘to bounce’ in (36) but not for *duan* ‘to break’ and *si* ‘to die’ in (37).

Assuming that a mono-clausal sentence can license at most one external argument, the ungrammaticality of (36) can be explained under the claim that *dou* ‘to tremble’ and *tan* ‘to bounce’ are unergatives. Take (36b) for example, since both *la* ‘to pull’ and *tan* ‘to bounce’ inside the resultative verb compound have an external argument, assuming that the external argument is licensed in the Spec of the little *v*, then the two will compete for the same position and there is no way for both of them to be licensed (also see Huang, Li and Li 2009:66 for some discussion from the perspective of events that is relevant to

the fact here). For both of these two external arguments to be licensed, a bi-clausal sentence such as the one in (38b) has to be used where the external argument of the embedded verb *tan* ‘to bounce’ is realized as an empty pronoun. Unaccusative verbs have no problems functioning as the second morpheme inside a resultative compound because they do not contribute an external but an internal argument to the compound.

Besides the facts about post-verbal arguments and resultative verb compounds that can be taken as evidence for the claim that the intransitive verbs that can co-occur with *xia* are unergatives, there is another fact which also supports my claim.

In Chinese as in other languages, some verbs can have different but closely related lexical meanings. Sometimes these different lexical meanings correspond to different syntactic behaviors and therefore must be treated as different verb entries.

Consider the following example:

(39) a. *tiao le san ge ren.*

jump PERF three CI person

‘Three people jumped (say, off a building) to commit suicide.’

b. *pao le san ge ren.*

run PERF three CI person

‘Three people ran away/escaped.’

c. *zou le san ge ren.*

walk PERF three CI person

‘Three people left.’

The verb *tiao* in (39a) can mean either jump (like in a long or high jump) or jump leading to suicide (like in jumping off a high building). Similarly, the verb *pao* in (39b) can mean

either run or run away. The verb *zou* in (39c) can mean either walk or leave. The fact is that the verbs all have the latter reading in (39). The first reading makes perfect sense but is unavailable. To express the first meaning, the existential construction has to be used:

(40) a. *you san ge ren tiao le.*

have three Cl person jump PERF

‘Three people jumped to commit suicide.’

‘Three people jumped.’

b. *you san ge ren pao le.*

have three Cl person run PERF

‘Three people ran away/escaped.’

‘Three people ran.’

c. *you san ge ren zou le.*

have three Cl person walk PERF

‘Three people left.’

‘Three people walked.’

The sentences above have a biclausal structure where *you* ‘to have’ is the matrix verb and the verbs in question are embedded. *San ge ren* ‘three persons’ is the object of *you* ‘to have’. It is possible for the embedded verb to have both readings. We assume that the two meanings of the three verbs discussed here correspond to two verb entries. Take *tiao* for example. The meaning ‘jump’ corresponds to an unergative verb entry while the meaning ‘jump leading to suicide’ corresponds to an unaccusative verb entry. This explains the fact about (39). With a post-verbal argument, the verb can only be unaccusative, which is

why the unergative meaning is unavailable. My assumption is further supported by the fact about resultative verb compounds:

(41) a. ta laoban ba ta qi-tiao le.

he boss BA he annoy-jump PERF

‘His boss annoyed him such that he jumped to commit suicide.’

b. ta laoban ba ta qi-pao le.

he boss BA he annoy-run PERF

‘His boss annoyed him such that he ran away.’

c. ta laoban ba ta qi-zou le.

he boss he he annoy-walk PERF

‘His boss annoyed him such that he left.’

I argued above that only unaccusatives can function as the second morpheme inside a resultative verb compound. My assumption predicts that when the verbs in question are used as the second morpheme in a resultative compound, they can only have the meaning which we assume to correspond to an unaccusative. This prediction is born out by the fact in (41).

Now let us see what happens when these verbs co-occur with *xia* (*pao* and *zou* normally cannot co-occur with *xia*. See Chapter 5 for discussion):

(42) a. ta tiao le san **xia**.

he jump PERF three time

‘He jumped three jumps.’

b. ta tiao le san **hui**.

he jump PERF three time

‘He jumped on three occasions.’

‘He jumped to commit suicide on three occasions.’

When *tiao* is used with an event quantifier containing *xia* such as *san xia* ‘three times’ in (42a), it gets the unergative reading. The sentence in (42a) cannot have the reading where the verb denotes jumps off a building leading to suicide. That reading has to be expressed by using the word *hui* in the event quantifier as shown by (42b). The fact in (42) supports our claim that *xia* co-occurs with unergative verbs.

Since we are discussing lexical ambiguity here, some remarks about a complication are in order. Using facts about post-verbal arguments and resultative verb compounds, we have seen above that all the intransitive verbs in (20) are unergatives. There is a complication associated with the three verbs *dong* ‘to move’, *xiao* ‘to laugh’ and *xiang* ‘to sound’ in (20) that needs explanation.⁶ First consider the fact below:

(43) a. **dong le yi pian shuye.*

move PERF one Cl tree leaf

‘A leaf moved.’

b. *feng chui-dong le yi pian shuye.*

wind blow-move PERF one Cl tree leaf

‘The wind blew and as a result a leaf moved.’

(44) a. **xiao le yi ge xiaohai.*

laugh PERF one Cl child

‘A child laughed.’

⁶ The verb *ku* ‘to cry’ also displays the discrepancy shown by the examples in (43) through (45) below. But since the verb normally cannot co-occur with *xia*, I ignore it here.

- b. ta dou-xiao le yi ge xiaohai.
 he tease-laugh PERF one CI child
 ‘He teased a child and as a result she laughed.’
- (45) a. *xiang le yi kou zhong.
 sound PERF one CI bell
 ‘A bell rang.’
- b. ta qiao-xiang le yi kou zhong.
 he knock-sound PERF one CI bell
 ‘He knocked on a bell and as a result it sounded.’

Let us focus on *xiang* ‘to sound’ in the discussion below because the three verbs behave the same in the respect under discussion. As shown by (45a), the verb *xiang* ‘to sound’, like the verb *tan* ‘to bounce’ discussed above, does not allow a post-verbal argument. But unlike *tan* ‘to bounce’, it can function as the second morpheme inside a resultative verb compound as shown by (45b). Given our assumptions above, (45) displays a discrepancy: (45a) shows that *xiang* ‘to sound’ cannot be unaccusative whereas (45b) seems to suggest just the opposite.

One way to explain the discrepancy here is to propose lexical ambiguity: depending on its lexical semantics, the word *xiang* can be both unergative and unaccusative.⁷ It is treated as an unaccusative when it means ‘(an object) to sound due to external force’. In cases like (45b) where the external force, namely the knocking denoted by *qiao* ‘knock’, is overtly expressed, *xiang* is treated as an unaccusative. *Xiang* is treated as an unergative when it means ‘(an object) to sound due to its internal properties’. In

⁷ The phenomenon illustrated by the examples in (43) through (45) has already been noted in Huang, Li and Li (2009:60), where the authors comment that “certain verbs have variable behaviors. ... Variable-behavior verbs alternate between the two classes [unergatives and unaccusatives].” Their conclusion is followed here.

cases like (45a) where no external cause is specified in the sentence, *xiang* is treated as an unergative and the ringing of the bell is interpreted as arising due to the internal mechanical/electrical device of the bell. The example below provides some empirical evidence for the explanation:

(46) ta da-xiang le na bu dianhua.

he do-sound PERF that CI phone

‘He beat that phone and as a result it sounded.’

The verb *da* can mean both ‘to beat; to hit’ and ‘to call (a phone)’. Given the ambiguity of the verb, it is possible for the sentence above to express two scenarios: the first is that he beat that phone and as a result it made some noises. The second is that he called that phone using, say a cell-phone, and as a result the phone rang. The fact is that the above sentence sounds natural under the first meaning but sounds quite odd under the second meaning, which suggests that the passive sounding of the phone caused by beating and the ringing of the phone due to its internal ringing device are treated differently by the grammar: the former is unaccusative whereas the latter is unergative. This explains why the first reading of (46) is natural because *xiang* as the second morpheme inside the resultative compound has to be unaccusative. Note that all the other intransitive verbs in (20) behave unambiguously as unergatives: they neither tolerate a post-verbal argument nor can they function as the second morpheme inside a resultative verb compound.

To summarize, in this section we provide empirical evidence for the structure proposed for event quantifiers formed by *xia* when they co-occur with intransitive verbs. Next we turn to defending the structure proposed for event quantifiers formed by *xia*

when they co-occur with transitive verbs and that proposed for event quantifiers formed by *hui*.

4. Defending the proposed structure for *xia* with transitive verbs and that for *hui*

The evidence for the two structures comes from facts about the interpretation of idioms, especially V-O ones. A V-O idiom is one that consists of a verb and its object such as the English one *to kick the bucket*. 17 V-O idioms are collected where the verb in the idiom can co-occur with *xia*. Since *hui* can also co-occur with the verbs that can co-occur with *xia*, these idioms makes it possible to compare event quantifiers formed by the two words. A systematic phenomenon arises when *xia* and *hui* are used with a V-O idiom. When *hui* is used, the idiomatic meaning is still available. In sharp contrast, the idiomatic meaning goes away when *xia* is used. In subsection 4.1, I provide examples to illustrate the fact mentioned here. An account for the fact based on the proposed structures in (24) and (27) above is given in 4.2.

4.1 Facts about the interpretation of idioms

Let me first provide some typical examples of the V-O idioms (see the appendix for a list of all the 17 idioms I have collected). The example below provides four idioms with both the literal and idiomatic meaning:

(47) a. tong mafeng-wo

poke hornet-nest

‘to poke a/the hornet-nest’

‘to offend a person not to be trifled with; to invite disaster’

b. mo laohu pigu

touch tiger backside

‘to touch the backside of a/the tiger’

‘to offend a person in authority; to beard the lion in his den’

c. bao fo-jiao

clasp Buddha foot

‘to clasp the feet of a/the Buddha statue’

‘to make a hasty last-minute effort’

d. peng dingzi

bump against nail

‘to bump against a/the nail’

‘to meet rejection’

Below I provide four sentences where the idioms above are used as the predicates.

As can be seen below, the sentences all have both a literal and idiomatic meaning:

(48) a. ta tong le mafeng-wo.

s/he poke PERF hornet-nest

‘S/he poked the hornet-nest.’

‘S/he invited disaster.’

b. ta mo le laohu pigu.

s/he touch PERF tiger backside

‘S/he touched the backside of the tiger.’

‘S/he offended a person in authority.’

c. ta bao le fo-jiao.

s/he clasp PERF Buddha-foot

‘S/he clasped the feet of a Buddha statue.’

‘S/he made a hasty last-minute effort.’

d. ta peng le dingzi.

s/he bump against PERF nail

‘S/he bumped against the nail.’

‘S/he met rejection.’

The two event quantifiers *san hui* ‘three times’ and *san xia* ‘three times’ are used with the idioms. As can be seen below, the sentence with *san hui* keeps the idiomatic meaning but the one with *san xia* only has the literal meaning (to save space, only the two idioms in (48a, b) are tested below, but the same fact applies to the other idioms too):

(49) a. ta tong le san hui mafeng-wo.

s/he poke PERF three time hornet-nest

‘S/he poked a hornet-nest three times.’

Or: ‘S/he offended someone not to be trifled with three times.’

b. ta tong le san xia mafeng-wo.

s/he poke PERF three time hornet-nest

Only: ‘S/he poked a hornet-nest three times.’

(50) a. ta mo le san hui laohu pigu.

s/he touch PERF three time tiger backside

‘S/he touched the backside of a tiger three times.’

Or: ‘S/he offended a person in authority three times.’

b. ta mo le san xia laohu pigu.

s/he touch PERF three time tiger backside

Only: 'S/he touched the backside of a tiger three times.'

There are two post-verbal positions that both event quantifiers can occupy: between the verb and its object and after the object. Note that the fact about the interpretation of these idioms does not change if the event quantifier switches its position from between the verb and its object to the position after the object:

(51) a. ta tong le mafeng-wo san hui.

s/he poke PERF hornet-nest three time

Like (49a), both the literal and the idiomatic reading are available.

b. ta tong le mafeng-wo san xia.

s/he poke PERF hornet-nest three time

Like (49b), only the literal reading is available.

(52) a. ta mo le laohu pigu san hui.

s/he touch PERF tiger backside three time

Like (50a), both the literal and the idiomatic reading are available.

b. ta mo le laohu pigu san xia.

s/he touch PERF tiger backside three time

Like (50b), only the literal reading is available.

Besides the direct object, some V-O idioms also involve an additional applied malificiary argument. For example, the idiom in (53a), when used idiomatically, involves an applied argument *wo* 'I' that denotes the person who "suffers from" the event of her/him pulling the pigtail or seizing on the mistake, as can be seen from (53b):

(53) a. *jiu bianzi*

pull pigtail

Literally: ‘to pull one’s pigtail’

Idiomatically: ‘to seize on one’s mistake; to capitalize on one’s vulnerable point’

b. *ta jingchang jiu wo bianzi.*

s/he often pull I pigtail

‘S/he often pulled my pigtail.’⁸

Or: ‘S/he often seized on my mistake.’

In terms of the interaction with the two event quantifiers, these idioms behave in exactly the same way as the ones discussed above, as can be seen from (54) below:

(54) a. *ta jiu le wo san hui bianzi.*

s/he pull PERF I three time pigtail

‘S/he pulled my pigtail three times.’

Or: ‘S/he seized on my mistake three times.’

⁸ The translation makes it seem that *wo* ‘I’ and *bianzi* ‘pigtail’ form a phrase where *wo* ‘I’ is the possessor of the head noun *bianzi* ‘pigtail’. As shown by the sentences in (54) below, *wo* ‘I’ and *bianzi* ‘pigtail’ can be separated by an event quantifier, which means that the two words are separate arguments of the verb and do not form a phrase. The fact about the applied malificiary argument is a general fact about the language and does not have to appear with idioms. For example:

(i) a. *ta chi le wo san ge pingguo.*

s/he eat PERF I three Cl apple

‘S/he ate three apples from me.’

b. *wo *(de) san ge pingguo*

I DE three Cl apple

‘three apples of mine’

The word *wo* ‘I’ in (ia) is an applied malificiary argument and it does not form an NP with the following argument *san ge pingguo* ‘three apples’ because the nominal modification marker *de* will be required for the two to form a noun phrase as shown by (ib). Note that more structure than that provided by (24) may be needed to accommodate the applied malificiary argument. One way to generate the required structure is to project a functional applicative head (cf. Pylkkänen (2008)) above the VP that provides a Spec position and also the malificiary semantics for the applied argument.

b. ta jiu le wo san xia bianzi.

s/he pull PERF I three time pigtail

Only: 'S/he pulled my pigtail three times.'

Again, the fact about interpretation is not affected by the change of position of the event quantifiers:

(55) a. ta jiu le wo bianzi san hui.

s/he pull PERF I pigtail three time

Like (54a), both the literal and the idiomatic reading are available.

b. ta jiu le wo bianzi san xia.

s/he pull PERF I pigtail three time

Like (54b), only the literal reading is available.

The phenomenon reported above is consistent with all the 17 idioms I have collected (see the Appendix for the complete list). As a matter of fact, the word *hui* keep the idiomatic reading for all kinds of idioms. The following example illustrates this:

(56) a. bei hei-guo

carry on the back black wok

Literally: 'to carry a black wok on the back'

Idiomatically: 'to take the blame for others; to be made a scapegoat'

b. zou hou-men

walk back door

Literally: 'to get in by the back door'

Idiomatically: 'to use connections to gain advantages'

Neither the verb *bei* ‘to carry on the back’ in (56a) nor the verb *zou* ‘to walk’ in (56b) can co-occur with *xia*. When *san hui* ‘three times’ co-occurs with these two idioms, the relevant idiomatic meaning is still available:

(57) a. ta bei le san hui hei-guo.

s/he carry on the back PERF three time black wok

‘S/he carried a black wok on his back three times.’

Or: ‘S/he was made a scapegoat three times.’

b. ta zou le san hui hou-men.

s/he walk PERF three time back door

‘S/he got in by the back door three times.’

Or: ‘S/he used connections to gain advantages three times.’

Again, the fact is not affected if *san hui* appears after the object. To save space, I omit the relevant examples. As predicted, the two sentences in (57) become ungrammatical if the event quantifier is replaced by *san xia* ‘three times’ because *xia* cannot co-occur with the two verbs:

(58) a. *ta bei le san xia hei-guo.

s/he carry on the back PERF three time black wok

‘S/he carried a black wok on his back three times.’

b. *ta zou le san xia hou-men.

s/he get through PERF three time back door

‘S/he got in by the back door three times.’

Just like English where there are sentential idioms such as *The cat is out of the bag*, Chinese also has sentential idioms. These sentential idioms can co-occur with *hui*

and still keep their idiomatic meaning whereas they either reject *xia* or allow it but lose the idiomatic meaning. Three sentential idioms are provided below in (59):

(59) a. da-shui chong le longwang-miao.

big-water dash PERF dragon king-temple

Lit: 'The flood dashed against (flooded) the Temple of the Dragon King.'

Idio: 'A conflict arose between people on the same side.'

b. gou yao le Lüdongbin.

dog bite PERF Lüdongbin

Lit: 'The dog bit Lüdongbin.'

Idio: 'Someone wronged a kind-hearted person.'

c. lao niu ken le nen cao.

old cow nibble PERF tender grass

Lit: 'An old cow nibbled some tender grass.'

Idio: 'An old man married a young woman.'

If *san hui* 'three times' is used with these idioms, both readings are available:

(60) a. da-shui chong le san hui longwang-miao.

big-water dash PERF three time dragon king-temple

'The flood dashed against (flooded) the Temple of Dragon King three times.'

Or: 'A conflict arose between people on the same side three times.'

b. gou yao le san hui Lüdongbin.

dog bite PERF three time Lüdongbin

'The dog bit Lüdongbin three times.'

Or: 'Someone wronged a kind-hearted person three times.'

c. lao niu ken le san hui nen cao.

old cow nibble PERF three time tender grass

‘An old cow nibbled some tender grass three times.’

Or: ‘An old man married a young woman three times.’

If *hui* is replaced by *xia*, as shown by the following example, the idiomatic reading in all three sentences is gone and only the literal meaning is available:

(61) a. da-shui chong le san xia longwang-miao.

big-water dash PERF three time dragon king-temple

Only: ‘The flood dashed against the Temple of Dragon King three times.’

b. gou yao le san xia Lüdongbin.

dog bite PERF three time Lüdongbin

Only: ‘The dog gave Lüdongbin three bites.’

c. lao niu ken le san xia nen cao.

old cow nibble PERF three time tender grass

Only: ‘An old cow had three nibbles of some tender grass.’

There seems to be a simple explanation for all the facts reported here. As already pointed out above, *xia* only quantifies over punctual events like coughs, knocks, kicks etc. Notice that the idiomatic reading of all the V-O idioms illustrated above seem to denote non-punctual eventualities. For instance, *tong mafeng-wo* ‘to poke the hornet-nest’ means idiomatically ‘to offend a person not to be trifled with’, which seems like an achievement (as will be shown and discussed in later chapters, *xia* cannot co-occur with achievements. Also, the verb *maofan* ‘to offend’ independently cannot co-occur with *xia*.) Given that

xia cannot quantify over non-punctual eventualities, it is no surprise that the idiomatic reading goes away whenever *xia* is present. In contrast, *hui* can quantify over non-punctual eventualities, which is why it keeps the idiomatic reading. This explanation faces a problem raised by examples such as the one in (62) below:

(62) chi doufu

eat tofu

Literally: ‘to eat tofu’

Idiomatically: ‘to touch someone (has a sexual connotation)’

The idiom can idiomatically mean ‘to touch someone in order to gain sexual advantage’. If Xiaobao touched Ake in this way, the sentence in (63a) can be used to describe his touching of Ake. The sentence then would be synonymous with the one in (63b) where the verb *mo* ‘touch’ is used.

(63) a. Xiaobao chi Ake doufu.

Xiaobao eat Ake tofu

‘Xiaobao touched Ake.’

b. Xiaobao mo Ake.

Xiaobao touch Ake

‘Xiaobao touched Ake.’

(64) Xiaobao mo le Ake san xia.

Xiaobao touch PERF Ake three time

‘Xiaobao touched Ake three times.’

The sentence in (64) suggests that the verb *mo* ‘touch’ can co-occur with *xia*. If the above explanation is correct, we predict that the sentence in (63a) should allow *xia* because the

idiomatic use of the verb denotes punctual events, namely touches, which independently can be quantified over by *xia* as illustrated by (64). However, this prediction is wrong.

The two sentences in (65) show that only *hui* is allowed while *xia* is banned:

(65) a. *Xiaobao chi le Ake san xia doufu.

Xiaobao eat ASP Ake three time tofu

‘Xiaobao touched Ake three times.’

b. Xiaobao chi le Ake san hui doufu.

Xiaobao eat ASP Ake three time tofu

‘Xiaobao touched Ake three times.’

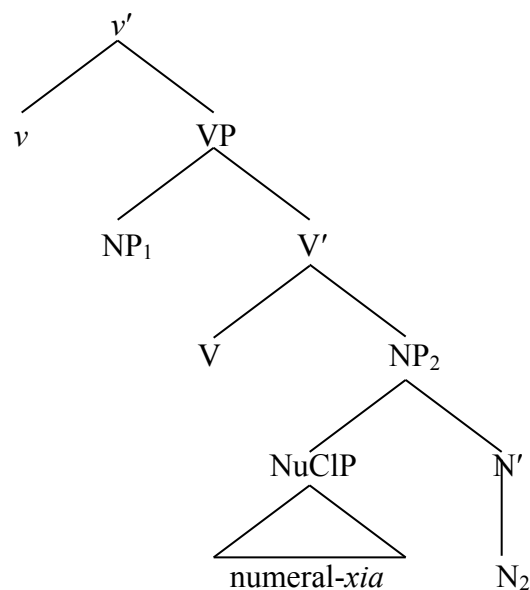
All the facts about Chinese idioms reported in this subsection can be explained under the proposed structures in (24) and (27) above, which I will show below.

4.2 The explanation

The structure proposed for the transitive verbs when they co-occur with *xia* is repeated in

(66) below:

(66)



Take for example the phrase *tong mafeng-wo* which literally means ‘to poke a/the hornet-nest’ and idiomatically means ‘to offend a person not to be trifled with’. The fact is that the idiomatic reading goes away when the phrase is used with an event quantifier with *xia* such as *san xia* ‘three times’. This fact directly follows from the structure above because under my proposal an event quantifier like *san xia* ‘three times’ as a NuCl compound is in the Spec of NP₂ projected by an event noun that is the cognate object of the verb. The semantic function of the event quantifier is to quantify over events denoted by the event noun, namely punctual poking events made in the poking event denoted by the main verb. Note that NP₂ combines with the verb first, which dictates that it is impossible to get rid of the punctual poking reading when the verb combines with its internal argument NP₁ because that meaning is already there when the internal argument gets merged. This also explains why idioms such as *chi doufu* ‘to eat Tofu or to touch someone in order to gain sexual advantage’ cannot co-occur with *xia* because the verb *chi* ‘to eat’ independently cannot co-occur with *xia*:

(67) ta chi le san ***xia/hui** (dongxi).

s/he eat PERF three time (thing)

‘S/he ate (things) three times.’

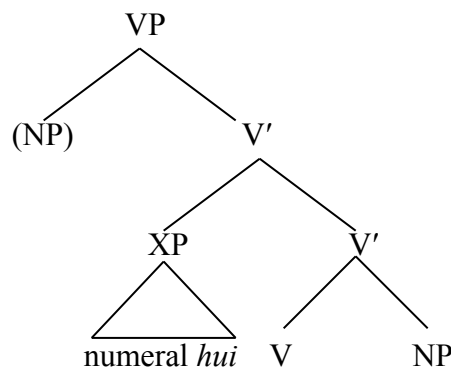
If *chi* ‘to eat’ cannot co-occur with *xia* in the first place as shown by (67), it is predicted that idioms having the verb cannot take event quantifiers with *xia*.

The crucial point in the explanation is this: when an event quantifier with *xia* is used with a phrase such as *tong mafeng-wo* ‘to poke a hornet-nest’ which can have both a literal and an idiomatic meaning, the event quantifier breaks the V-O phrase by merging with the verb before its thematic object and forces the object to sit in the Spec of the VP.

I assume that the idiomatic meaning of a V-O phrase is computed within a projection that includes only the verb and its object. Such a projection does not exist when event quantifiers with *xia* are used, which is why the idiomatic meaning is gone whenever *xia* is present.

The structure proposed for event quantifiers formed by *hui* is repeated in (68) below. The key syntactic difference between event quantifiers with *xia* and those with *hui* is this: when the two event quantifiers are used with a V-O idiom like *tong mafeng-wo* ‘to poke a hornet-nest’, event quantifiers formed by *xia* break the V-O idiom by merging with the verb before its thematic object and force the object to sit in the Spec of the VP whereas event quantifiers formed by *hui* keep the V-O idiom intact by merging with the whole phrase as an adjunct. The idiomatic meaning of a V-O idiom is assumed to be computed within a projection that includes only the verb and its object. Such a projection does not exist when event quantifiers formed by *xia* are used, which is why the idiomatic meaning is gone whenever *xia* is present. By contrast, the required projection is still available with event quantifiers with *hui*, which is why *hui* always keeps the idiomatic meaning.

(68)



5. Some remaining issues about the syntactic proposals

In this section, I discuss some remaining issues for the structures proposed in Section 2. The issues regarding *xia* is discussed in Section 5.1 and those involving *hui* are discussed in Section 5.2.

5.1 Remaining issues for *xia*

In this section I discuss two issues related to event quantifiers formed by *xia*, one is about word order and the other is about the exchangeability of *xia* and instrument nouns.

5.1.1 Two word order issues

There are two word order issues that need to be solved, each of which is discussed below in a subsection.

5.1.1.1 Word order between the event quantifier and the thematic object

As already noted above, when the main verb is transitive, the event quantifier can occupy two post-verbal positions: between the verb and its thematic object and after the thematic object. This is shown below:

(69) a. Xiaobao qiao le san xia na shan men.

Xiaobao knock PERF three time that Cl door

‘Xiaobao made three knocks on that door.’

b. Xiaobao qiao le na shan men san xia.

Xiaobao knock PERF that Cl door three time

‘Xiaobao made three knocks on that door.’

Given the structure in (24), after the raising of V to *v*, the word order in (69b) where the event quantifier occurs after the thematic object is derived. To derive the word order in (69a) where the event quantifier appears between the verb and its object, I follow Larson

(1988) to assume that the V' that consists of the verb and NP₂ (namely the projection of the verb's cognate object which has the event quantifier in the Spec) undergoes reanalysis to become a single verb that as a whole will move to little *v*. Below I will provide a piece of empirical evidence to support the claim here.

A fact is that the event quantifier *yi xia* 'one time' with the numeral *yi* 'one' has acquired a duration reading that is not available to all the other event quantifier formed by *xia*.⁹ So besides meaning 'one time', *yi xia* can also mean 'a short while'¹⁰. The fact that *yi xia* has the duration reading is best illustrated by verbs that cannot co-occur with *xia* as an event quantifier. As shown by (70a) below, the verb *liao* 'to chat', which is an activity verb but not a semelfactive, cannot take an event quantifier formed by *xia*.

(70) a. *wo he ta liao le san xia.

I with he chat PERF three time

'I had three chats with him.'

⁹ It is not surprising given the fact that the numeral *yi* 'one' has developed distributions and interpretations that are not available to all the numerals starting from *san* 'three'. For example, *yi* 'one' can be omitted in a noun phrase of the form "yi + Cl + N" when the phrase is in the object position, an option unavailable to all the other numerals. Similar to *yi* 'one' is the numeral *liang* 'two', which in many cases does not mean two but an unspecified small number (cf. a couple of). For instance, the event quantifier *liang xia* 'two times' in cases like *mo le liang xia* (touch PERF two time 'touched twice/a couple of times') can mean twice but can also mean several times. Due to irrelevant complication caused by the idiosyncrasy associated with *yi* 'one' and *liang* 'two' to the discussion, I intentionally avoid using them and choose the numeral *san* 'three' in my examples. For discussion of some of the peculiar properties of *yi* 'one' and *liang* 'two', see Tsai (2002).

¹⁰ Note that *yi xia* under the duration reading does not make the idiomatic reading of V-O idioms disappear since duration phrases in general do not make the idiomatic reading go away. This is shown below:

- (i) wei-le jintian de kaoshi, ta zuowan bao le yi xia/liang ge zhongtou fo-jiao.
 for today DE exam he last night clasp PERF one time/two Cl hour Buddha foot
 'For today's exam, he made a last minute effort for a short while/two hours last night.'
 'For today's exam, he clasped the feet of a Buddha statue for a short while/two hours last night.'

As shown above, the V-O idiom *bao fojiao* 'to clasp the feet of a Buddha statue/to make a hasty last-minute effort' has both the literal and idiomatic reading when used with *yi xia* under its duration reading and the duration phrase *liang ge zhongtou* 'two hours' (the literal meaning is not as salient as the idiomatic reading due to pragmatic reasons). One possibility that duration phrases keep the idiomatic reading is that they have the same syntax as event quantifiers formed by *hui*. One cannot use the fact above as counterexamples for the fact that event quantifiers formed by *xia* always make the idiomatic reading go away since *yi xia* is not an event quantifier in the above example even if it contains the word *xia*.

b. wo he ta liao le yi xia.

I with he chat PERF one time

‘I chatted with him for a short while.’

The sentence in (70b) is grammatical; but *yi xia* has a duration reading instead of an event quantifier reading. Given the fact, when *yi xia* appears with semelfactive verbs which can take event quantifiers formed by *xia*, the sentence is predicted to have two readings: one where *yi xia* is an event quantifier which counts the single punctual events denoted by the verb and one where *yi xia* has the duration reading. This prediction is only partially borne out. When *yi xia* appears between the verb and its object, the sentence does have the two readings; but when *yi xia* appears after the object of the verb, the sentence only has the reading where *yi xia* is interpreted as an event quantifier. This is illustrated below:

(71) a. Xiaobao qiao le yi xia na shan men.

Xiaobao knock PERF one time that Cl door

‘Xiaobao made a knock on that door.’

‘Xiaobao knocked on that door for a short while.’

b. Xiaobao qiao le na shan men yi xia.

Xiaobao knock PERF that Cl door one time

‘Xiaobao made a knock on that door.’

The fact is further supported by the example below, where the verb *taolun* ‘to discuss’ is an activity and cannot take event quantifiers formed by *xia* as shown by (72a) below ((72a) will also be ungrammatical if *san xia* appears after the object):

(72) a. *women taolun san xia zhe ge wenti ba.

we discuss three time this Cl problem SFP

‘Let’s discuss this problem three times.’

b. women taolun yi xia zhe ge wenti ba.

we discuss one time this CI problem SFP

‘Let’s discuss this problem for a short while.’

c. *women taolun zhe ge wenti yi xia ba.

we discuss this CI problem one time SFP

‘Let’s discuss this problem for a short while.’

As shown by (72b), when *yi xia* appears between the verb and its object, the sentence is grammatical and *yi xia* has the duration reading. When *yi xia* appears after the object, the sentence becomes ungrammatical. What happens in (72b, c) is consistent with the fact in (71): *yi xia*, when appearing between the verb and its object, has both the event quantifier and the duration reading. However, when it appears after the object, it only has the event quantifier reading. Since *taolun* ‘to discuss’ as an activity verb is incompatible with the event quantifier *yi xia*, the event quantifier reading of *yi xia* in the sentence in (72b) gets filtered out and the sentence in (72c) becomes ungrammatical since the only possible reading of *yi xia* is not allowed due to the aspectual nature of the verb.

The question is why it is possible for *yi xia* to have the duration reading when it appears between the verb and its object? My assumption is that the duration reading, which is not available to all the other event quantifiers and can be viewed as an idiosyncrasy of *yi xia*, is the result of reanalysis. When *yi xia* and the verb forms a constituent which undergoes reanalysis to form a single verb, *yi xia* gets trapped and fossilized in the verb, which gives it the possibility to develop idiosyncratic readings. When *yi xia* and the verb are separated by the object of the verb as in (71b) and (72c), it

is a stand-alone constituent and can only have the event quantifier reading. The fact that *yi xia* can have the duration reading only when it appears between the verb and its object thus provides evidence for the reanalysis claim made above.

5.1.1.2 *The event quantifier before the verb*

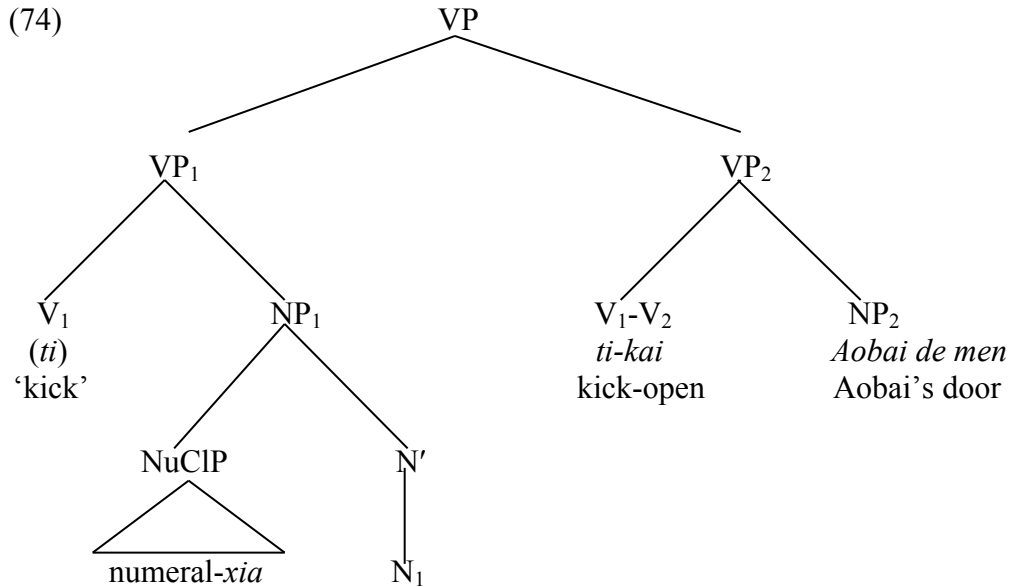
My syntactic proposal for the word *xia* dictates that *xia* can only occur on the right of the verb because it is inside the complement of the verb and Chinese is head-initial in the verbal domain. The sentence in (73) below clearly shows that this is not the case since *xia* is on the left of the main verb, which is a resultative compound verb:

(73) Xiaobao san xia ti-kai le Aobai de men.

Xiaobao three time kick-open PERF Aobai DE door

‘Xiaobao gave Aobai’s door three kicks and as a result it opened.’

Following Li (1990, 1991, 2005), the structure in (74) below is proposed to reconcile my syntactic proposal for *xia* and the fact that it appears in a preverbal position as illustrated by (73). In this structure, my proposal about *xia* stays the same. It still forms a NuCl compound with a numeral that sits in the Spec of the NP projected by a null event noun. The NP (NP₁ in the tree) is in the complement position of a verb, which is phonetically null and identical to the first morpheme inside the resultative verb compound:



As can be seen from the tree above, the verb V_1 in VP_1 is identical to the first morpheme in the resultative verb compound V_1-V_2 , namely *ti-kai* ‘kick-open’. The verb phrase in which *san xia* ‘three times’ occurs, namely VP_1 , is the adjunct of the projection of the compound main verb. The structure in (74) is an example of the so-called serial verb construction that abounds in Mandarin (see Li 1991, 2005 and references cited therein for more discussions).

A piece of evidence for the structure in (74) is that the phonetically null verb can appear on the surface:

(75) a. Xiaobao san xia ti-kai le Aobai de men.

Xiaobao three time kick-open PERF Aobai DE door

‘Xiaobao gave Aobai’s door three kicks and as a result it opened.’

b. Xiaobao ti san xia ti-kai le Aobai de men.

Xiaobao kick three time kick-open PERF Aobai DE door

‘Xiaobao gave Aobai’s door three kicks and as a result it opened.’

As can be seen from (75), the only difference between (75a) and (75b) is that the first morpheme inside the compound verb, namely *ti* ‘kick’, overtly appears before the event-quantifier in (75b) whereas it is null in (75a).

5.1.2 *Xia* and instrument nouns

For some of the verbs that can co-occur with *xia*, *xia* can be replaced by a noun denoting a typical instrument used in the event denoted by the verb. This fact is illustrated below:

(76) a. Xiaobao *ti* le Aobai *san* *xia/jiao*.

Xiaobao kick PERF Aobai three time/jiao

‘Xiaobao gave Aobai three kicks.’

b. Xiaobao *tong* le Aobai *san* *xia/dao*.

Xiaobao stab PERF Aobai three time/knife

‘Xiaobao gave Aobai three stabs (using a knife).’

c. Xiaobao *she* le Aobai *san* *xia/jian*.

Xiaobao shoot PERF Aobai three time/arrow

‘Xiaobao gave Aobai three shots (using an arrow).’

d. Xiaobao *chou* le Aobai *san* *xia/bianzi*.

Xiaobao whip PERF Aobai three time/whip

‘Xiaobao gave Aobai three whips (using a whip).’

Note that the instrument noun in these cases functions as an event quantifier because the numeral does not denote the number of the instruments used but the number of punctual events. For example, *san* ‘three’ in (76b) does not refer to the number of knives used in the stabbing, which is unspecified; rather, it denotes the number of stabs in the stabbing. This is why in all these cases the instrument noun can always be replaced by *xia* and the

meaning of the sentence keeps the same except that the instrument is left unspecified with *xia* in the event quantifier.

In the proposed structure, *xia* as a classifier is the head of the NuCl compound, which sits in the Spec of the NP. The Spec-head relation between *xia* and the event noun makes it possible to account for the fact. Given that the Spec-head relation is the typical structural configuration for agreement, I claim that the Cl in the NuCl compound in the Spec and the event noun agree with each other as follows: the lexical semantics of the event noun has a specification about the typical instrument involved in the event denoted by the noun (a stab involves a knife), by means of agreement, this piece of information is transmitted to the classifier. If the information is overtly manifested, *xia* will surface as an instrument noun such as the ones in (76). This may sound ad hoc but it is actually common for all the classifiers. As noted by Chao (1968:585), a classifier agrees with the nouns it co-occurs with “according to the shape, kind, or some other property associated with the noun”. Take the classifier *gen* for example. It only co-occurs with nouns denoting inanimate objects that have a long, thin shape such as ropes, sticks etc.

This also explains why there is a lot of idiosyncrasy associated with the instrument noun:

(77) a. Xiaobao ti le Aobai san jiao/*shou.

Xiaobao kick PERF Aobai three foot/hand

‘Xiaobao gave Aobai three kicks (using a foot/*hand).’

b. Xiaobao tong le Aobai san dao/#qianbi/#fuzi.

Xiaobao stab PERF Aobai three knife/pencil/ax

‘Xiaobao gave Aobai three stabs (using a knife/pencil/ax).’

As shown above, it is ungrammatical to use the noun *shou* ‘hand’ to replace the noun *jiao* ‘foot’, which is the only grammatical noun to use in this context. This is not surprising because what counts as a kick dictates that the instrument must be the foot. In (77b), the noun *dao* ‘knife’ is the most natural one to use and the sentence with *dao* ‘knife’ can be understood out of the blue. If *dao* ‘knife’ is replaced by nouns like *qianbi* ‘pencil’ or *fuzi* ‘ax’, the sentence sounds odd out of the blue and contextual information is needed for the sentence with these two nouns to sound natural. The generalization is that the instrument noun used as an event quantifier can only be those words that denote the “prototypical” instrument as dictated by the lexical semantics of the event noun. This can be explained by the proposal here because the instrument noun is *xia* plus a piece of information about the instrument that comes directly from the event noun.

5.2 Remaining issues for *hui*

I will discuss two issues related to event quantifiers formed by *hui*.

5.2.1 *Hui* is not associated with a noun in an event quantifier

In the structure proposed for event quantifiers formed by *hui*, I claim that *hui*, unlike *xia*, is not associated with any noun and forms an VP-internal adjunct with the numeral used with it. Below I provide some evidence for the claim that an event quantifier with *hui* all by itself is a constituent, which seems to conflict with the fact that *hui* independently can be a classifier for event nouns. The fact that the word *hui* can be used as a classifier for event nouns alone does not mean that a numeral-*hui* cluster such as *san hui* ‘three time’ cannot be a constituent in the syntax all by itself. As a matter of fact, it is not difficult to find parallel examples in the language. Consider the two words *fenzhong* ‘minute’ and *nian* ‘year’ below:

(78) a. san fenzhong/nian shijian

three CL_{minute/year} time

‘three minutes’/years’ of time’

b. san duan shijian

three CL_{piece} time

‘three intervals of time’

c. san hui shiyan

three CL_{time} experiment

‘three experiments’

d. san ge shiyan

three Cl experiment

‘three experiments’

(78a) shows that *fenzhong* ‘minute’ and *nian* ‘year’ can be used as classifiers for the noun *shijian* ‘time’ just like the classifier *duan* ‘piece, segment’ in (78b). Similarly, *hui* ‘time’ can function as the classifier for the event noun *shiyan* ‘experiment’ in (78c) just like *ge* in (78d). Another parallel between *fenzhong* ‘minute’ and *nian* ‘year’ and *hui* is shown below:

(79) a. san (*ge) fenzhong/nian

three (*Cl) minute/year

‘three minutes/years’

b. san (*ge) hui

three (*Cl) time

‘three times’

The fact above suggests that the two words *fenzhong* ‘minute’ and *nian* ‘year’ may have grammaticalized as classifiers because they do not tolerate any classifier for themselves. Given the fact that *fenzhong* ‘minute’ and *nian* ‘year’ are classifiers just like *hui*, the fact in (80a) below shows that a duration phrase consisting of a numeral like *san* ‘three’ and either *fenzhong* ‘minute’ or *nian* ‘year’ functions as a constituent, which does not tolerate the noun *shijian* ‘time’. If no head noun is associated with the two classifiers *fenzhong* ‘minute’ and *nian* ‘year’ in duration phrases like *san fenzhong/nian* ‘three minutes/years’, it is no surprise that there is no head noun inside event quantifiers containing *hui* ‘time’:

(80) a. wo deng le ta san fenzhong/nian (*shijian).

I wait PERF s/he three minute/year (*time)

‘I waited for her/him for three minutes/years.’

b. wo deng le ta san hui.

I wait PERF s/he three time

‘I waited for her/him three times.’

5.2.2 Null nouns on the surface

This section discusses null nouns on the surface, which provides further evidence for the proposed structures. As is well-known, Chinese is a pro-drop language where both the subject and object of a sentence can be null on the surface. What is more, for a nominal phrase consisting of a numeral/demonstrative, a classifier and a noun that functions as either the subject or the object, the head noun in the phrase can also be null on the surface.

Let me first provide an example for this fact:

(81) a. chi le ma?

eat PERF SFP

‘Did (somebody) eat (something)?’

b. na ge hen haochi.

that Cl very tasty

‘That (something) is very tasty.’

c. wo chi le liang ge.

I eat PERF two Cl

‘I ate two (something).’

Utterances like the one in (81a) are very common in everyday conversations. Note that both the subject and the object of the sentence are null on the surface, which have to be recovered from the context. The facts in (81b) and (81c) show that the head noun inside a nominal phrase can also be null. With these facts in mind, consider the example below where the main verb *shang* ‘award’ is ditransitive:

(82) a. wo shang le ta san **hui**.

I award PERF he three time

‘I awarded him (something) three times.’

b. wo shang le ta san **xia**.

I award PERF he three time

‘I awarded him three (something).’

c. wo shang le ta san **tou**.

I award PERF he three Cl

‘I awarded him three (something).’

Given the fact about null nouns, the sentence in (82a) should be able to have two readings: the first is that I awarded him something three times. Under this reading, the sentence has

a null direct object and the event quantifier *san hui* ‘three times’ counts awarding events denoted by the verb. The second reading is that I awarded him three event entities. Under this reading, the expression *san hui* ‘three times’ is part of the direct object and *hui* is the classifier for a null noun that denotes the event entities I awarded him. The fact is that the second reading is not available. One may argue that this fact may be due to pragmatic reasons because under the second reading the null noun can only be an event noun and it is uncommon to award event entities to people. This explanation does not seem to be plausible due to the fact in (82b). Note that the only reading of the sentence in (82b) is that I awarded him three event entities such as three kicks etc. If it were uncommon to award people event entities, we would expect that the sentence in (82b) requires a highly specific context for its reading to be available, which is not true. As a matter of fact, the sentence in (82b) is just as natural as the one in (82c) where there is a typical nominal classifier *tou* and a null non-event noun which needs to be recovered from the context.

The facts above seem to suggest two points: first, *xia* is a classifier associated with an event noun even if the noun is null on the surface, which is shown by the parallel between (82b) and (82c); second, the function of a numeral-*hui* cluster in a sentence like the one in (82a) is an event quantifier for the main predicate.

I provide the corresponding sentences where the null elements in (82) above are all overt on the surface:

(83) a. wo shang le ta san hui jinyinzhubao.

I award PERF he three time jewelry

‘I awarded him jewelry three times.’

b. wo shang le ta san xia erguang.

I award PERF he three time slap on the face

‘I awarded him three slaps on the face.’

c. wo shang le ta san tou fei-niu.

I award PERF he three Cl fat-cow

‘I awarded him three fat cows.’

As shown by (83a), the direct object of *shang* ‘award’, namely *jinyinzhubao* ‘jewelry’, is overtly present on the surface. Although linearly *san hui* ‘three times’ and *jinyinzhubao* ‘jewelry’ are next to each other, they do not form a constituent since *san hui jinyinzhubao* is ungrammatical. In (83b) and (83c), the head nouns in the object phrases are present. It is obvious that *xia* is in parallel to the nominal classifier *tou*. Now consider the following fact:

(84) a. wo shang le ta jinyinzhubao san hui.

I award PERF he jewelry three time

‘I awarded him jewelry three times.’

b. wo shang le ta erguang san xia, (baoli¹¹ liang ge.)

I award PERF he slap on the face three time (knock on the head two Cl)

‘I awarded him three slaps on the face and two knocks on the head.’

c. wo shang le ta fei-niu san tou, (fei-yang wu zhi.)

I award PERF he fat-cow three Cl (fat-goat five Cl)

‘I awarded him three fat cows and five fat goats.’

¹¹ The noun *baoli* refers to a hard knock on the head made by finger knuckles. I am not sure if it exists in every dialect of Chinese, but an internet search indicates that it is quite commonly used. The verb generally used with the noun is either *qiao* ‘to knock’ or *da* ‘to hit; to beat’ and the classifier for it can be *ge*, *xia* or *ji*.

The only difference between (83a) and (84a) is that the direct object switches its position with the event quantifier. There is no semantic difference between the two sentences in terms of truth conditions. I assume that the word order change is due to the direction of attachment of the adjunct. Following Bowers (1993), I assume that the adjunct *san hui* ‘three times’ can attach to either the left side or the right side of the V’, generating two word orders. Now consider the sentences in (84b) and (84c) where the numeral-classifier cluster is switched to the position after the noun. The fact is that the two sentences sound odd without the part in parentheses. The reason for the fact is as follows. First consider the example below:

(85) a. san tou fei-niu

three CI fat-cow

‘three fat cows’

b. *fei-niu san tou

fat-cow three CI

‘three fat cows’

As shown by the fact in (85), the numeral-classifier cluster normally has to appear before the noun, which is why the sentences in (84c, d) are ungrammatical without the part in parentheses. The reason why the part in parentheses can save the sentence is because it creates a list. In a context where things are listed and counted, it is possible to place the numeral-classifier cluster after the head noun for the purpose of highlighting the quantity of the thing. This phenomenon has already been recorded in traditional grammars such as Chao (1968:559), where he points out that “in the invoice or inventory style the order [the relative order of a numeral-classifier cluster and the noun] is reversed”. The following

conservation is provided by Chao to illustrate the fact (the relevant parts are highlighted in bold):

(86) A: ditan ne?

rug SFP

‘How about rugs?’

B: ditan a?

rug SFP

‘Rugs?’

A: en, ditan.

yeah rug

‘Yeah, rugs.’

B: ditan me, **ditan liang tiao**.

rug SFP rug two CL_{strip}

‘Rugs, uh, rugs, two (strips).’

A: chaji ne?

tea table SFP

‘And tea tables?’

B: **chaji si ge**.

tea table four Cl

‘Tea tables, four.’

A: shujia---

bookcase

‘Bookcase---’

B: (shujia) yi jian.

(bookcase) one CL_{article}

‘(Bookcase), one (article).’

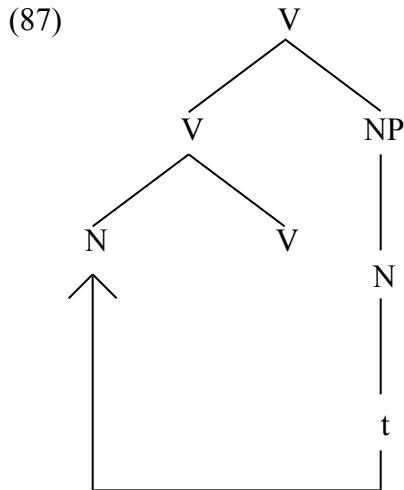
The example above very well illustrates what Chao calls “the invoice or inventory style” of conversation where a list is created. The reason why the relevant part in parentheses in (84b) and (84c) saves the sentence is because it creates a list which makes it possible for the numeral-classifier to appear after the head noun. The point is that *xia* behaves on a par with typical classifiers whereas *hui* behaves quite different. The fact follows from the structures proposed for the two words.

6. Theoretical implications of the syntax of *xia*

In this section, I discuss the theoretical implications of the syntax of *xia*. I first discuss a very popular approach of deriving verbs in the literature and then discuss Cognate Object Constructions.

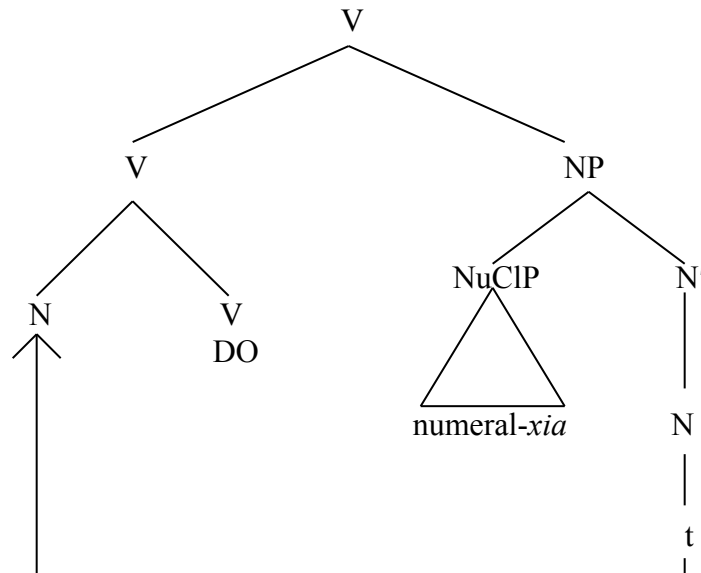
6.1 The implication for deriving verbs in the syntax through noun incorporation

In this subsection, I compare my syntactic proposal with a very influential proposal in the literature made by Hale and Keyser (1993) for English denominal verbs. The essence of Hale and Keyser’s (1993) proposal is that English denominal verbs like *laugh* are derived syntactically through noun incorporation. The following structure is the general scheme for noun incorporation (cf. Baker 1988):

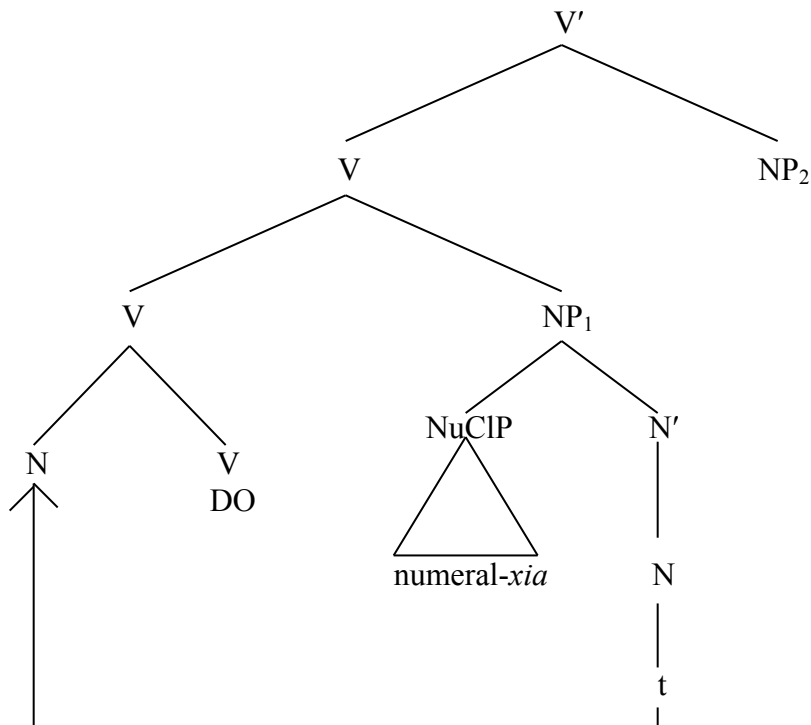


During noun incorporation, the head N of the NP c-commanded by the V moves up and adjoins to the V. Hale and Keyser (1993) follow Baker's (1988) spirit and argue that denominal verbs in English are derived through noun incorporation. Take the verb *laugh* for example. Under their theory, the structure in (87) above is what they call the *lexical relational structure* (the l-syntax) of the verb, which is “not necessarily rigidly distinct” from what they call the s(yntax)-syntax. As can be seen from the structure, the verb starts out as a noun, which then undergoes noun incorporation to merge with the abstract V up in the tree. After the incorporation process, according to the two authors, “the resulting ‘compound’, of which only the N component is phonologically realized, corresponds to the denominal verb”. One may argue that the Chinese verbs that can co-occur with *xia* are also derived through noun incorporation just like *laugh*. I provide two structures below for the verbs in question under the hypothetical noun incorporation theory:

(88) Hypothetical structure for the intransitive verbs that co-occur with *xia*



(89) Hypothetical structure for the transitive verbs that co-occur with *xia*



First note that a separate projection of classifiers (namely a CIP) above the root noun as proposed in theories like A. Li (1999) will cause a serious problem for the hypothetical

noun incorporation theory. This is because for the root N to move up and adjoin to DO, there cannot be any head along the way that will induce minimality effects and therefore block the movement of the root noun (cf. The Head Movement Constraint in Travis 1984). For the sake of discussion, I adopt the NP structure proposed in (17) to avoid the problem for the hypothetical noun incorporation theory.

Let us take two concrete examples to illustrate how the two structures above work. First consider the intransitive verb *xiao* ‘to laugh’. Under the hypothetical theory, the way how this verb is derived is exactly like its English counterpart. It originates from the root noun \sqrt{xiao} , which then undergoes noun incorporation to adjoin to the abstract verb DO. The resulting “compound” emerges on the surface as a verb. The only difference between English and Chinese is that the word *xia* used as a classifier has to be inside the NP of the root noun whenever a numeral is present because Chinese is a classifier language. Now consider the transitive verb *qiao* ‘to knock’. Just like *xiao* ‘to laugh’, it is derived through noun incorporation of the root noun \sqrt{qiao} into the abstract verb DO. The difference between the intransitive verb and the transitive one is that the transitive one has to take an internal argument after it is derived. Note that this theory also provides an account for the question why these verbs can co-occur with *xia*: they can co-occur with *xia* on the surface because *xia* is with the root noun from which they are derived.

This hypothetical theory based on noun incorporation faces both empirical and theoretical problems. The empirical problem is that it cannot account for the facts about the idioms reported in the previous subsection. Take the verb phrase *tong mafeng-wo* (poke hornet-nest) for example. The fact is that this verb phrase has both the literal meaning ‘to poke a hornet nest’ and the idiomatic reading ‘to offend a person not to be

trifled with'. But when *san xia* 'three time' is used with the phrase, *tong san xia mafeng-wo* only has the literal meaning 'to give a hornet nest three pokes'. Under the noun incorporation theory, the verb *tong* 'to poke' in both *tong mafeng-wo* which has two meanings and *tong san xia mafeng-wo* which has only the literal meaning is derived through noun incorporation. The only difference is that in one case the classifier *xia* is present in the NP of the root noun \sqrt{tong} whereas in the other it is not. In both cases, the verb will combine with *mafeng-wo* 'hornet-nest' after it is derived through the incorporation of the root noun. But in one case the resulting phrase gets two readings whereas in the other it gets only one reading. It is not clear why the phrase cannot get the idiomatic reading when there is a classifier in the NP of the root noun.

A theoretical problem for the noun incorporation theory is that it causes an inconsistency for a general pattern. Note that under the noun incorporation theory a chain of the form [N.....t] is formed via head movement. In English, noun incorporation provides the only case where both the head and the tail of the chain are pronounced:

- (90) a. She laughed a merry laugh.
 b. Smile a little smile for me, Rosemarie.
 c. She coughed/sneezed a loud cough/sneeze.

The sentences above show that both the resulting "compound" formed by adjoining the head N to the abstract V through noun incorporation, which generates the surface verb, and the trace left behind by the root noun are pronounced on the surface. The example below shows that it is impossible to pronounce both the head and the tail of a chain formed in all other cases, whether the chain is formed through head or phrasal movement:

- (91) a. *Will John will have finished his paper by next Friday?

- b. *What did John do what?
- c. *John seems to John like Mary.

The facts above show that only the head of a chain (or the upstairs copy) gets pronounced and the tail of the chain (the trace or the downstairs copy) is always silent. The noun incorporation theory therefore causes an inconsistency for a general pattern of the syntax-phonetics interface in English.¹² If the main verbs and their objects in (90) are all base generated in the syntax, the inconsistency no longer exists.

6.2 The implication for the Cognate Object Construction

I argue that *xia* in an event quantifier is the classifier for the cognate object of the verb. The Chinese facts we have seen so far raise two puzzles. I put the puzzles in (92) below:

(92) Two puzzles:

- a. Transitive verbs in English cannot take cognate objects whereas transitive verbs in Chinese can. Why?
- b. Cognate objects must appear on the surface in English but they cannot be overtly present in Chinese. Why?

In English, verbs that can take a cognate object are all intransitive such as *cough*, *sneeze*, *smile* etc. Transitive verbs like *hug* cannot take a cognate object as shown by (93a) below:

(93) a. *John hugged Mary three gentle hugs.

b. Xiaobao bao le Ake san xia.

Xiaobao hug PERF Ake three time

‘Xiaobao gave Ake three hugs.’

¹² It is impossible to pronounce both the head and tail of a chain in Chinese. In Chinese wh-questions, only one copy of the wh-word gets pronounced. English phrases such as *to sneeze three sneezes* is impossible in Chinese too. The next section has a detailed discussion about the difference between English and Chinese in terms of the surface realization of cognate objects.

Chinese is different from English in that transitive verbs, as long as they are semelfactive, can co-occur with event quantifiers formed by *xia*. An example is given in (93b) above and more can be found in the verb lists in (20). The proposal is that *xia* is the classifier for the cognate object of the verb, which raises the first puzzle in (92a).

The second puzzle is partially shown by (93b) where the cognate object of the verb is null on the surface. To see this more clearly, consider the following example:

- (94) a. John coughed three loud coughs.
 b. *John coughed three loud.
 c. *John coughed three.

In English, the cognate object of the verb has to be present on the surface; otherwise, the sentence will be ungrammatical as shown by (94) above. The situation in Chinese is just the opposite, which is illustrated by the following example:

- (95) a. Xiaobao duosuo le san xia.
 Xiaobao tremble PERF three time
 ‘Xiaobao had three trembles.’
 b. *Xiaobao duosuo le san xia duosuo.
 Xiaobao tremble PERF three time tremble
 ‘Xiaobao had three trembles.’
 c. Xiaobao da le san xia duosuo.
 Xiaobao do PERF three time tremble
 ‘Xiaobao had three trembles.’

The contrast between (95a) and (95b) shows that the cognate object cannot overtly appear on the surface. If the event noun is to appear on the surface, the main verb needs to be the

light verb *da* ‘to do’. All the three sentences in (95) indicate that the verb and its cognate object cannot appear on the surface simultaneously.

To solve the two puzzles, I need two assumptions. The first is the Davidsonian (Davidson 1967) view of events, namely that events are individuals in the domain of discourse just like ordinary individuals such as John and Terry’s ring. The second is the argument status of cognate objects in both Chinese and English. For evidence for the Davidsonian view of events, see for example Higginbotham et al (2000), Landman (2000) and many others in the literature. For evidence for the second assumption, I assume that those sentences that contain an event quantifier formed by *xia* are instances of the Chinese Cognate Object Construction¹³. I have already argued above that the cognate object is in the complement position of the verb. As for English, I follow Macfarland (1995), Massam (1990) among many others to assume that English cognate objects are arguments of the verb but not adjuncts. If they were adjuncts, it would be very mysterious why they are disallowed with transitive verbs.

Before discussing the first puzzle, an independent fact about Chinese needs to be pointed out, which is relevant to the issue discussed here. The fact is illustrated by the example in (96) below:

- (96) a. bao jiaozi
 wrap dumpling

¹³ Hong (1998), following Chao (1968), claims that there are three types of cognate objects in Chinese, which are summarized as “cognate objects which are reduplicated forms of the verb; cognate objects which are things related to the action; and terms expressing the times an action is done”. The first type, namely the reduplication of the verb, is assumed to be a lexical process but not a syntactic construction, see Ch 4 for a detailed study. I discussed some examples of the second type in 5.1.2 and will discuss the others in Ch 3. The third type includes the two verbal classifiers discussed here and also verbal classifiers like *bian* ‘time’ and *tang* ‘time’, which will be discussed in Ch 3. For the third type, Hong puts all these verbal classifiers in a group, but does not provide any evidence to show why they belong to the same type. As shown in this chapter, event quantifiers formed by *xia* and those formed by *hui* have different structures.

‘to wrap (veggie or meat stuffing with a flour wrap) to make dumplings’

b. qie si

cut shred

‘to cut (something such as a potato into) shreds’

c. diao hua

carve flower

‘to carve (something such as a radish into) a flower’

d. zhu zhou

boil porridge

‘to boil (something such as raw rice into) porridge’

As shown above, transitive verbs in Chinese can take objects that denote entities brought about in the event denoted by the verb. Note that the verbs do **NOT** have to be a creation verb such as *write* or *build*. Take the example in (96a) for example, the phrase does not mean wrapping dumplings that are already existent with something like a piece of plastic wrap, where the object takes the theme or patient role. Rather, the phrase means to make dumplings by wrapping veggie or meat sandwich using a piece of round flour wrap. The fact indicates that the object carries the “result” role, which denotes entities created as the result of the event denoted by the verb. The same fact applies to all the other examples in (96).

Note that transitive verbs that can take event quantifiers formed by *xia* can also take this kind of “result” object, which is shown below:

(97) a. ta zai qiang-shang za le yi xia.

he at wall-top pound PERF one time

‘He pounded on the wall once.’

b. ta zai qiang-shang za le yi ge keng.

he at wall-top pound PERF one Cl dent

‘He made a dent on the wall by pounding on it.’

The transitive verb *za* ‘to pound’ can co-occur with *xia* as shown by (97a). As illustrated by (97b), the verb can also take the “result” object which denotes a dent created by the pounding event.

The fact about “result” objects in Chinese is **ONLY** possible with certain creation verbs such as *build* in English. The English counterparts of the Chinese verbs in (96) and (97) cannot take a “result object”. If Chinese transitive verbs independently allow “result” objects, then it is no surprise that they allow cognate objects, which are just a special kind of “result” object that denotes event entities created in the event. English transitive verbs, in general, cannot take “result” objects, which is why they cannot take cognate objects. See Huang, Li and Li (2009 Ch1) for a theory which explains why Chinese verbs allow non-theme objects such as “result” objects whereas English verbs do not.

Now let us turn to the second puzzle. I propose the following universal hypothesis to account for the puzzle:

(98) PF Pronunciation of Cognate Objects as a Last Resort

Do not pronounce the cognate object of a verb in the PF unless you have to.

In Chinese, cognate objects are not pronounced on the surface because head nouns can be null with the presence of a classifier. This is shown below:

(99) a. wo chi le san ge (pingguo).

I eat PERF three Cl (apple)

‘I ate three (apples).’

b. na san ge (pingguo) bei wo chi le.

that three Cl (apple) BEI I eat PERF

‘Those three (apples) were eaten by me.’

c. wo tingjian le san xia (kesou).

I hear PERF three Cl_{time} (cough)

‘I heard three (coughs).’

d. na san xia (kesou) hen xiang.

that three Cl_{time} (cough) very loud

‘Those three (coughs) were very loud.’

e. ta kesou le san xia *kesou.

he cough PERF three time *cough

‘He coughed three coughs.’

The two sentences in (99a, b) illustrate that nominal classifiers for non-event nouns like *ge* can tolerate null head nouns whether the whole phrase is in the subject or object position. The same fact also applies to verbal classifiers like *xia* as shown by (99c, d). Since the event noun *kesou* ‘cough’ independently can be null on the surface, then it has to be null when it is the cognate object of the verb in (99e) according to (98).

In English, cognate objects have to be pronounced since a numeral and a modifier cannot stand as the object of the verb without the head noun:

(100) a. John coughed three loud coughs.

b. I heard three loud *(coughs).

c. Those three loud *(coughs) frightened the baby.

d. John coughed three loud *(coughs).

As pointed out by Jones (1988) and many others, English cognate objects usually, if not always, require a modifier such as *loud* in (100a). The facts in (100b, c) indicate that the head noun cannot be null on the surface. Similarly, the cognate object in (100d) can not be null as well. To save the sentence, the cognate object has to be present on the surface as a last resort according to (98).

7. Summary and an unsolved issue

In this chapter, we discussed the syntax of event quantifiers formed by *xia* ‘time’ and *hui* ‘time’. When *xia* is used with a numeral to function as an event quantifier in a sentence, the proposal is that *xia* is a classifier for an event noun that is the cognate object of the verb. *Xia* forms a compound with the numeral used with it and sits in the Spec of the NP projected by the event noun. The projection of the event noun is in the complement position of the main verb and forces the internal argument of the verb, if it has one, to be in the Spec position of the VP. As for *hui*, the fact is that it can also function as the classifier for event nouns. When it is used with numerals to function as event quantifiers in a sentence, the proposal is that the event quantifier all by itself is a VP-internal adjunct which is not associated with a noun. We provide different facts to support the two syntactic proposals and we also discuss the theoretical implications of the proposals.

One major issue that has not been solved in this chapter is why certain verbs cannot co-occur with *xia*. Some examples are given below:

Achievement verbs:

- (101) a. ta ying le san *xia/hui na ge youxi.
 he win PERF three time that Cl game

‘He won that game three times.’

b. ta dao le san *xia/hui shanding.

he reach PERF three time summit

‘He reached the summit three times.’

Accomplishment verbs:

(102) a. ta du le san *xia/bian na pian wenzhang.

he read PERF three time that CI paper

‘He read that paper three times.’

b. ta kan le san *xia/bian na bu dianying.

he watch PERF three time that CI movie

‘He watched that movie three times.’

Some unergative verbs:

(103) a. ta pao le san *xia/bu pao le wu mi.

he run PERF three time/step run PERF five meter

‘He ran three steps and ran five meters.’

b. ta zou le san *xia/bu you huilai le.

he walk PERF three time/step then return PERF

‘He walked three steps and then returned.’

The explanation for the facts here involves the semantics of event quantifiers, which will be discussed in Chapter 4 and 5. Before that, we need to discuss the syntax of some other verbal classifiers and event quantifiers.

Appendix V-O idioms used in this chapter (17)

The following is a list of 17 V-O idioms with a semelfactive verb I have collected. The literal meaning and the idiomatic meaning are separated by a slash in the gloss:

(a) bao fo-jiao

clasp Buddha foot

‘to clasp Buddha’s feet’ / ‘to make a hasty last-minute effort; to do nothing until the last minute; to profess devotion only when in trouble’

(b) da suanpan

beat abacus

‘to fiddle with the beads of an abacus’ / ‘to scheme’

(c) jiao shetou

chew tongue

‘to chew the tongue’ / ‘to gossip’

(d) jiu bianzi

pull pigtail

‘to pull one’s pigtail’ / ‘to seize on one’s mistake; to capitalize on one’s vulnerable point’

(e) kou maozi

cover with an inverted container like a bowl hat

‘to cover one’s head with a hat’ / ‘to put a (usually bad) label on someone’

(f) mo laohu pigu

touch tiger backside

‘to touch the backside of a tiger’ / ‘to offend a person in authority; to beard the lion in his den’

(g) pai ma-pi

pat horse-buttock

‘to flatter’

(h) peng dingzi

bump against nail

‘to bump against a nail’ / ‘to have one’s offer/proposal turned down; to meet rejection’

(i) qiao bian-gu

beat side-drum

‘to beat the drum on the side’ / ‘to speak a good word indirectly for someone’

(j) qiao zhu-gang

knock bamboo-cane

‘to knock on the bamboo-cane’ / ‘to fleece someone of his money’

(k) qiao bianzi

raise pigtail

‘to stick up one’s pigtail’ / ‘to kick the bucket; to die’

(l) qiao weiba

raise tail

‘to stick up the tail’ / ‘to get cocky’

(m) ti pi-qiu

kick leather-ball

‘to kick the ball’ / ‘to shift responsibility onto others’

(n) tong mafeng-wo

poke hornet-nest

‘to poke a hornet-nest’ / ‘to offend a person not to be trifled with; to invite disaster’

(o) wa qiang-jiao

dig wall-foot

‘to dig the foundation of a wall’ / ‘to sabotage; to steal something valuable from others’

(p) yao erduo

bite ear

‘to bite the ear’ / ‘to whisper into somebody’s ear’

(q) zhuang nan-qiang

bump against south wall

‘to bump against the south wall’ / ‘to end up at a dead end; to fail’

CHAPTER 3

SOME OTHER REPRESENTATIVE VERBAL CLASSIFIERS: THEIR SYNTAX AND SOME RELATED SYNTACTIC ISSUES

0. Introduction

In the previous chapter, we discussed the syntax of two event quantifiers (one formed by *xia* ‘time’ and one formed by *hui* ‘time’) and proposed two different structures for each of them. As a classifier language where the classifier system is well developed, Chinese has a lot more than two verbal classifiers. All these other ones, just like *xia* and *hui*, can also function as event quantifiers with numerals. Some examples of the event quantifiers are provided below:

- (1) a. Xiaobao chi le **yi kou** na zhi kao-ji.

Xiaobao eat PERF one mouth that CI roasted chicken

‘Xiaobao took one bite of that roasted chicken.’

- b. Xiaobao wang qian zou le **liang bu**.

Xiaobao toward front walk PERF two step

‘Xiaobao walked two steps forward.’

- c. na ge zi ta xie le **san bi**, shengxiade ji-bu-de le.

that CI character he write PERF three stroke rest remember-not-RS PERF

‘(As for) that character, he wrote three strokes of it and cannot remember the rest.’

- d. Xiaobao du le **san bian** na ben fo-jing.

Xiaobao read PERF three time that CI Buddhist text

‘Xiaobao read that Buddhist text three times.’

e. Xiaobao qu le **san tang** Yunnan.

Xiaobao go PERF three time Yunnan

‘Xiaobao went to Yunnan three times.’

A major question the current chapter asks about these various event quantifiers illustrated by the five boldfaced ones above is: do they project different structures than those two proposed in Chapter 2, or do they behave like either *xia* or *hui* structurally? Due to space limit, eight representatives of the event quantifiers are chosen and put in two groups for discussion below. The answer to the question is that the ones that will be examined in the current chapter all behave like *xia* structurally. In other words, the difference between *xia* and the ones under discussion in this chapter is lexical but not structural.

The chapter is organized as follows: Section 1 is devoted to the four words *bi* ‘stroke’, *bu* ‘step’, *kou* ‘mouth’ and *sheng* ‘sound’ and Section 2 deals with the two words *bian* ‘time’ and *tang* ‘time (in terms of trip)’. My main aim in both sections is to show with facts that these words behave like *xia* structurally. Facts about event quantifiers with these words will be shown to follow from the structure proposed for *xia* in Chapter 2. Comparison with *hui* ‘time’ will be made when necessary. In Section 3 I discuss a puzzle that involves all the event quantifiers we have discussed and its solution. Section 4 concludes the chapter. An appendix that includes lists of idioms used in the chapter is appended at the end.

1. The syntax of *bi* ‘stroke’, *bu* ‘step’, *kou* ‘mouth’ and *sheng* ‘sound’

In this section, I discuss the four verbal classifiers given in the title above. Like *xia*, these four words can be used with a numeral to function as an event quantifier in a sentence or as a classifier in a noun phrase. In each of the four examples below, the first sentence has

an event quantifier with one of the four words in question and the second sentence has a noun phrase where the word is used as a classifier:

- (2) a. ta na shuazi zai qiang-shang huluan tumo le san **bi**.
 s/he take brush at wall-top randomly paint PERF three stroke
 ‘S/he made three random strokes of painting on the wall using a brush.’
- b. na san **bi** tumo ba haohaode yi mian qiang gei hui le.
 that three CL_{-stroke} paint BA good one CL wall GEI ruin PERF
 ‘Those three strokes of painting ruined a good wall.’
- (3) a. Zhongguo de jingji jinnian wang qian feiyue le hen da yi **bu**.
 China DE economy this year toward front leap PERF very big one step
 ‘China’s economy leaped a big step forward this year.’
- b. Zhongguo de jingji jinnian hui you yi **bu** hen da de feiyue.
 China DE economy this year will have one CL_{-step} very big DE leap
 ‘China’s economy will have a very big step of leap this year.’
- (4) a. na tiao feng-gou yao le ta san **kou**.
 that CL wild-dog bite PERF he three mouth
 ‘That wild dog gave him three bites.’
- b. na tiao feng-gou de san **kou** siyao zai ta tui-shang liuxia le
 that CL wild-dog DE three CL_{-mouth} bite at he leg-top leave PERF
 yongjiu de bahen.
 permanent DE scar
 ‘That wild dog’s three bites left permanent scars on his leg.’

(5) a. ta kesou le san **sheng**.

he cough PERF three sound

‘He coughed three coughs.’

b. na san **sheng** kesou chao-xing le haizi.

that three CL_{sound} cough make noise-wake PERF child

‘Those three coughs woke up the child.’

The fact above shows that these words behave like *xia* and *hui* in terms of functioning as a classifier inside a nominal phrase and as an event quantifier in a sentence. The syntax of a nominal phrase where there is a verbal classifier has been discussed before and will not be repeated here. The task of the current section is to figure out the syntax of the event quantifiers with the four verbal classifiers. The claim is that the structure proposed for *xia* in Chapter 2 can be used to account for event quantifiers with the words in question. As a matter of fact, all the verbal classifiers in the examples above except *bu* ‘step’ in (3) can be replaced by *xia* without changing both the grammaticality and truth conditions of the sentence:

(6) a. ta na shuazi zai qiang-shang huluan tumo le san **bi/xia**.

s/he take brush at wall-above randomly paint PERF three stroke/time

‘S/he made three random strokes of painting on the wall using a brush.’

b. Zhongguo de jingji jinnian wang qian feiyue le yi **bu/*xia**.

China DE economy this year toward front leap PERF one step/time

‘China’s economy leaped a step forward this year.’

c. na tiao feng-gou yao le ta san **kou/xia**.

that CL wild-dog bite PERF he three mouth/time

‘That wild dog gave him three bites.’

d. ta kesou le san **sheng/xia**.

he cough PERF three sound/time

‘He coughed three coughs.’

The reason why *bu* ‘step’ in (6b) cannot be replaced by *xia* will be given in Chapter 5. Below I will provide evidence to support the claim that these verbal classifiers have the same structure as *xia*.

At least two facts are in support of the claim: selectional restriction between the words in question and the verbs they can co-occur with and facts about the interpretation of idioms. Let us discuss selectional restriction first. (7) below provides the basic fact:

(7) Facts about the selectional restriction between the four verbal classifiers and the verbs they can co-occur with

a. *bi* literally means pen. It is generally used with verbs that involve a pen or pen-like instrument such as a brush. Typical examples are: *hua* ‘to draw’, *mo* ‘to smear’, *tu* ‘to squiggle’, *xie* ‘to write’ etc.

b. *bu* means step. It is generally used as an event quantifier with verbs of motion such as *beng* ‘to leap’, *tiao* ‘to jump’, *pao* ‘to run’, *zou* ‘to walk’ etc.

c. *kou* means mouth. It is generally used with verbs whose denotations involve the mouth. Typical examples include: *chi* ‘to eat’; *chou* ‘to smoke’; *chui* ‘to blow’; *he* ‘to drink’; *ken* ‘to nibble’; *min* ‘to sip’; *pen* ‘to squirt’; *qin* ‘to kiss’; *tian* ‘to lick’; *tu* ‘to spit’; *tun* ‘to swallow’; *xi* ‘to breathe’; *yao* ‘to bite’; *yan* ‘to swallow’ etc.

- d. *sheng* means sound. It is generally used with sound-making verbs. Typical examples include *han* ‘to yell’, *hao* ‘to howl’; *jiao* ‘to scream’, *kesou* ‘to cough’, *ku* ‘to cry’, *xiao* ‘to laugh’ etc.

Some sentences are provided below to illustrate the fact listed above:

- (8) a. Xiaobao zai zhi-shang hua le san bi.
 Xiaobao at paper-top draw PERF three stroke
 ‘Xiaobao made three strokes of drawing on the paper.’
- b. Xiaobao wang qian tiao le san bu.
 Xiaobao toward front jump PERF three step
 ‘Xiaobao jumped three steps forward.’
- c. gou tian le Xiaobao san kou.
 dog lick PERF Xiaobao three mouth
 ‘The dog gave Xiaobao three licks.’
- d. Xiaobao han le san sheng.
 Xiaobao yell PERF three sound
 ‘Xiaobao made three yells.’

If a verbal classifier and a verb in (8) are matched in a way that is different from what is given above, for instance, if *kou* ‘mouth’ is used with *tiao* ‘to jump’, the sentence would be ungrammatical. The question is: what syntactic structure makes it possible for the two to agree with each other? The same fact is also observed with *xia* ‘time’, which can only co-occur with semelfactives as reported in Chapter 2. The proposal there is that *xia* is a classifier for an event noun that sits in the complement position of the verb. Since *xia* as the classifier has a matching with the event noun, which, has agreement with the verb as

its complement, the matching between *xia* and the verb is explained. The same reasoning can be applied here. We have seen that the words in question can function as classifiers for event nouns. Assuming they have the same structure as *xia*, what has been said about *xia* applies to them and the fact can be explained in the same way. Note that the structure proposed for *hui* cannot account for the fact here because an event quantifier with *hui* is an adverbial, which does not place any selectional restriction on the verb or vice versa.

Assuming that the event quantifiers in (8) have the structure proposed for *xia* can also explain the interchangeability of *xia* for the verbal classifiers under discussion as shown by (6). I discussed instrument nouns used in event quantifiers that can be replaced by *xia* in the previous chapter such as *jiao* ‘foot’ in *ti le ta yi jiao* (kick PERF he one foot ‘gave him a kick’), which can be replaced by *xia* without changing the grammaticality and truth conditions of the sentence. Note that the word *kou* ‘mouth’ in (6c) can also be viewed as an instrument noun just like *jiao* ‘foot’, which means what has been said about *jiao* ‘foot’ in Chapter 2 can be applied to explain the replacement fact in (6c). As for *bi* ‘stroke’ and *sheng* ‘sound’ in (6a) and (6d) respectively, they do not denote the instrument used in the event but the entities created in the event (i.e., the strokes made in the drawing event and the sounds made in the yelling event). To explain the fact that some instrument nouns used in event quantifiers can be replaced by *xia*, I claimed that those instrument nouns are the realizations of *xia* plus a “instrument” feature based on the fact that the denotation of the instrument noun is the instrument in the denotation of the event noun. The same logic can be applied to account for *bi* ‘stroke’ and *sheng* ‘sound’, with the simple change of the “instrument” feature by a “result” feature given that the two verbal classifiers denote resultative entities created in the event denoted by the event

noun. This seems ad hoc, but a fact about the agreement between non-event nouns and their co-occurring classifiers is that the agreement is based on different features of the noun like the (in)animacy, shape, size, etc. of the denotation of the noun¹⁴. If the agreement for non-event nouns is based on different features, it is not surprising that the agreement for event nouns can be based on more than one feature.

Next consider the fact about idioms. Since *kou* ‘mouth’ is compatible with the most verbs, it is the easiest to find V-O idioms whose verb can take *kou* as an event quantifier. Due to this fact, the discussion below will be based on *kou*. Let me first provide some examples where *kou* is used as an event quantifier:

(9) a. Xiaobao chou le san **kou** na gen xuejia.

Xiaobao smoke PERF three mouth that CI cigar

‘Xiaobao made three sucks on that cigar.’

b. Xiaobao qin le san **kou** Ake.

Xiaobao kiss PERF three mouth Ake

‘Xiaobao gave Ake three kisses.’

c. na tiao gou yao le Xiaobao san **kou**.

that CI dog bite PERF Xiaobao three mouth

‘That dog gave Xiaobao three bites.’

All the events above involve the mouth. The event quantifier *san kou* ‘three mouth’ in all the sentences counts event parts inside the relevant event. For instance, a cigar-smoking event can be viewed as a series of sucking on the butt of the cigar. *San kou* ‘three mouth’ in (9a) is used to count the individual sucking events.

¹⁴ See Chao (1968) for concrete examples for this fact.

We can find V-O idioms with a verb that can co-occur with *kou* as an event quantifier. For example, the verb *chi* ‘to eat’ can take event quantifiers with *kou* and it appears in V-O idioms such as the ones below (more examples can be found in the appendix):

(10) a. *chi* doufu

eat tofu

‘to eat tofu’

‘to molest (a woman)’

b. *chi* ruan-fan

eat soft rice

‘to eat soft rice’

‘(a man) to financially depend on his significant other’

An event quantifier with *hui* ‘time’ and one with *kou* ‘mouth’ are used with the idioms above:

(11) a. Xiaobao *chi* le ta yi **hui** doufu, ta shengqi le.

Xiaobao eat PERF she one time tofu she angry SFP

‘Xiaobao ate tofu from her once [on an occasion] and she got angry.’

‘Xiaobao molested her once [on an occasion] and she got angry.’

b. Xiaobao *chi* le ta yi **kou** doufu, ta shengqi le.

Xiaobao eat PERF she one mouth tofu she angry SFP

‘Xiaobao took one bite of tofu from her and she got angry.’

(12) a. ta *chi* le san **hui** ruan-fan.

he eat PERF three time soft-rice

‘He ate soft rice three times [on three occasions].’

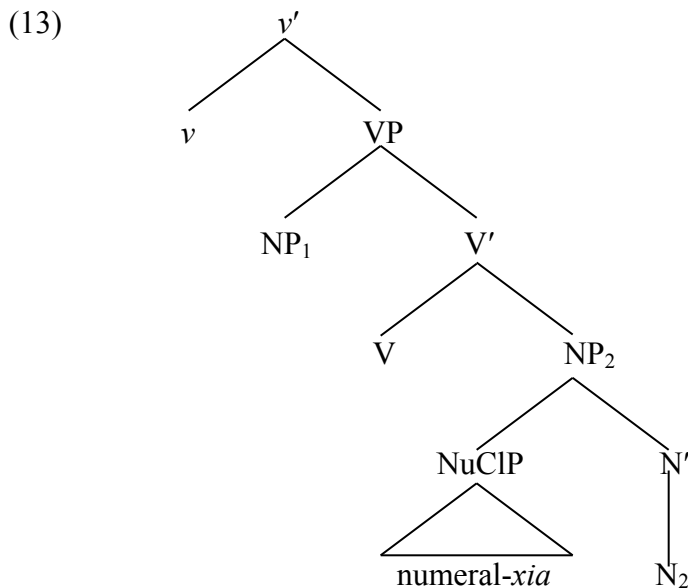
‘He got financially dependent on his wife three times [on three occasions].’

b. ta chi le san **kou** ruan-fan.

he eat PERF three mouth soft-rice

‘He took three bites of soft rice.’

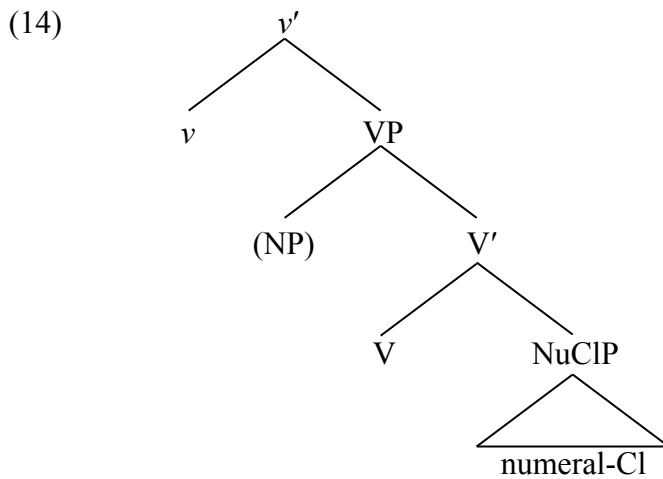
The fact above shows that the idiom always gets the literal interpretation with the word *kou* ‘mouth’, which is reminiscent of the fact and discussion about *xia* in Chapter 2. The structure proposed for *xia* is repeated below:



The reasoning goes like this: the event quantifier with *xia* is inside the projection of the event noun N_2 , which combines with the verb first and forces its thematic object NP_1 to the Spec of the VP. Assuming that the idiomatic meaning of the idiom is processed inside the smallest projection that includes only the verb and its object, such a projection does not exist in the proposed structure due to the presence of NP_2 in the complement position of the verb. As a result, the idiomatic reading is unavailable. If we adopt the structure and

replace *xia* with the verbal classifiers in question, the fact in (11) and (12) gets accounted for.

Before moving onto the discussion of the other group of verbal classifiers, some remarks about another possible structure are in order. Note that the event noun N_2 in the structure in (13) is, for most of the time, null on the surface. This raises the question whether we need to posit the event noun in the first place. In a structure such as the one below where the projection of the event quantifier sits directly in the complement position of the verb, all the facts also can be explained:



The structure above can also account for the facts about selectional restriction and idioms. Note that the event quantifier sits in the complement position of the verb and the verbal classifier is the head of the event quantifier. Since every verb has a selectional restriction on its complement, it is no surprise that the verb and the verbal classifier have agreement. As for the fact about idioms, the event quantifier forces the thematic object of the verb to sit in the Spec position and therefore breaks the set-up for the processing of the idiomatic meaning.

The reason why we posit the event noun N_2 in the structure of (13) is that it can appear on the surface. To the best of my knowledge, there are two situations where the event noun can be present on the surface. In both cases the event noun and the main verb do not have a cognate relation. Let us first look at the first situation:

(15) a. Xiaobao shan le Aobai.

Xiaobao slap PERF Aobai

‘Xiaobao slapped Aobai.’

b. Xiaobao shan le Aobai san xia.

Xiaobao slap PERF Aobai three time

‘Xiaobao slapped Aobai three times.’

c. Xiaobao shan le Aobai san xia erguang.

Xiaobao slap PERF Aobai three CL_{time} slap on the face

‘Xiaobao gave Aobai three slaps on the face.’

As shown by (15c), an event noun, namely *erguang* ‘slap on the face’, is overtly realized on the surface, which is why we posit an null event noun for cases like (15b) where there is no overt event noun after the event quantifier. Similar examples can also be found for the verbal classifiers in question. Consider the following fact:

(16) a. Xiaobao han le Aobai.

Xiaobao call PERF Aobai

‘Xiaobao called Aobai.’ [call: to make a sound as in *call out one’s name*]

b. Xiaobao han le Aobai san sheng.

Xiaobao call PERF Aobai three sound

‘Xiaobao made three calls to Aobai.’ [calls: three sounds not phone-calls]

c. Xiaobao han le Aobai san sheng baba.

Xiaobao call PERF Aobai three CL_{sound} dad

‘Xiaobao made three calls of dad [i.e., *dad, dad, dad*] to Aobai.’

d. Xiaobao ma le Aobai san sheng wangbadan.

Xiaobao curse PERF Aobai three CL_{sound} bastard

‘Xiaobao called Aobai bad names with three *bastard*’s.’

The verbal classifier *sheng* ‘sound’ in (16b) is used to count the calls made by Xiaobao. As shown by (16c), it is possible for the noun *baba* ‘dad’ to appear after *sheng* ‘sound’. Note that the noun *baba* ‘dad’ is the content of the three calls he made, which means that *baba* ‘dad’ is used as an event noun in the sentence. A similar example is given in (16d) where the noun *wangbadan* ‘bastard’ is optional on the surface and refers to the content of the three verbal curses made by Xiaobao.

The other situation where the event noun can be present on the surface is when the main verb is the light verb *da* ‘to do’:

(17) a. ta da le san xia duosuo.

he do PERF three CL_{time} tremble

‘He had three trembles.’

b. ta da le san xia penti.

he do PERF three CL_{time} sneeze

‘He had three sneezes.’

Except the two situations we just saw where the event noun and the verb have no cognate relation, in all the other cases where the verb is assumed to take a cognate object,

the cognate object, which is an event noun, cannot overtly appear on the surface. This is shown below:

(18) a. ta duosuo le san xia *duosuo.

he tremble PERF three time tremble

‘He had three trembles.’

b. Xiaobao wen le Ake san xia *wen.

Xiaobao kiss PERF Ake three time kiss

‘Xiaobao gave Ake three kisses.’

I argued in the previous chapter that the cognate object cannot appear on the surface due to an independent grammatical rule that dictates the PF pronunciation of cognate objects should be silent whenever it is possible to do so. Since it is possible to drop a head noun in a noun phrase in Chinese, the cognate object cannot be pronounced. The facts in (15) through (18) show that an event noun can either occur or be covert on the surface. In the latter case, it is silent due to a grammatical rule but it is nonetheless there.

In this section, we looked at four verbal classifiers and discussed their syntax. The facts we have seen suggest that the structure proposed for *xia* can account for the distributions of these four verbal classifiers as well. In the next section, we examine two more verbal classifiers.

2. The syntax of *bian* ‘time’ and *tang* ‘time’

In this section, we discuss the two verbal classifiers *bian* ‘time’ and *tang* ‘time’. Like all the other verbal classifiers discussed so far, these two words can be used as classifiers for event nouns in a nominal phrase. Two examples are given below to illustrate the fact:

(19) a. san bian yan baojian-cao yao huafei dagai ershi fenzhong de shijian.

three CL_{time} eye health-exercise will take about twenty minute DE time

‘Three eye health exercises will take about twenty minutes.’

b. xi-li suoyou ren dou taoyan mei-tian xiawu de san bian

department-inside all person all hate everyday afternoon DE three CL_{time}
pailian.

rehearsal

‘Everybody in the department hates the three rehearsals every afternoon.’

(20) a. na tang gan-ji lei-huai le ta.

that CL_{time} go-market tire-bad PERF he

‘That market-going exhausted him.’

b. yinwei fubai, cheng-li mei-tian dou you haoji tang kangyi youxing.

due to corruption city-inside everyday all have several CL_{time} protest march

‘Because of corruption, there are several protest marches every day in the city.’

Now we will focus on the syntax of event quantifiers containing these two words.

Let us see *bian* first, which literally means ‘all around; all over; thorough’. Some examples are provided below to illustrate the literal meaning of the word:

(21) a. bian-di dou shi ta sa de niunai.

thorough-ground all be s/he spill DE milk

‘All over the ground is the milk that s/he spilled.’

b. ta de pengyou bian tianxia.

s/he DE friend all over world

‘His/Her friends are all over the world.’

c. ta you-bian le ouzhou.

s/he travel-thorough PERF Europe

‘S/he has travelled throughout/all over Europe.’

d. fojiao jianzu bian-bu zhe ge diqu.

buddhism building thorough-spread this CI area

‘Buddhist buildings spread all over this area.’

The literally meaning of *bian* is kept when the word is used as an event quantifier, which is why Chao (1968:616) translates the word as ‘once over, once through’. Typical verbs that can co-occur with *bian* are all accomplishment verbs such as *bei* ‘to recite (a poem)’, *chao* ‘to copy (a text etc.)’, *chang* ‘to sing (a song)’, *du* ‘read (a book)’, *kan* ‘watch (a movie)’ etc, as can be seen from the example below:

(22) a. ta du le san bian Kuangye de Huhuan.

s/he read PERF three time wild DE call

‘S/he read *The Call of the Wild* three times.’

b. ta kan le san bian Afanda.

s/he watch PERF three time Avatar

‘S/he watched Avatar three times.’

c. ta chao le na pian kewen san bian.

s/he copy PERF that CI text three time

‘S/he copied that text three times.’

d. ta ba na shou shi bei le san bian.

s/he BA that CI poem recite PERF three time

‘S/he recited that poem three times.’

All the events denoted by the sentences above are accomplishments and *bian* ‘time’ is used to count those accomplishments. Sometimes the theme of the verb is null on the surface, but the sentence still gets a telic event reading if *bian* ‘time’ is used. This is shown below:

(23) a. ta chang le (yi shou ge).

he sing PERF (one Cl song)

‘He sang (a song).’

b. ta san fenzhong chang le *(yi shou ge).

he three minute sing PERF (one Cl song)

‘He sang *(a song) in three minutes.’

c. ta san fenzhong chang le yi bian.

he three minute sing PERF one time

‘He sang (something) thoroughly once in three minutes.’

d. *ta san fenzhong chang le yi hui.

he three minute sing PERF one time

‘He sang once [on an occasion] in three minutes.’

(23a) shows that the verb *chang* ‘to sing’ can stand with or without an object. A preverbal duration phrase such as *san fenzhong* ‘three minute’ in (23b) has the same interpretation as time-span adverbials like *in three minutes* in English. As shown by (23b), the duration phrase cannot co-occur with the verb *chang* ‘to sing’ without a quantized object such as *yi shou ge* ‘a song’. The sentence in (23c) shows that with the event quantifier *yi bian* ‘one time’ in the sentence, the duration phrase is allowed even if the object is missing. This is in contrast with the event quantifier *yi hui* ‘one time’ in (23d). I assume that in

cases like (23c), there is a null quantized object whose reference needs to be recovered from the context. The assumption is based on the fact that Chinese is a pro-drop language where both the subject and the object can be dropped (see the previous chapter for some examples of this fact and see for example, Xu 1986 and Huang 1987 for discussion). The lexical semantics of *bian* will force the dropped object to have a quantized interpretation. The assumption is further supported by the fact that when an event quantifier with *bian* is used with a typical activity verb, a telic reading is coerced. Consider the example below:

(24) a. *ta san fenzhong ku le.

she three minute cry PERF

‘She cried in three minutes’

b. ta ku le yi hui.

she cry PERF one time

‘She cried once [on an occasion].’

c. ta ku le yi bian.

she cry PERF one time

‘She cried once.’

d. ta ku le yi bian, daoyan bu manyi, ta zhihao zai ku yi bian.

she cry PERF one time director not satisfied she have to again cry one time

‘She cried once, the director was not satisfied, she had to cry once again.’

The verb *ku* ‘to cry’ is a typical activity verb. This is shown in (24a) where the preverbal duration phrase is ungrammatical. The sentence in (24b) with the event quantifier *yi hui* ‘one time’ means that there is an occasion, say, this morning, on which she cried. With the event quantifier *yi bian* ‘one time’, the sentence in (24c) sounds pretty odd out of the

blue. Now imagine the scenario where she is an actress shooting a crying take. She did it once and the director was not satisfied, so she had to do it again. (24c) is perfect in this context. The sentence in (24d) provides a more complete description of the scenario. The reason why (24c) sounds natural in the context is because the crying in the context is an accomplishment: a well-defined take that has the crying as its content.

Next we turn to the word *tang*, which was translated by Chao (1968:616) as ‘trip’. Chao’s translation reflects the fact that this word, when used as an event quantifier, selects verbs of motion such as *lai* ‘to come (to)’, *gu* ‘to go (to)’, *fei* ‘to fly (to)’ etc, as shown by the following example:

(25) a. jinnian ta qu le san tang Beijing.

this year s/he go PERF three time Beijing

‘This year s/he went to Beijing three times.’

b. wo mingnian yao fei yi tang Xianggang.

I next year will fly one time Hong Kong

‘I will fly to Hong Kong once next year.’

As shown above, *tang* is used with a numeral to count “trip”-type events such as going to Beijing and flying to Hong Kong. The crucial fact about *tang* ‘time’ is that, just like *bian* ‘time’ discussed above, event quantifiers with *tang* always count accomplishments. Due to this fact, all the verbs of motion that co-occur with *tang* necessarily involve a goal. In cases where the goal is not overtly present on the surface, the sentence still gets a telic reading with *tang*. This is shown below:

(26) a. zhihao mafa ni zai zou yi tang.

have to bother you again walk one time

‘(We) have to bother you to go (there) once again.’

b. ta jintian pao le san tang.

he today run PERF three time

‘He ran (there) three times today.’

Zou ‘to walk’ and *pao* ‘to run’ are both activity verbs, which do not necessarily involve a goal. But if they are used with *tang* as in the sentences above where no overt goals are on the surface, the reading we get is still a telic accomplishment. Take the sentence in (26b) for example. The sentence means that he ran to a place (for something) three times today. The place has to be recovered from the context. This is in contrast to an event quantifier with *hui* ‘time’. Consider the example below which differs from (26) only by the event quantifier:

(27) a. zhihao mafa ni zai zou yi hui.

have to bother you again walk one time

‘(We) have to bother you to walk once again.’

b. ta jintian pao le san hui.

he today run PERF three time

‘He ran three times today.’

The important fact is that the two sentences in (27) by default¹⁵ have the reading where *zou* ‘to walk’ and *pao* ‘to run’ denote an atelic activity. For example, the one in (27b) means that he ran on three occasions today, say, once in the morning, once in the afternoon and once in the evening. The running on each occasion does not have to have a goal. The point is further shown by the fact below:

¹⁵ Given a context, it is possible for the two sentences in (27) to have the same accomplishment reading as those in (26). The important thing here is that (27) also has the activity reading given above in the text whereas (26) does not.

(28) a. haizi zai di-shang luan/daocho pa.

child at ground-top randomly/all over the place scrawl

‘The child scrawled randomly/around on the ground.’

b. ta zai he-li luan/daocho you.

he at river-inside randomly/all over the place swim

‘He swam randomly/around in the river.’

c. haizi zai di-shang luan/daocho pa le san

child at ground-top randomly/all over the place scrawl PERF three

#tang/hui.

time/time

‘The child scrawled randomly/around on the ground three times.’

d. ta zai he-li luan/daocho you le san #tang/hui.

he at river-inside randomly/all over the place swim PERF three time/time

‘He swam randomly/around in the river three times.’

With the two adverbials *luan* ‘randomly’ and *daocho* ‘all over the place’ and without any goal-specifying element in the sentence, the event denoted by the predicate is an activity.

It is infelicitous to count the activities using an event quantifier with *tang*. The word has to be replaced by *hui*. However, with an explicit goal-specifying phrase, it is grammatical to count the event by *tang*:

(29) a. haizi wang men-bian pa le san tang.

child toward door-side scrawl PERF three time

‘The child scrawled to the door three times.’

b. ta cong zhe'er dao na'er you le san tang.

he from here to there swim PERF three time

‘He swam from here to there three times.’

So far, we have seen facts showing that event quantifiers with *bian* ‘time’ and *tang* ‘time’ count accomplishments. Due to this fact, the two verbal classifiers both place selectional requirements on the verbs they can co-occur with. In brief, *bian* ‘time’ typically appears with certain accomplishment verbs and *tang* ‘time’ only co-occurs with verbs of motion that have a goal. This is the first fact which indicates that we may need the structure for *xia* to account for the two verbal classifiers.

Now let us look at facts about idioms. One V-O idiom is given in (30) below with both its literal and idiomatic meaning:

(30) ca pigu

wipe ass

‘to wipe one’s ass’

‘to clean up the mess left behind by someone’

As shown by (31) below, the event quantifier *san bian* ‘three times’ makes the idiomatic reading disappear whereas the event quantifier *san hui* ‘three times’ is compatible with both readings:

(31) a. wo bang ta ca le san bian pigu.

I help he wipe PERF three time ass

‘I wiped his ass three times.’

b. wo bang ta ca le san hui pigu.

I help he wipe PERF three time ass

‘I wiped his ass three times.’

‘I cleaned up the mess left behind by him three times.’

Next consider the two idioms in (32):

(32) a. zou hou-men

walk back door

‘to walk through the backdoor’

‘to secure advantages through pull or influence’

b. pao longtao

run gown with colored embroidery for walk-ons

‘play an insignificant role’

The two idioms above are chosen because they have a verb that can co-occur with *tang* ‘time’. Note that the first one has both a literal and idiomatic meaning whereas the literal meaning of the second one is unavailable in every day language¹⁶. If *san hui* ‘three times’ is used, the idiom keeps whatever meaning it has:

(33) a. ta zou le san hui houmen.

he walk PERF three time backdoor

‘He walked through the backdoor three times.’

‘He secured advantages through pull three times.’

b. ta pao le san hui longtao.

he run PERF three time gown with colored embroidery for walk-ons

‘He played an insignificant role three times.’

¹⁶ In Peking opera, there are times when actors wearing a gown with colored embroidery run back and forth on the stage to indicate certain kinds of scenes such as an on-going battle. These actors are basically live stage props and do not play a significant role. The literal meaning of the phrase (running while wearing a gown with colored embroidery) may be available in the field of Peking opera but not in everyday language.

But if *san tang* ‘three times’ is used, the idiom in (32a) only gets the literal meaning and the one in (32b) becomes uninterpretable:

(34) a. ta zou le san tang houmen.

he walk PERF three time backdoor

‘He walked through the backdoor three times.’

b. *ta pao le san tang longtao.

he run PERF three tang gown with colored embroidery for walk-ons

Based on the fact about selectional restriction and interpretation of idioms, I will assume the structure proposed for *xia* in Chapter 2 for *bian* ‘time’ and *tang* ‘time’.

To summarize: so far we have discussed the syntax of nine verbal classifiers (*xia*, *hui*, *ci*¹⁷, *bi*, *bu*, *kou*, *sheng*, *bian* and *tang*) and proposed two structures for the event quantifiers with these nine verbal classifiers. It is an empirical question whether there are other different structures projected by event quantifiers that are not discussed. I leave the question for future research. The rest of the current chapter is devoted to a syntactic issue involving all the verbal classifiers we have seen so far.

3. A syntax-semantics mismatch and its solution

In this section, I discuss an issue involving all the verbal classifiers we have discussed. In 3.1 below, I report the facts and raise the question and in 3.2 I provide a solution to the question.

3.1 Facts illustrating the mismatch

Consider the following fact:

¹⁷ Instead of pointing out that it is the general verbal classifier which is ambiguous between *xia* and *hui* in Ch 2, I do not discuss this one. Its structure is based on the reading it has, namely either that of *xia* or that of *hui*.

(35) a. Xiaobao han zhe yi **kou** pingguo.

Xiaobao hold in the mouth ZHE one Cl_{mouth} apple

‘Xiaobao has a mouthful of apples in his mouth.’

b. Xiaobao qian le yi **kou** Ake.

Xiaobao kiss PERF one mouth Ake

‘Xiaobao gave Ake a kiss.’

The two sentences above are superficially very similar. But they have different structures. The difference between them comes from the string of words after the aspectual marker *zhe* and *le*: the string in (35a) forms a constituent that functions as the object of the verb whereas the string in (35b) does not. The proper name *Ake* is the object of the verb and the numeral-classifier cluster *yi kou* ‘one mouth’ is an event quantifier for the predicate of the sentence. This is not hard to tell from the meaning of the two sentences: *yi kou* in (35a) denotes the amount of the apples Xiaobao has in his mouth and has nothing to do with the number of states denoted by the predicate. By contrast, *yi kou* in (35b) gives the number of kisses Xiaobao gave to Ake and it makes no sense to associate it with the proper name *Ake* semantically. To further support the claim here, I provide a parallel sentence for both (35a) and (35b):

(36) a. Xiaobao han zhe yi **kou** pingguo.

Xiaobao hold in the mouth ZHE one Cl_{mouth} apple

‘Xiaobao has a mouthful of apples in his mouth.’

b. Xiaobao na zhe yi **ba** cai-dao.

Xiaobao hold ZHE one Cl knife

‘Xiaobao holds a knife in his hand.’

(37) a. Xiaobao qian le yi **kou** Ake.

Xiaobao kiss PERF one mouth Ake

‘Xiaobao gave Ake a kiss.’

b. Xiaobao ken le yi **kou** na ge pingguo.

Xiaobao nibble PERF one mouth that CI apple

‘Xiaobao took a nibble from that apple.’

Let us consider the sentences in (36) first. The one in (36b) parallels with the one in (36a) semantically: the classifier *ba* has nothing to do with the holding state. There is no doubt that what is after *zhe* in (36b) is the object phrase. The sentence in (36a) should have the same structure. Now consider (37). Again, the two sentences are semantically similar. *Yi kou* in (37b) specifies the number of nibbling events. Note that what is after *kou* in (37b) is a phrase. *Kou* in (37b) cannot be claimed to be the classifier for the noun *pingguo* ‘apple’ since it has its own classifier *ge*. Another piece of evidence comes from the fact below:

(38) a. Xiaobao qin le Ake yi **kou**.

Xiaobao kiss PERF Ake one mouth

‘Xiaobao gave Ake one kiss.’

b. Xiaobao ken le na ge pingguo yi **kou**.

Xiaobao nibble PERF that CI apple one mouth

‘Xiaobao took a nibble from that apple.’

The sentences in (38) mean the same thing as those in (37). The fact above shows that the event quantifier has no structural relation with the object because it can be separated from the object, which is not possible for the sentences in (36):¹⁸

(39) a. *Xiaobao han zhe pingguo yi **kou** .

Xiaobao keep in the mouth ZHE apple one Cl-mouth

‘Xiaobao has a mouthful of apples in his mouth.’

b. *Xiaobao na zhe cai-dao yi **ba**.

Xiaobao hold ZHE knife one Cl

‘Xiaobao holds a knife in his hand.’

To summarize the facts so far: when a string of words consisting of a numeral, a classifier and a noun appears after a verb in a sentence, there are two parsing possibilities: the first is illustrated by (36) where the string is a constituent and the second is illustrated by (37) where the string does not form a constituent. In the first case, the numeral and classifier are with the noun and have nothing to do with the number of eventualities denoted by the verb. In the second case, the noun alone is the object of the sentence and the numeral and classifier form an event quantifier, which counts the number of eventualities denoted by the predicate. Given these two possibilities, there are sentences that are ambiguous between the two readings specified here. Consider the example below:

(40) Xiaobao chi le san kou pingguo.

Xiaobao eat PERF three mouth apple

‘Xiaobao took three bites of apple(s).’

‘Xiaobao ate three mouthfuls of apple(s).’

¹⁸ The sentences in (39) can be saved by creating a list. See examples (84) through (86) in Chapter 2 and the discussion there.

Under the first reading, *san kou* ‘three mouth’ is an event quantifier which has nothing to do with the quantity of the denotation of the object *pingguo* ‘apple’, which is unspecified. There may be just one apple or any other number of apples, from which Xiaobao took the three bites. Under the second reading, *san kou* ‘three mouth’ specifies the amount of the apples. What is unspecified is how many bites were used to consume the three mouthfuls of apples. Out of the blue, the first reading is more salient, but the second reading is also available. Imagine that Xiaobao is a baby. His mom chews apples to make a mouthful of chewed apple and feeds it to him. Under this scenario, the second reading is perfect. The sentence can be disambiguated as follows:

(41) a. Xiaobao chi le san kou na ge pingguo.

Xiaobao eat PERF three mouth that CI apple

‘Xiaobao took three bites of that apple.’

b. Xiaobao wu kou chi le san kou pingguo.

Xiaobao five mouth eat PERF three CL_{mouth} apple

‘Xiaobao ate three mouthfuls of apple in exactly five bites.’

Na ge ‘that CI’ in (41a) specifies the amount of the apples and makes sure *san kou* ‘three mouth’ is not about the number of the apples but denotes the number of eating events. In (42b), the preverbal *wu kou* ‘five mouth’ is an event quantifier counting the bites Xiaobao used to eat the three mouthfuls of apple. A parallel sentence with only one reading is provided for each of the two readings of the sentence in (40):

(42) a. Xiaobao chi le san kou pingguo.

Xiaobao eat PERF three mouth apple

‘Xiaobao took three bites of apples.’

- b. Xiaobao chi le san hui pingguo.
 Xiaobao eat PERF three time apple
 ‘Xiaobao ate apples three times [on three occasions].’
- (43) a. Xiaobao chi le san kou pingguo.
 Xiaobao eat PERF three Cl-mouth apple
 ‘Xiaobao ate three mouthfuls of apples.’
- b. Xiaobao chi le san ge pingguo.
 Xiaobao eat PERF three Cl apple
 ‘Xiaobao ate three apples.’

With all the facts as background, now let us turn to the facts which seem to display what I will call a syntax-semantics mismatch. Consider the sentence in (44a) under the scenario of the fairy tale of Snow White, who took two bites from the poisoned apple given to her by her witch step-mother:

- (44) a. Baixue-gongzhu chi le liang kou pingguo, lima dao-zai le
 Snow White eat PERF two mouth apple at once fall-on PERF
 di-shang.
 ground-top
 ‘Snow White took two bites of the apple and fell on the ground at once.’
- b. Baixue-gongzhu liang kou pingguo yi chi, lima dao-zai le
 Snow White two mouth apple once eat at once fall-on PERF
 di-shang.
 ground-top
 ‘Once Snow White has taken two bites of the apple, she fell on the ground at once.’

Given the meaning of the sentence, *liang kou* ‘two mouth’ in (44a) is an event quantifier that counts bites. It has nothing to do with the quantity of the denotation of the bare noun *pingguo* ‘apple’, which refers to the poisoned red apple in the given context. Given these facts, the sentence has a structure where *liang kou* ‘two mouth’ and *pingguo* ‘apple’ have no structural relation. Now consider the sentence in (45b) where *liang kou* ‘two mouth’ and *pingguo* ‘apple’ stay together and move before the verb. A wide-spread assumption in syntax is that the possibility for a string of words to undergo movement indicates that the string is a constituent. Now we have a conundrum: semantically, the two parts are not related; but syntactically, they seem to be related. This is why I call it a syntax-semantics mismatch. This mismatch involves all the event quantifiers we have seen so far. Below I provide examples to illustrate the fact with other verbal classifiers. Consider the example below:

(45) a. women jin le yi **ci** cheng.

we enter PERF one time city

‘We went into town once.’

b. women kan le yi **hui** dianying.

we watch PERF one time movie

‘We watched movies once.’

c. women guang le liang **tang** Shanghai.

we visit PERF two time Shanghai

‘We visited Shanghai twice.’

The meaning of the sentences above clearly shows that the numeral and verbal classifier form an event quantifier that counts the number of events denoted by the predicate. For

instance, *liang tang* ‘twice’ in (45c) indicates the number of the visiting events and has no semantic relation with the object *Shanghai*. Now consider the examples below from Zhu (1982:117), who, as far as I can tell, seems to be the first to note the phenomenon (Zhu’s original examples have a null subject. For ease of illustration, I add an overt subject to the sentences).

(46) a. women yi ci cheng ye mei jin.

we one time city even not enter

‘We didn’t even go into town once.’

b. women yi hui dianying ye mei kan.

we one time movie even not watch

‘We didn’t even watch movies once.’

c. women liang tang Shanghai yi guang, guang lüfei jiu hua le

we two time Shanghai once visit only travel fare just cost PERF

liang bai kuai.

two hundred Chinese dollar

‘Once we have visited Shanghai twice, the travel fare alone cost us 200 dollars.’

As shown by these sentences, the event quantifier and the object stay together and move before the verb. Next consider the following examples that involve *xia* and *bian*:

(47) a. moshushi pai le san **xia** bazhang, yi zhi tuzi cong maozi-li zuan

magician clap PERF three time palm one Cl rabbit from hat-inside crawl

le chulai.

PERF out

‘The magician clapped his palms three times; a rabbit crawled out of the hat.’

b. moshushi san xia bazhang yi pai, yi zhi tuzi cong maozi-li zuan
 magician three time palm once clap one CI rabbit from hat-inside crawl
 le chulai.

PERF out

‘Once the magician has clapped his palms three times, a rabbit crawled out of the hat.’

(48) a. chao le san **bian** kewen, ta de shou dou suan le.

copy PERF three time text he DE hand even ache PERF

‘Having copied the text three times, his hand ached.’

b. san bian kewen yi chao, ta de shou dou suan le.

three time text once copy he DE hand even ache PERF

‘Once having copied the text three times, his hands ached.’

Take (47) for example. Semantically, *san xia* ‘three time’ has nothing to do with *bazhang* ‘palm’ because the numeral *san* ‘three’ denotes the number of the clapping events but not the quantity of palms. But the fact in (47b) shows that *san xia* and *bazhang* can be moved together, which seems to indicate syntactic constituency. The same fact holds for (48).

In the next subsection, I provide a proposal to account for the mismatch.

3.2 A solution

I will use the following example for discussion:

(49) a. ta chao le san **bian/hui** kewen, neirong jiu quan ji-zhu le.

he copy PERF three time text content then all remember-RS PERF

‘He copied the text three times/on three occasions and then remembered all the contents (of the text).’

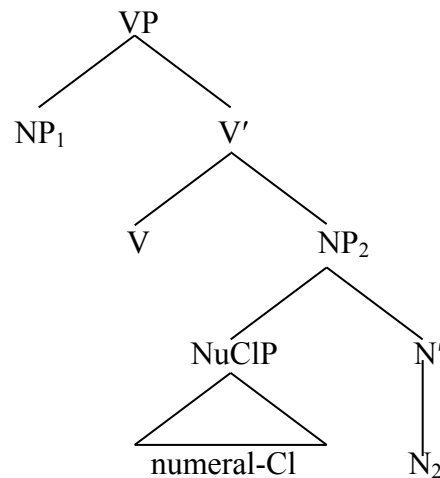
b. ta san **bian/hui** kewen yi chao, neirong jiu quan ji-zhu le.

he three time text once copy content then all remember-RS PERF

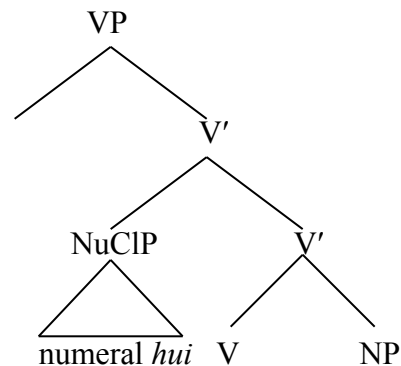
‘Once he has copied the text three times/on three occasions, he then remembered all the contents (of the text).’

I will take the assumption that the possibility for a string of words to move together is an indication of syntactic constituency of the string. This means that the event quantifier and the object must form a constituent at some point of the derivation due to the fact about the movement in (49b). I repeat the two structures we have proposed for event quantifiers below: the one in (50b) is for those with the event quantifier *hui* and the other one in (50a) is for those with words like *xia* or *bian*. Note that in both structures the event quantifier and the object of the verb do not form a constituent (remember NP₁ in (50a) is the object (such as *kewen* ‘text’ in (49)), N₂ is the null event noun):

(50) a.



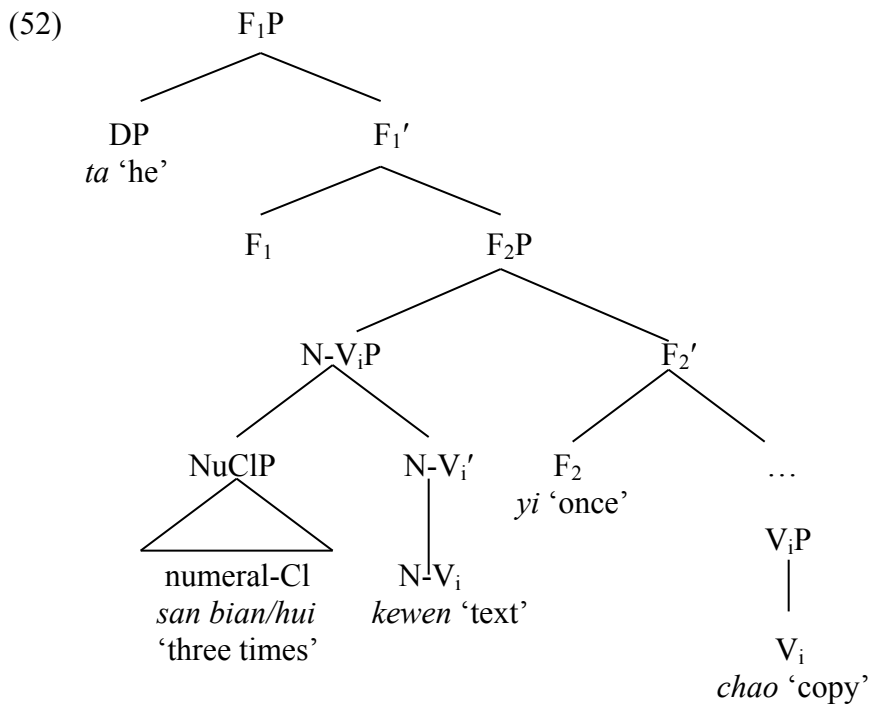
b.



If we assume that the sentence in (49b) is derived from the one in (49a), which is possible, then at some point of the derivation history, the event quantifier and the object have to form a constituent. My assumption is that the two sentences in (49) are not derivationally related. The proposed structures in (50) will still be assumed for the sentence in (49a). As for the sentence in (49b), which is repeated below as (51), I propose the following surface structure in (52) for it:

(51) ta san **bian/hui** kewen yi chao, (neirong jiu quan ji-zhu le).
 he three time text once copy (content then all remember-RS PERF)

‘Once he has copied the text three times/on three occasions, he then remembered all the contents (of the text).’



FP stands for functional projections. Depending on the theory one adopts, F₁P can be, say, the projection of topic, namely TopP. Whether *ta* ‘he’ is in the subject or topic position is not my concern here, I therefore avoid the issue using the vague tag F₁P. Similarly, I am not concerned about the category of the functional word *yi* ‘once’, so F₂P is used to label

its projection. Other functional projections between F₂P and VP such as *v*P and AspP are irrelevant and omitted. The most important thing to note is that the event quantifier and the object form a phrase N-VP. N-V stands for a gerund that has an incorporated object such as book-reading. The V in N-V is null and gets its interpretation from the context. In cases like (51), the null V in N-V gets its interpretation from the main verb, which is why it is co-indexed with the main verb. The reason for positing the gerund is because verbal classifiers like *bian* and *hui* independently do not co-occur with non-event nouns like *kewen* ‘text’.

There are cases where the null V in the gerund recovers its interpretation from outside the sentence. Consider the following example:

(53) a. na kou tan shi ta xingxiang jin hui.

that CL_{mouth} phlegm make he image completely ruin

‘That phlegm-spitting made his image totally ruined.’

‘That mouthful of phlegm made his image totally ruined.’

b. na liang jiao/xia you-men rang che wang qian cuan-chuqu hao yuan.

that two foot/time gas-door make car to front dash-RS quite far

‘Those two steps on the accelerator pedal made the car dash forward quite far.’

First consider the sentence in (53a), which has two readings. The first reading expresses a scenario where, say, there is a mouthful of phlegm on his suit, which ruined his image. The other reading expresses a scenario where he spat in public and that action ruined his image. Under this second reading, the subject of the sentence refers to an event denoted by an invisible verb *tu* ‘to spit’, which is not present anywhere in the sentence. The fact that it can be recovered is due to world knowledge about spitting in public. The fact that

the sentence has the second reading provides evidence for the null gerundive verb posited above.

Next consider the sentence in (53b). First thing to note is that, if one wants to count the denotations of the noun *you-men* ‘accelerator pedal’, the classifier for the noun is *ge* but not *jiao* ‘foot’ or *xia* ‘time’. The phrase *liang jiao/xia you-men* in (53b) does not refer to two accelerator pedals but two stepping events on the pedal. Note that the event reading can not come from the noun or the verbal classifier. It has to come from an invisible verb, which does not appear in the sentence. The null verb gets interpreted as “step” due to the fact that we step on accelerator pedals to make cars dash forward.

A similar piece of evidence comes from the expression *chi banzi* ‘eat board’, which has both the literal meaning ‘to eat boards’ and the idiomatic one ‘to receive board-beatings’. (The idiomatic meaning is due to the historical fact that it was a common Chinese judicial practice in the past to punish people who have sinned by beating them on the back or thighs using a long board.) Since the scenario of eating boards is rare, out of the blue the idiomatic meaning is the natural and default reading of the expression. Now let us see what happens when an event quantifier is used with the idiom. First consider the sentence below with the event quantifier *san hui* ‘three times’:

(54) Xiaobao chi le san **hui** banzi.

Xiaobao eat PERF three time board

‘Xiaobao got beaten by a board on three occasions.’

‘Xiaobao ate boards on three occasions.’

Assuming that the V’ consisting of only the verb and its object is the projection where the meaning of a V-O expression is computed. Given what we have proposed for

the syntax of *hui* in Chapter 2, *san hui* ‘three times’ is an adjunct attached to the V’. Assuming that adjoining an adjunct to a projection does not affect the semantic computation inside the projection, the fact about the interpretation of the sentence in (54) is predicted: whether the meaning coming out of the smallest V’ is the literal or the idiomatic one, it will not be affected by the adjunction of the event quantifier *san hui* ‘three times’, which is why the sentence can have both meanings.

Next consider the sentence below with the event quantifier *san kou* ‘three mouth’:

(55) Xiaobao chi le san **kou** banzi.

Xiaobao eat PERF three mouth board

‘Xiaobao took three bites of boards.’

The fact is that the sentence above only has the literal meaning. This is predicted by the proposal that *san kou* ‘three mouth’ as an event quantifier combines with the verb *chi* ‘to eat’ first and forces its object *banzi* ‘board’ to sit in the Spec of the VP, which breaks the set-up for the computation of the idiomatic reading.

Lastly, consider the sentence below with the event quantifier *san xia* ‘three times’:

(56) Xiaobao chi le san **xia** banzi.

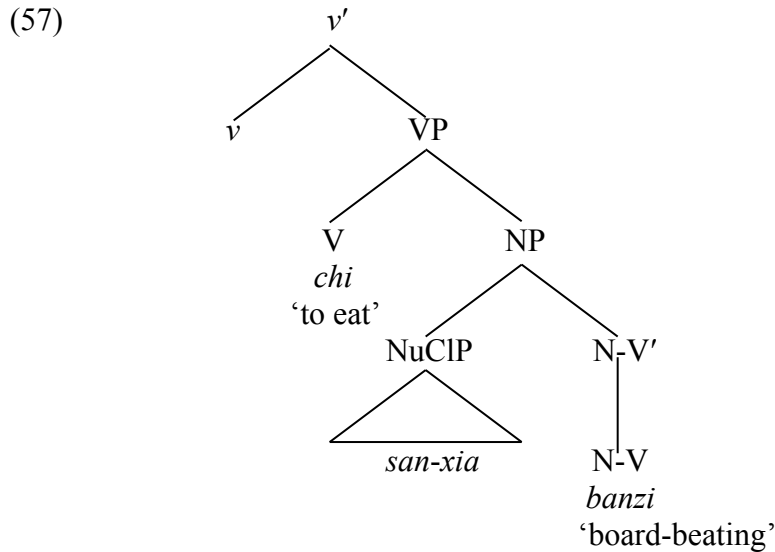
Xiaobao eat PERF three mouth board

‘Xiaobao got three board-beatings.’

The fact is that the sentence above only has the idiomatic reading, which is not predicted. Given the structure proposed for *xia* in Chapter 2, (56) is predicted to be ungrammatical. This is because event quantifiers with *xia* is proposed to sit in the complement position of the verb. It is a fact that *xia* has a selectional restriction on the verbs it can co-occur with and the verb *chi* ‘to eat’ is not one of those verbs. We have seen in Chapter 2 that idioms

such as *chi doufu* ‘eat tofu (to molest women)’ cannot co-occur with an event quantifier with *xia*.

I assume the following structure for the sentence in (56):



The key point of the proposal is that the noun *banzi* ‘board’ is an underlying event noun with a null gerundive verb *beating* as its head. The word *xia* functions as the classifier for the event noun and sits in the Spec position of the NP projected by the event noun with the numeral *san* ‘three’. The NP is the object of the verb *chi* ‘to eat’. *Chi san xia banzi* as the VP is now the smallest projection that contains only the verb and its object where the meaning of the expression is computed. We can view the whole VP as an idiom that gets the reading ‘to get/receive three board-beatings’.¹⁹

¹⁹ The verb *chi*, which literally means ‘to eat’, can mean ‘to get/receive’ when used with an event quantifier formed by *xia* or an instrument noun. This is shown by the examples below:

- (i) a. ta chi le wo zhe yi xia, mei ge san-wu nian shi huifu-bu-liao le.
 he eat PERF I this one time without CI three-five year be recover-not-RS PERF
 ‘He got this (blow, kick, pound etc.) from me and cannot recover within a three or five year period.’
 b. chi wo yi quan/jian/gun!
 eat I one fist/sword/stick
 ‘Get a punch by a fist/slash by a sword/beat by a stick from me!’

4. Summary

In this chapter, I discussed the syntax of two groups of verbal classifiers. I show that they all have the same syntax as *xia* ‘time’ proposed in Chapter 2. Then I discussed a syntax-semantics mismatch involving verbal classifiers and proposed a solution for the mismatch. The rest of the dissertation will be devoted to semantic issues involving verbal classifiers. I will explore the semantic implications of the syntactic structures identified for the event quantifiers. But before that, we will take a detour to look at verb reduplication in Chinese, which is closely related to verbal classifiers and sheds light on the semantic issues which will be discussed.

Appendix Idioms that can take event quantifiers formed by *kou* ‘mouth’

a. *chi wobian-cao*

eat nest side-grass

‘to eat grass by one’s nest/to involve the people close to oneself’

b. *chi huitou-cao*

eat turn head-grass

‘to eat grass on an old pasture/to regret; to turn around to do something quitted’

c. *chi daguo-fan*

eat big wok-rice

‘to eat rice from a big wok/to get an equal share regardless of the work done’

d. *chi tian’e-rou*

eat swan-meat

‘to eat swan meat/to aspire after something one is not worthy of’

e. *he xibei-feng*

drink northwest wind

‘to breathe cold wind/to starve’.

These idioms, when used with an event quantifier formed by *kou* ‘mouth’, can only have the literal meaning.

CHAPTER 4

VERB REDUPLICATION AND TWO KINDS OF PLURACTIONALITY IN MANDARIN CHINESE

0. Introduction

This chapter discusses verb reduplication in the language. In many traditional grammars, a class of expressions is generally listed with words such as *xia* ‘time’ and *hui* ‘time’ as a subtype of verbal classifiers. The example below comes from Zhu (1982:51), where the author treats the words in boldface as examples of a subtype of verbal classifiers just like *xia* ‘time’ and *hui* ‘time’ discussed in previous chapters:

(1) a. kan yi **kan**

look one look

‘to have a look’

b. xiang yi **xiang**

think one think

‘to think for a short while’

c. xie yi **xie**

rest one rest

‘to rest for a short while, to have a rest’

The three verb phrases above all consist of a verb, the numeral *yi* ‘one’ and another copy of the verb. The verb copy in these phrases is listed by Zhu as example of one of the three types of verbal classifiers he identified in the language. Strictly speaking, expressions like *yi xiang* in (1b) are not like the event quantifiers discussed so far because *yi xiang* in (1b) does not count the number of thinking. One piece of evidence for this fact is that all the

verbal classifiers discussed so far like *xia* ‘time’ can be used with all numerals whereas in phrases like those in (1) above only the numeral *yi* ‘one’ can be used. Nevertheless, the phenomenon illustrated by (1) is closely related to the event quantifiers discussed so far and therefore deserves close examination.

I claim that phrases such as those in (1) are derived from the insertion of the numeral *yi* ‘one’ in the middle of the reduplicated form of a verb such as *xiang-xiang* ‘to think for a short while’. Verb reduplication, along with derivational affixation, is one of the most common ways to express pluractionality or verbal/event plurality across languages (cf. Cusic 1981 and Wood 2007). As I will show below, verb reduplication in Mandarin is no exception in this respect. However, it has not been discussed from the perspective of pluractionality. On one hand, verb reduplication has long been noted and described in Chinese grammars (see for instance Chao 1968, Li and Thompson 1981 and Zhu 1982). These grammarians are full aware of the connection between verb reduplication and aspect. But as far as I can tell, few Chinese grammarians, if any at all, view verb reduplication from the perspective of pluractionality. On the other hand, there are non-native speaker authors working on the typology of pluractionality who look at the language trying to find pluractional categories. They reach the conclusion that Chinese has no pluractionals at all. For example, Chinese is among the 43 languages surveyed by Wood (2007) and is claimed to be one of the 7 languages “in which I [Wood] found no pluractional categories” (2007:35). In the book on the typology of pluractionality edited by Xrakovskij (1997), there is a chapter about Chinese where the author claims at the very beginning that “Chinese lacks grammatical forms whose basic function would be to express plurality of actions or any of its semantic varieties.” The two claims cited here

are empirically incorrect. Facts will be provided below to show that pluractionality is morphologically marked by verb reduplication in Chinese.

This chapter is organized as follows: in section 1, I introduce all the three patterns of verb reduplication in the language. I report the distributions of the reduplicated form of each pattern and point out the verbs that are prohibited in each reduplication pattern. In section 2, I introduce the conceptual distinction between event-internal and event-external pluractionality (see Cusic 1981), which has been reported to be morphologically attested in different languages (see for example Henderson 2012 and Wood 2007). Then I argue that the three Chinese reduplication patterns fall into two types, the contrast between which is the overt manifestation of the distinction between event-internal and event-external pluractionality. In section 3 I give a semantic account for the two event-internal reduplication patterns. I explain why achievement verbs and resultative verb compounds are prohibited in the two patterns. A semantic account for the event-external reduplication pattern is provided in section 4. Section 5 discusses reduplication of nouns in the language and show that there is a parallel between verb and noun.

1. Three patterns of verb reduplication and their distributions

Verb reduplication in Chinese has three patterns, depending on the number of syllables in the base and how the syllables are reduplicated.²⁰ The first is what will be called the X-X pattern where the base is a monosyllabic verb X and it gets copied during reduplication. The second is the XY-XY pattern where the base XY is a disyllabic verb and it is copied during reduplication just like the first pattern. The last one is the XX-YY pattern where

²⁰ One thing to note is that Chinese has a one-to-one correspondence between syllables and morphemes with only very few exceptions. In other words, a syllable is in general a morpheme and vice versa.

the base is either two coordinated mono-syllabic verbs X and Y or a disyllabic verb XY. Under this pattern, the first syllable/morpheme X in the base gets copied first and then the second one Y is copied. The two reduplicated forms XX and YY are then concatenated as the reduplication of the base. It will be shown that the three patterns fall into two types: the X-X pattern and the XY-XY pattern share much in common and belong to the same type that stands in contrast to the XX-YY pattern, which has very different properties than the first two and forms a type all by itself. I will argue that the difference between these two types of reduplication corresponds to the contrast between two kinds of pluractionality: event-internal versus event-external pluractionality (cf. Cusic 1981), which has been reported to be morphologically marked in different languages such as Chechen (see Yu 2003 and Wood 2007), Kaqchikel (see Henderson 2012) and Yurok (see Garrett 2001, Garrett and Wood 2001 and Wood 2007).

Below I will introduce the three patterns one by one. The introduction in this section is only concerned with the distribution of each pattern in terms of the environments where the reduplicated form can appear and types of verbs which are prohibited in the pattern. Semantic issues involved in verb reduplication are discussed in the sections that follow.

1.1 The X-X pattern

Let us first look at the X-X pattern, which is exemplified by the following example:

(2) a. kan-kan

look-look

‘to look (at something) for a short while, to have a look’

b. xiang-xiang

think-think

‘to think for a short while’

c. xie-xie

rest-rest

‘to rest for a short while ; to have a rest’

First thing to note is that the numeral *yi* ‘one’ and the perfective aspect marker *le* can be inserted in the middle of the reduplicated form. The form X-X and its counterpart X-*yi*-X with the insertion of the numeral *yi* ‘one’ have the same meaning and are both used in the imperfective such as imperatives and conditionals.²¹ The form X-*le*-X with the insertion of the perfective aspect marker *le* is used in the perfective. Let us first look at X-X and X-*yi*-X in the imperfective. The sentences in (3a) and (3b) below are imperatives and those in (3c) and (3d) are conditionals:

(3) a. gei wo kan-(*yi*)-kan.

give I look-(one)-look

‘Give (it to) me to have a look!’

b. ni zai xiang-(*yi*)-xiang.

you again think-(one)-think

‘You think for a short while again!’

c. zhe jian yifu xi-(*yi*)-xi hai neng chuan.

this Cl clothes wash-(one)-wash still can wear

²¹ In all the cases I can think of, X-X and X-*yi*-X are always interchangeable. But due to the difference in the number of syllables between the two forms (two versus three), there may be cases where one is preferred over the other, which should not be surprising since Chinese is sensitive to prosody in terms of the number of syllables. Prosody-induced differences will be ignored in the discussion as long as they do not involve the semantics of reduplication.

‘This piece of clothes, if given a bit of washing, can still be worn.’

d. ta dong-(yi)-dong shou-zhitou jiu neng ba zhe jian shiqing jiejie.

s/he move-(one)-move finger then can BA this Cl matter solve

‘S/he can solve this matter if s/he moves her/his fingers a couple of times.’

The form *X-le-X* is used in the perfective, as shown below:

(4) a. wo kan-le-kan.

I look-PERF-look

‘I had a look.’

b. ta xiang-le-xiang zhe ge wenti.

s/he think-PERF-think this Cl problem

‘S/he thought about this problem for a short while.’

c. ta xie-le-xie, you qu gan-huo le.

s/he rest-PERF-rest again go do-work SFP

‘S/he had a rest, then went to work again.’

d. ta chang-le-chang na dao cai, juede bu-cuo.

s/he taste-PERF-taste that Cl dish feel not bad

‘S/he had a taste of that dish and felt it was not bad.’

Two kinds of verbs are banned from this reduplication pattern. Here I only report the fact and will explain in later sections why the verbs are prohibited. The first is stative verbs as shown below:

(5) a. *ai-ai

love-love

‘to love a bit’

b. *dong-dong

understand-understand

‘to understand a bit’

c. *you-you

have-have

‘to have for a short while’

d. *zai-zai

be located at-be located at

‘to be located at a place for a short while’

Sentences containing any of the forms above, whether in the imperfective or perfective, will be ungrammatical. To save place, I omit the examples.

The second kind of verbs banned in this pattern is verbs whose lexical semantics involves a resultant state. In the Vendler-Dowty terminology, they are so-called achievement verbs which include both transitive ones and unaccusative ones (see Chapter 2 for discussion of unaccusativity in Chinese). Some typical examples are given below:

(6) *chu* ‘to exit’, *dao* ‘to reach’, *dao* ‘to fall down’, *diao* ‘to fall off’, *jin* ‘to enter’, *lai* ‘to arrive; to come’, *po* ‘to break’, *si* ‘to die’, *shu* ‘to lose’, *ying* ‘to win’, etc.

The verbs above cannot be reduplicated in the X-X pattern:

(7) a. *chu-chu

exit-exit

‘to exit a couple of times’

b. *dao-dao

reach-reach

‘to reach (somewhere) a couple of times’

c. *po-po

break-break

‘to break a couple of times’

d. *si-si

die-die

‘to die a couple of times’

Sentences containing these forms would be ungrammatical. Again, the examples will be omitted to save space.

Before moving on to introducing the second pattern, a special case of this pattern needs to be pointed out. There is a type of disyllabic verbs in the language identified by traditional grammarians such as Zhu (1982) as the V-O type²², where the first syllable/morpheme of the verb is verbal and the second one is nominal. The two morphemes inside such a verb may have been once verb and object during earlier stages of the language, which is why these verbs are classified as the V-O type. Take the verb *shuo-qing* for example. The first syllable/morpheme *shuo* is verbal and means ‘to say; to speak’ and the second morpheme *qing* is nominal and means ‘circumstance; situation; condition; case; state of affairs etc’. The verb *shuo-qing* means ‘to intercede for someone; to plead for mercy for someone; to ask for favor on behalf of someone’. Another similar example is the verb *ping-li* ‘to judge between right and wrong; to reason things out’ where the first morpheme *ping* means ‘to comment; to judge’ and the second nominal morpheme *li* means ‘principle; truth; reason etc’. When these verbs are reduplicated, the verbal morpheme is reduplicated and strands the nominal morpheme. In other words, the

²² The Chinese term used by Zhu (1982:32) is *shu-bin*, where *shu* means predicate and *bin* means object.

reduplication pattern is X-X Y given such a verb XY.²³ It is ungrammatical to reduplicate the verbs using the other two reduplication patterns that will be introduced below. The fact is shown below, using the two verbs *shuo-qing* and *ping-li* introduced above as examples:

(8) a. ni qu wei wo shuo-(yi)-shuo qing.

you go for I say-(one)-say circumstance

‘You go intercede a bit for me.’

b. ta wei wo shuo-le-shuo qing.

s/he for I say-PERF-say circumstance

‘S/he interceded a bit for me.’

c. ni gei women ping-(yi)-ping li.

you for we judge-(one)-judge truth

‘You make a judgment for us.’

d. ta gei women ping-le-ping li.

s/he for we judge-PERF-judge truth

‘S/he made a judgment for us.’

As can be seen above, the two verbal morphemes inside the two verbs are reduplicated in the X-X pattern, stranding the nominal morpheme as if it is a stand-alone object. The fact below shows that these verbs cannot be reduplicated using the other two patterns:

(9) a. *shuoqing-shuoqing; *shuoshuo-qingqing

intercede-intercede say.say-circumstance.circumstance

²³ Note that not all verbs of the V-O type can be reduplicated in the X-X Y pattern. Some such as *guan-xin* (close-heart) ‘to care about’ have to be reduplicated in the XY-XY pattern. The following tendency seems to hold: the more fossilized the verb-object relation is, the more difficult for the verb to be reduplicated in the X-X Y pattern and the more likely it will be reduplicated in the XY-XY pattern.

- | | | |
|----|----------------------|-------------------------------|
| | ‘to intercede a bit’ | ‘to intercede a bit’ |
| b. | *pingli-pingli; | *pingping-lili |
| | judge-judge | comment.comment-reason.reason |
| | ‘to make a judgment’ | ‘to make a judgment’ |

I assume that the historical verb-object relation between the two morphemes inside such verbs is revived in cases like (8a, b) and (8c, d) where the verbal morpheme inside the verb is reanalyzed as a stand-alone monosyllabic verb in the syntax and gets reduplicated. This assumption gets empirical support from the fact below:

- (10) a. ni qu wei wo shuo ge qing.
 you go for I say Cl circumstance
 ‘You go intercede for me.’
- b. ni gei women ping ge li.
 you for we judge-judge Cl truth
 ‘You make a judgment for us.’

The fact above shows that the classifier *ge* can be inserted between the two morphemes in such verbs. The presence of the classifier indicates that a nominal phrase is formed as the object. The facts show that this kind of verb can be reanalyzed either from the side of the verbal morpheme by means of reduplication or from the side of the nominal morpheme by means of insertion of classifiers.

1.2 The XY-XY pattern

Now consider the XY-XY pattern of reduplication. Consider the following examples:

- (11) a. taolun-taolun
 discuss-discuss

‘to discuss for a short while; to have a bit of discussion’

b. *xiuxi-xiuxi*

rest-rest

‘to rest for a short while; to have a rest’

c. *anmo-anmo*

massage-massage

‘to massage for a short while; to do some massage’

d. *fenxi-fenxi*

analyze-analyze

‘to analyze for a short while; to do some analysis’

As shown by the forms above, the whole base gets copied under this pattern just like the previous one. But unlike the first pattern which allows both the numeral *yi* ‘one’ and the perfective aspect marker *le* to be inserted in the middle of the reduplicated form, the reduplicated form of this pattern does not tolerate the insertion of either of these two elements. This difference between the two patterns is phonological in nature. Pairs of synonymous verbs can be found where the first verb is monosyllabic and the second one is disyllabic. The insertion of *yi* ‘one’ and *le* is only allowed in the reduplicated form of the monosyllabic verb and banned in that of the disyllabic one. To see this fact, consider the pair consisting of the two verbs *xie* and *xiuxi*, both of which mean “to rest”:

(12) a. *xie-xie*

rest-rest

‘to rest for a short while’

- b. xie-yi-xie
rest-one-rest
'to rest for a short while'
- c. xie-le-xie
rest-PERF-rest
'rested for a short while'
- d. xiuxi-xiuxi
rest-rest
'to rest for a short while'
- e. *xiuyi-yi-xiuxi
rest-one-rest
'to rest for a short while'
- f. ??xiuxi-le-xiuxi
'rested a short while'

As shown above, the reduplicated form of *xie* allows the insertion whereas that of *xiuxi* does not. Other similar verb pairs are not difficult to find such as *tan* 'to talk about' and *taolun* 'to discuss'; *xiang* 'to think'; *kaolü* 'to think; to consider'; etc. For all the verb pairs, I cannot think of anything one verb has but the other does not that is responsible for the difference as illustrated by (12) except their difference in terms of number of syllables (monosyllabic versus disyllabic). Since this study is mainly concerned with the semantic issues involved in verb reduplication, this phonological difference will be put aside.

Like the first pattern, the bare reduplicated form XY-XY is used in the imperfective such as imperatives and conditionals. This is shown by the example below, where the first two are imperatives and the other two are conditionals:

(13) a. nimen taolun-taolun zhe ge wenti.

you discuss-discuss this Cl problem

‘You discuss this problem for a short while.’

b. rang ta wei nimen fenxi-fenxi zhe jian shiqing.

let he for you analyze-analyze this Cl matter

‘Let him analyze this matter a bit for you.’

c. Ake daban-daban hui geng piaoliang.

Ake dress up-dress up will more pretty

‘Ake, if dressed up a bit, will be more beautiful.’

d. zhe jian wuzi shoushi-shoushi jiu keyi zhu ren le.

this Cl house tidy up-tidy up then can live person SFP

‘This house, if given a bit of tidying up, will be able to be lived in by people.’

Given that it is marginal to insert the perfective aspect marker *le* in the reduplicated form, the question is how to express such a meaning where the reduplicated form is used in the perfective. To express the meaning, the expression *yi xia* ‘one time’ has to be used. The sentence in (14a) and the one in (14b) express the same meaning but the latter is far more natural than the former. The same fact holds true for the pair in (14c) and (14d):

(14) a. ??ta gen wo baoyuan-le-baoyuan jiu zou le.

s/he to I complain-PERF-complain then leave PERF

‘S/he complained a bit to me and then left.’

b. ta gen wo baoyuan le yi xia jiu zou le.

s/he to I complain PERF one time then leave PERF

‘S/he complained a bit to me and then left.’

c. ??tamen shangliang-le-shangliang, jueding fangqi.

they discuss- PERF-discuss decide give up

‘They had a discussion and decided to give up.’

d. tamen shangliang le yi xia, jueding fangqi.

they discuss PERF one time decide give up

‘They had a discussion and decided to give up.’

The expression *yi xia* in (14b) and (14d) consists of the numeral *yi* ‘one’ and the verbal classifier *xia* ‘time’. Note that neither the verb *baoyuan* ‘to complain’ nor *shangliang* ‘to discuss’ is semelfactive. Also, the expression *yi xia* has a duration reading rather than the event-counting reading when it appears with semelfactives (see Section 5.1.1 in Ch 2 for facts and discussions of the duration reading of *yi xia*). I argue below that this semantic shift is forced by the aspectual nature of the verbs.

The same kinds of verbs that are banned in the first pattern are also banned in this pattern. First consider disyllabic achievement verbs:

(15) a. *daoda-daoda

arrive-arrive

‘to arrive a couple of times’

b. *kanjian-kanjian

see-see

‘to see a couple of times’

c. *diushi-diushi

lose-lose

‘to lose a couple of times’

d. *faxian-faxian

find-find

‘to find a couple of times’

As shown above, the achievement verbs cannot be reduplicated in this pattern. Disyllabic stative verbs are also banned in this pattern:

(16) a. *weirao-weirao

surround-surround

‘to surround (something) for a short while’

b. *shuyu-shuyu

belong to-belong to

‘to belong to ... for a short while’

c. *yongyou-yongyou

own-own

‘to own for a short while’

d. *cunzai-cunzai

exist-exist

‘to exist for a short while’

There is a complication about statives. In highly colloquial language, a limited number of statives can be reduplicated in this pattern. These statives can be divided into two kinds. The first is certain adjectives. Consider the example below:

(17) a. women jinwan gaoxing-gaoxing!

we tonight happy-happy

‘Let’s get happy (have some fun) tonight!’

b. women jinwan hen gaoxing.

we tonight very happy

‘We were pretty happy tonight.’

The word *gaoxing* is an adjective meaning ‘happy’. As shown by (17a), it is reduplicated in the XY-XY pattern. However, note that, when reduplicated, the adjective acquires a dynamic reading ‘to get happy’. This fact is shown by the meaning contrast between (17a) and (17b) where the simple adjective is used. Note that the simple adjective describes the state that we were happy. But the reduplicated form does not describe any state. It is used in an imperative to make a suggestion. The fact suggests that the reduplicated adjective has been coerced to be a verb. This is further supported by the fact that the reduplicated form of the adjective, like that of a verb, can also be paraphrased by using the expression *yi xia*. This is shown below where the sentence in (18a) can be seen as the paraphrase of that in (18b). The two sentences in (18c, d) have the verb *bishi* ‘to compete’ in the reduplicated form. The parallel between (18a, b) on one hand and (18c, d) on the other further indicates that the adjective has been coerced into a verb.

(18) a. women chuqu gaoxing-gaoxing!

we go out happy-happy

‘Let’s go out to get happy / to have some fun!’

b. women chuqu gaoxing yi xia!

we go out happy one time

‘Let’s go out to get happy (to have some fun)!’

c. women chuqu bishi-bishi!

we go out compete-compete

‘Let’s go out to have a competition!’

d. women chuqu bishi yi xia!

we go out compete one time

‘Let’s go out to have a competition!’

Adjectives that can be reduplicated in the XY-XY pattern like *gaoxing* ‘happy’ above are very rare²⁴ and will be ignored in the discussion below.

The second kind of stative verbs that can be reduplicated in this pattern is a couple of stative verbs. Consider the following example:

²⁴ *Gaoxing* ‘happy’ is the only true adjective I found that behaves like this. Possible candidates such as *xinku* ‘tired and exhausted due to hard work’ are not true examples of the fact under discussion:

(i) a. ta hen xinku.

he very tired

‘He is tired and exhausted due to hard work.’

b. zhe jian shiqing jiu zhihao xinku-xinku ni le.

this CI thing then have to tired-tired you SFP

‘(As for) this thing, (I/we) then have to tire you a bit.’

c. zhe jian shiqing jiu zhihao xinku ni le.

this CI thing then have to tired you SFP

‘(As for) this thing, (I/we) then have to tire you (i.e., I/we have to ask you to do it for us).’

The fact is that words like *xinku* have both an adjectival (ia) and a verbal (ic) use. The reduplicated form in (ib) is the reduplication of the verb since it can still take the object. Similar words include *kelian* ‘pitiful’ and *qingxing* ‘sober’ which can also be reduplicated in the pattern. But like *xinku*, they both have a verbal use and when they are reduplicated, the reduplicated form can still take an object (cf. *kelian-kelian ta* ‘to pity him a bit’ and *qingxing-qingxing tounao* ‘to sober the brain a bit’), which means that what is being reduplicated is the verb but not the adjective.

(19) a. ta yinggai mingbai-mingbai zhe-ge daoli!

he should get to understand this-Cl reason

‘He should get to know this reason!’

b. wo dei rang ta zhidao-zhidao wo de lihai!

I have to make he know-know I DE fearfulness

‘I should make him get to know my fearfulness!’

The example in (19a) is from Huang, Li and Li (2009:23). From the gloss and translation provided by the authors, the reduplicated form of the stative verb *mingbai* ‘to understand’ means ‘to get to understand’. I share the same intuition with these authors and provide another example in (19b) to illustrate the same fact: the stative verb *zhidao* ‘to know’, if reduplicated, also acquires the inchoative meaning of getting to know. The fact here can be summarized as follows: very few statives can be reduplicated in the XY-XY pattern to acquire the inchoative meaning. Due to the limited number of these words, I will ignore them in the discussion below.

1.3 The XX-YY pattern

Now let us consider the last verb reduplication pattern, namely the XX-YY pattern. As noted in the beginning of this section, the base of this pattern is either two coordinated monosyllabic verbs X and Y or a disyllabic verb XY. Let us first look at an example of the first case where the base is two coordinated monosyllabic verbs:

(20) a. qiao.qiao-da.da

knock.knock-beat.beat

‘to knock and beat repeatedly’

b. zou.zou-ting.ting

walk.walk-stop.stop

‘to walk/go and stop repeatedly’

The two bases X and Y are both stand-alone verbs, and usually have either similar or opposite meanings. As shown above, the verb X gets reduplicated first and then Y is copied. XX and YY are then concatenated to form the reduplication of the base.

An example of the second case where the base is a disyllabic verb is given below:

(21) a. momo-cengceng

idle (away time).idle (away time)-drag along.drag along

‘to dawdle a lot; to dillydally a lot’

b. gougou-dada

bend around.bend around-hang (arm) over. hang (arm) over

Literally: ‘to make lots of body contact by bending an arm around or hanging it over another person’s upper body’

Idiomatically: ‘to have illicit relations wth someone’

The base of the reduplicated form in (21a) is the disyllabic verb *mo-ceng* ‘to dawdle’. Note that the disyllabic base verb in this pattern is of the so-called coordinative type (see Zhu 1982, the Chinese term used by him is *lianhe* which means coordinative), which highlights the fact that the two syllables/morphemes in such a verb usually have either similar or opposite meanings and were historically of the same syntactic category (verb in most cases). I assume that the two morphemes in such verbs are reanalyzed as stand-alone verbs when reduplicated, and will not distinguish the two cases in the text below.

The numeral *yi* ‘one’ and the perfective aspect marker *le* cannot be inserted in the middle of the reduplicated form of this pattern. The bare reduplicated form can be used in

the imperfective. The reduplicated form in the first sentence in the example below is used in a conditional. The one in the second sentence is used in a generic/habitual sentence:

(22) a. ni zai momo-cengceng, women jiu
 you still idle (away time).idle (away time)-drag along.drag along we then
 yao chidao le.

will late SFP

‘If you keep dawdling, we’ll be late.’

b. na wei xuanshou laoshi duoduo-shanshan,

that CI player always hide.hide-get out of the way.get out of the way

henshao zhudong chuji.

seldom on one’s initiative attack

‘That player always dodges and seldom launches an attack on his own initiative.’

To express perfective meanings, the perfective aspect marker *le* can be directly attached to the reduplicated form, as shown by the example in (23a) below. However, *le* does not have to be used for a reduplicated form in this pattern to get the perfective reading. The context could do that. For instance, the sentence in (22b) above can also be an episodic statement about a box match that took place before the time of utterance, in which case the sentence is in the perfective without the perfective aspect marker. Another example is provided below in (23b) where there is no *le* after the reduplicated form but the context dictates that it is in the perfective:

(23) a. tamen qiaoqiao-dada le yi shangwu.

they knock.knock-beat.beat PERF one morning

‘They have been knocking and beating the whole morning.’

- b. tamen yilushang zouzou-tingting, hua le shi tian cai dao.
 they along the way walk.walk-stop.stop spend PERF ten day till arrive
 ‘They went and stopped repeatedly along the way and spent ten days before arriving.’

Now let us consider verbs that are banned in this reduplication pattern. A very important difference between this reduplication pattern and the previous two is that this pattern does not ban achievement verbs. Consider the following example:

- (24) a. duan.duan-xu.xu
 break.break-continue.continue
 ‘to stop and continue repeatedly’
- b. jin.jin-chu.chu
 enter.enter-exit.exit
 ‘to enter and exit repeatedly’
- c. fen.fen-he.he
 break up.break up-get together.get together
 ‘to break up and get together repeatedly’
- d. shu.shu-ying.ying
 lose.lose-win.win
 ‘to lose and win repeatedly’

The verb *duan* ‘to break’, if used alone, cannot be reduplicated, as shown by the fact in (25a):

- (25) a. *shengyin duan-le-duan, wo mei ting-qing.
 sound break-PERF-break I not listen-clear
 ‘The sound stopped a couple of times. I didn’t hear it clearly.’

b. shengyin lao duan, wo mei ting-qing.

sound repeatedly break I not listen-clear

‘The sound stopped repeatedly. I didn’t hear it clearly.’

c. shengyin duanduan-xuxu, wo mei ting-qing.

sound break.break-continue.continue I not listen-clear

‘The sound stopped and continued. I didn’t hear it clearly.’

Note that there is nothing wrong about the scenario where a sound stopped multiple times and as a result I did not hear it clearly. The meaning can be grammatically expressed by (25b) where the simple verb *duan* ‘to break’ plus the adverb *lao* ‘repeatedly’ is used. Or if the verb gets reduplicated in the XX-YY pattern with the morpheme *xu* ‘to continue’, the same meaning can also be grammatically expressed as in (25c). The fact suggests that some grammatical rule is playing a role to dictate that the X-X reduplication pattern cannot be used to express the intended meaning. The same fact is shown by the following fact with the two verbs *jin* ‘to enter’ and *chu* ‘to exit’ below:

(26) a. *wo he Ake tanhua qijian, Xiaobao jin-le-jin, chu-le-chu.

I and Ake talk duration Xiaobao enter-PERF-enter exit-PERF-exit

‘While I was talking with Ake, Xiaobao came in and went out repeatedly.’

b. wo he Ake tanhua qijian, Xiaobao butingde jin chu.

I and Ake talk duration Xiaobao nonstop enter exit

‘While I was talking with Ake, Xiaobao came in and went out repeatedly.’

c. wo he Ake tanhua qijian, Xiaobao butingde jinjin-chuchu.

I and Ake talk duration Xiaobao nonstop enter.enter-exit.exit

‘While I was talking with Ake, Xiaobao came in and went out repeatedly.’

As shown by (26a), the two verbs cannot be reduplicated in the X-X pattern. The intended meaning has to be expressed through the help of an adverb plus the simple verbs as in (26b) or the reduplicated form in the XX-YY pattern as in (26c).

We have seen that statives in general are banned in the X-X and XY-XY pattern. We also saw that very few adjectives such as *gaoxing* ‘happy’ can be reduplicated in the XY-XY pattern where they are coerced to be verbs. Also, certain stative verbs such as *mingbai* ‘to understand’ and *zhidao* ‘to know’ can also be reduplicated in the XY-XY pattern where they acquire the inchoative reading. The fact is that the norm to reduplicate adjectives of the same type as *gaoxing* ‘happy’ is the XX-YY pattern, as shown below.²⁵

(27) a. gaogao-xingxing

happy

‘rather happy’

b. xinxin-kuku

tired

‘rather tired’

c. piaopiao-liangliang

pretty

‘rather pretty’

²⁵ There are different types of adjectives in terms of the number of syllables and the internal make-up of the word in the language. These different types of adjectives have different reduplication patterns. The pattern for adjectives of the same type as *gaoxing* ‘happy’ is XX-YY. For other types such as monosyllabic ones like *gao* ‘tall’ or those that have a morpheme to express a built-in degree such as *tong-hong* ‘extremely red’, the reduplication patterns are different. It is unclear whether all the adjective reduplications in the language can be subsumed under pluractionality. For instance, the so-called vivid reduplication (cf. Chao 1968:209, also see Zhu 1982:27) is said to express “the meaning of liveliness”, which may or may not be related to pluractionality. Since adjectives have more reduplication patterns than verbs, a full discussion of adjective reduplication in the language is worth another project and will not be given here.

d. *piaoliang-piaoliang

pretty

‘to get pretty’

As shown by (27a) and (27b), the two adjectives are reduplicated in the XX-YY pattern. Note that the reduplicated form stays adjectival in nature. In other words, unlike the XY-XY pattern, there is no coercion from adjectives to verbs. Also, the grammatical meaning expressed by this reduplication pattern is intensity but not inchoativity. The adjective *piaoliang* ‘pretty’ cannot even be reduplicated in the XY-XY pattern as shown by (27d).

The word *mingbai* ‘to be clear (about)’ provides an interesting case to compare the two reduplication patterns. The examples from (28) through (30) below are from Huang, Li and Li (2009). First consider the example below:

(28) a. ta mingbai zhe-ge daoli.

he understand this-Cl reason

‘He understands this reason.’

b. ta dui zhe-ge daoli hen mingbai.

he P this-Cl reason quite be clear

‘He is quite clear about this reason.’

The point of the above example is that the word has a verbal use in (28a) because it takes an object. The one in (28b) seems to have an adjectival use since the thematic argument is introduced by the preposition *dui*. Now consider the following examples:

(29) a. ta yinggai mingbai-mingbai zhe-ge daoli.

he should get to understand this-Cl reason

‘He should get to know this reason!’

- b. *ta (yinggai) mingming-baibai zhe-ge daoli.
 he should be rather clear about this-Cl reason
- (30) a. ta dui zhe-ge daoli mingming-baibai.
 he P this-Cl reason be rather clear
 ‘He is quite clear about this reason.’
- b. *ta (yinggai) dui zhe-ge daoli mingbai-mingbai.
 he should P this-Cl reason get to understand

As shown by (29) and (30), the reduplicated form in the XY-XY pattern can still take an object whereas the form in the XX-YY pattern can not, which suggests that the former is verbal while the latter is adjectival. All the facts here seem to suggest this: adjectives like *gaoxing* ‘happy’ and *mingbai* ‘clear’, by default, are reduplicated in the XX-YY pattern. When they get reduplicated in the XY-XY pattern, it is either because they are coerced to be verbs or they have a verbal use which gets reduplicated. The facts also suggest that statives in terms of certain adjectives are not banned in the XX-YY pattern.

In this section, we focused on the forms of verb reduplication. The rest of the chapter will be devoted to facts and issues about the semantics of verb reduplication. Below I will first introduce a distinction about pluractionality made by Cusic (1981) and provide empirical evidence to show that the distinction is manifested in Chinese. Then I will deal with the semantics of the X-X and the XY-XY pattern in Section 3 and that of the XX-YY pattern in Section 4.

2. Event-internal versus event-external pluractionality

Event-internal and event-external are the two values of the primary parameter among the four semantic parameters proposed by Cusic (1981) to characterize pluractionality across

languages.²⁶ Cusic (1981:67) first distinguishes three levels on which event pluralization can happen, namely the phase level, the event level and the occasion level:

(31) Cusic's (1981:67) three levels of event pluralization:

- a. Plurality is internal to an event if a single event on a single occasion consists of internal phases;
- b. Plurality is external to an event but internal to an occasion if a single bounded event (internally plural or not) is repeated on a single occasion;
- c. Plurality is external to event and occasion if a single bounded event is repeated on separate occasions.

Based on the definitions above, Cusic (1981:78-79) then made the distinction between event-internal versus event-external pluractionality. He calls event-internal pluractionality the REPETITIVE action and defines it as follows:

“By repetitive, I mean that the units of action are conceived as confined to a single occasion, and to a single event on that occasion. That is, repetitive action is the event-internal plurality (a) described in the previous chapter [(31a) above]. It happens that in this type of plurality, the index of repetition is usually considered to be large or uncountable (i.e. mass-like) and the type of action is regarded as having repetitive internal phases.”

He dubs event-external pluractionality the REPEATED action and provides the following definition (Cusic 1981:79):

“By repeated action, I mean that the units of action are potentially distributable, though not necessarily distributed, over multiple occasions. That is, repeated action classes together the event-external/occasion-internal and event-external/occasion-external plurality (b and c) described in the previous chapter [(31b, c) above]. This reduction of the two distinguishable event/occasion relations in event plurality to one category in plural verbs is justified by the fact that, in general, the two meanings are available as interpretations of a single form.”

²⁶ The name of the parameter is “the Event Ratio Parameter”. Another one of his four parameters relevant to the current study is “the Relative Measure Parameter”, which will be discussed in Section 3 below.

Note that the crucial difference between event-internal and event-external pluractionality is that event-internal repetition of events **MUST** be inside a single event whereas event-external repetition of events **CAN** be distributed over different occasions. In other words, event-internal pluractionality is necessarily on one occasion since the repetitions happen within a single event, which cannot be on different occasions. By contrast, it is possible for event-external pluractionality to involve more than one occasion because the repeated events may have happened on multiple occasions.

This conceptual distinction has been reported to manifest itself morphologically in many different languages such as Yurok (see Wood 2007) and Kaqchikel (see Henderson 2012). Below I provide empirical evidence to show that it is also manifested in Chinese. To be specific, I will show that pluractionality expressed by the X-X and the XY-XY pattern is event-internal whereas that expressed by the XX-YY pattern is event-external. It will be shown that a reduplicated form in the X-X or the XY-XY pattern always denotes a single event that happens on one occasion. By contrast, it is possible that the repeated events expressed by the XX-YY pattern happen on different occasions.

Imagine the scenario where Xiaobao came to Ake's home early this morning and made a knock on the door. Since there was no answer, he left. Later in the evening he came back again and made another knock on the door. Given this context, there are two occasions: one in the morning and one in the evening. Now consider the three sentences below:

(32) a. Xiaobao jintian qiao le Ake de men.

Xiaobao today knock PERF Ake DE door

'Xiaobao knocked on Ake's door today.'

b. Xiaobao jintian qiao le liang xia/hui Ake de men.

Xiaobao today knock PERF two time/time Ake DE door

‘Xiaobao knocked on Ake’s door twice today.’

c. Xiaobao jintian qiao-le-qiao Ake de men.

Xiaobao today knock-PERF-knock Ake DE door

‘Xiaobao made a couple of knocks on Ake’s door.’

The sentence in (32a) with the verb *qiao* ‘to knock’ and no event quantifiers is true in the given scenario because Xiaobao did knock on the door. The one in (32b) with the same verb and either *xia* ‘time’ or *hui* ‘time’ in the event quantifier is also true because he did knock on the door twice. Under one reading of *twice* which corresponds to the event quantifier with *xia* ‘time’, he made two knocks on the door during the day, which is true. Under the other reading of *twice* which corresponds to the event quantifier with *hui* ‘time’, he knocked on the door on two occasions during the day, which is also true. Now consider the sentence in (32c) with the reduplicated form of the verb. The fact is that the sentence is NOT true in the given scenario. Let us see why it is false.

The reduplicated form *qiao-le-qiao* dictates that more than one knock need to be made on the door because it involves event pluralization (see Section 3 for more details), which is satisfied in the given scenario since Xiaobao made two knocks in total. However, under the assumption that the X-X reduplication pattern is event-internal, the repeated knocks must be within one single event, which is not satisfied in the scenario above. The fact that the sentence in (32c) is false in the given scenario is evidence to support the assumption that the X-X pattern is event-internal. A very clear intuition of native speakers is that a reduplicated form in the X-X pattern denotes a single event (to be

precise, an activity, see Section 3 below) and this intuition is empirically supported by the fact here.

Next let us consider the XX-YY pattern, which, in contrast to the X-X pattern, is claimed to express event-external pluractionality. To see this, consider the following facts:

(33) a. na liangkouzi chaochao-naonao le yi beizi.

that couple quarrel.quarrel-fight.fight PERF one lifetime

‘That couple quarrels and fights throughout their life.’

b. zhexie nian tamen lia fenfen-hehe, zuihou

these year they two break up.break up-get together.get together in the end

zhongyu zou-dao le yiqi.

finally walk-arrive PERF the same place

‘During these years, they broke up and made peace repeatedly, in the end they finally got together (as a couple).’

c. zhe ji nian shiyou jiage zhangzhang-luoluo, shei ye bu zhidao xia

this several year petrol price rise.rise-fall.fall who even not know next

yi nian hui shi shenme qingkuang.

one year will be what situation

‘These years the price of petrol rose and fell repeatedly, nobody knows what it will be like next year.’

d. ta zai huanhai fufu-chenchen le zheme duo nian, shen an

he at officialdom float.float-sink.sink PERF so many year deeply familiar

wei guan zhi dao.

do official ZHI way

‘For so many years, he floated up [got promoted] and sank down [got demoted] in the officialdom repeatedly. He is deeply familiar with the way to be an official.’

As shown above, each of the four sentences above has a reduplicated form in the XX-YY pattern. All these forms denote repeated events distributed over different occasions. For instance, all the quarrellings and fightings denoted by *chaochao-naonao* ‘quarrel.quarrel-fight.fight’ in (33a) happen on occasions which scatter throughout the interval denoted by the duration phrase *yi beizi* ‘one lifetime’. Similarly, for *fenfen-hehe* ‘break up.break up-get together.get together’ in (33b), the scenario expressed by the sentence is that they broke up and got together, broke up again and then got together. These events took place repeatedly during the interval denoted by *zhexie nian* ‘these years’. It is clear that the events happened on different occasions. The same fact also applies to the sentences in (33c) and (33d).

Note that it does not have to be the case that the repeated events denoted by a XX-YY form are always distributed over different occasions. It is possible for them to occur on one occasion. This is illustrated below:

(34) a. *tamen chaochao-naonao le yi shangwu.*

they quarrel.quarrel-fight.fight PERF one morning

‘They have been quarrelling and fighting the whole morning.’

b. *liang ge xiaoshi jiangzuo qijian, yizhi you ren jinjin-chuchu.*

two Cl hour lecture duration nonstop have person enter.enter-exit.exit

‘There have been people going in and out during the two hour long lecture.’

For the sentence in (34a) above, it is possible that they have been quarrelling and fighting nonstop the whole morning, in which case the activities are on a single occasion. As for the sentence in (34b), the two hour long lecture can be viewed as a single occasion during which people went in and out nonstop.

Lastly let us consider the XY-XY pattern, which, like the X-X pattern, is also claimed to express event-internal pluractionality. Due to the fact it is marginal to use the perfective aspect marker *le* with a reduplicated form in the XY-XY pattern, it is not easy to show the point in a straightforward way. First consider the example below:

(35) a. zhe jian yifu ta fengfeng-bubu, chuan le haoduo nian.

this Cl clothes she sew.sew-repair.repair wear PERF many year

‘(As for) this piece of clothes, she sewed and repaired it repeatedly and wore it for many years.’

b. ??zhe jian yifu ta fengbu-le-fengbu, chuan le haoduo nian.

this Cl clothes she sew.repair-*le*-sew.repair wear PERF many year

‘(As for) this piece of clothes, she did some sewing and repairing on it and (since then) wore it for many years.’

c. zhe jian yifu ta fengbu le yi xia, chuan le haoduo nian.

this Cl clothes she sew-repair PERF one time wear PERF many year

‘(As for) this piece of clothes, she did some sewing and repairing on it and (since then) wore it for many years.’

The reduplicated form in (35a) is in the XX-YY pattern. The scenario expressed by the sentence is this: she wore the piece of clothes and it got worn. She sewed and repaired it and wore it for some time. Then it became worn again and she sewed and repaired it to wear it for some more time... In this scenario, the sewings and repairs denoted by the reduplicated form were done on different occasions separated by intervals during which she wore the piece of clothes that has been repaired. To make a minimal pair, the sentence in (35b) has the reduplicated form of the same base in the XY-XY pattern. As pointed out above, due to phonological reasons that do not need to concern us here, *le* is marginal in the middle of the reduplicated form and as a result the sentence does not

sound perfect. If we put aside the oddness caused by phonology, the fact about the interpretation of the sentence is that the sewing and repairing denoted by *fengbu-fengbu* happens on one occasion, which is shown by the translation given. The paraphrase of *fengbu-le-fengbu* using *yi xia* is given in (35c), which is a perfect sentence and mean the same thing as (35b). The facts in (35b) and (35c) suggest that the XY-XY pattern is event-internal.

Given all the facts we have seen so far, it is clear that the X-X and XY-XY pattern belong to the same type that is in contrast to the XX-YY pattern (more supporting facts will be reported below such as the verb-noun parallel reported in Section 5). In the two sections that follow, we will discuss the semantics of the two types of reduplication patterns.

3. The semantics of the two event-internal reduplication patterns

This section is devoted to the semantics of the two event-internal reduplication patterns. Due to the fact that the XY-XY pattern has a limitation in distribution with the perfective aspect marker *le*, examples below will mostly be in the X-X pattern. But the conclusions and claims that will be made are supposed to be applicable to both patterns. Here are the claims: given a verb V (monosyllabic or disyllabic), a pluralizing operation is induced by reduplication which sums instances of the event denoted by V. Since the reduplication is in the event-internal pattern (X-X or XY-XY), a group formation operation (see Landman 1996) is then applied to the sum and turns it into a singular event as the denotation of the reduplicated form. The singular event is an atelic activity and of the same event type as the denotation of V (i.e., the activity falls under the description of V). Depending on the

aspectual nature of V, the instances summed in the denotation of V-V may or may not be grammatically accessible for counting.

In subsection 3.1 below, I will provide evidence to support the claims. Then in subsection 3.2, I will discuss some complications raised by accomplishment verbs in the language.

3.1 Evidence for the claim

First consider the two sentences in (36) that differ only by the form of the main verb:

(36) a. Xiaobao qiao le Ake de men.

Xiaobao knock PERF Ake DE door

‘Xiaobao knocked on Ake’s door.’

b. Xiaobao qiao-le-qiao Ake de men.

Xiaobao knock-PERF-knock Ake DE door

‘Xiaobao made a couple of knocks on Ake’s door.’

The sentence in (36a) with the verb in its simple form asserts that there was a knocking event on Ake’s door by Xiaobao. The sentence in (36b) with the reduplicated form of the verb is a bit more informative. Suppose that Xiaobao made only one knock on the door, the sentence in (36a) is true but the one in (36b) is false. For (36b) to be true, more than one knock has to be made. This fact suggests that verb reduplication involves iteration of events. So the denotation of the reduplicated form is the sum of iterated instances of the event denoted by the base. The question is: what is this sum in terms of its event type and Aktionsart? The answer is that it is an atelic activity that is of the same event type as the denotation of the base. Let us first look at its event type. Consider the example below:

(37) Xiaobao qiao-le-qiao Ake de men, ta yigong qiao le ban fenzhong.

Xiaobao knock-PERF-knock Ake DE door he in total knock PERF half minute

‘Xiaobao made some knocks on Ake’s door, he knocked for half a minute in total.’

The first clause in the sentence above contains the reduplicated form of the verb *qiao* ‘to knock’ and the second clause has the verb in its simple form. The sentence formed by the two clauses is coherent and consistent. Note that the second clause asserts that the event described in the first clause lasted half a minute. The fact that the simple verb can be used to make an assertion about the event denoted by the reduplicated form suggests that the denotation of the reduplicated form is of the same event type as the denotation of the base: they both fall under the description of the verb *qiao* ‘to knock’. The next question is what kind of eventuality it is. Consider the fact below:

(38) a. *Xiaobao san fenzhong qiao le Ake de men.

Xiaobao three minute knock PERF Ake DE door

‘Xiaobao knocked on Ake’s door in exactly three minutes.’

b. Xiaobao san fenzhong qiao-kai le Ake de men.

Xiaobao three minute knock-open PERF Ake DE door

‘Xiaobao knocked open Ake’s door in exactly three minutes.’

c. *Xiaobao san fenzhong qiao-le-qiao Ake de men.

Xiaobao three minute knock-PERF-knock Ake DE door

‘Xiaobao knocked on Ake’s door for a short while in exactly three minutes.’

The preverbal duration phrase *san fenzhong* ‘three minutes’ in Chinese has the same kind of interpretation as the English time-span adverbial *in three minutes*. As shown by (38a), the simple verb *qiao* ‘to knock’ is not compatible with the phrase, which means that the

event denoted by the verb is atelic. This is in contrast to the resultative verb compound *qiao-kai* ‘knock-open’ in (38b). Due to the resultant state denoted by *kai* ‘open’, the event denoted by the compound is a telic accomplishment and as predicted the compound can co-occur with the preverbal duration phrase. The fact in (38c) shows that the reduplicated form is like the simple form in (38a) in its incompatibility with the preverbal duration phrase. The fact in (38) suggests that the reduplicated form denotes an atelic activity.

The fact below shows that the iterated events in the activity denoted by the reduplicated form of the verb *qiao* ‘to knock’ are accessible for counting:

(39) Xiaobao qiao-le-qiao Ake de men, ta yigong qiao le san xia.

Xiaobao knock-PERF-knock Ake DE door he in total knock PERF three time

‘Xiaobao made some knocks on Ake’s door. He made three in total.’

The assertion made by the second clause in the sentence above is about the event denoted by the reduplicated form in the previous clause. The event quantifier *san xia* ‘three times’ gives the number of knocks made inside the activity denoted by the reduplicated form. Note that although the denotation of the reduplicated form entails more than one knock, the reduplicated form all by itself does not specify the number of the knocks.²⁷ One thing to note is that the number of the iterated events in the activity denoted by a reduplicated form is small. It would be infelicitous to use, say, *sanshi xia* ‘thirty times’ in the sentence above. The fact that the number of the iterated events is small is parametric, which has to do with “the Relative Measure Parameter” proposed by Cusic (1981). The parameter is concerned with the relative size of the repetition (iteration) induced by pluractionals such

²⁷ It has been pointed out above that the numeral *yi* ‘one’ can be inserted in the middle of the reduplicated form of a monosyllabic verb like *qiao* ‘to knock’. Note that *yi* ‘one’ in V-*yi*-V does not literally mean one but a small number more than one, which means that *yi* ‘one’ has a semantic drift in this context. This is not surprising because the two numerals *yi* ‘one’ and *liang* ‘two’ have developed many idiosyncratic properties the other numerals do not have (cf. Tsai 2002).

as reduplication. It has two values: INCREASE and DECREASE, which corresponds to a large size of repetition and a small size of repetition. It seems that the parameter is set to DECREASE in Chinese. Cusic (1981:83) has some examples from the language Quileute, which seems to behave like Chinese in this respect.

Besides semelfactives like *qiao* ‘to knock’ discussed above, the base in the event-internal reduplication patterns can also be an activity or accomplishment verb (statives in general and all achievement verbs are banned as pointed out above). I discuss reduplicated forms with an activity base below and deal with forms with an accomplishment base in the next subsection. Consider the example with the activity verb *liao* ‘to chat’ below:

(40) a. wo he ta liao le.

I and he chat PERF

‘I chatted with him.’

b. wo he ta liao-le-liao.

I and he liao-PERF-liao

‘I chatted with him for a short while.’

There is a meaning contrast between the sentence in (40a) and the one in (40b). The sentence in (40a) with the simple verb asserts that there was a chatting event between me and him. The sentence in (40b) with the reduplicated form of the verb has the reading that there was a chatting event between me and him that lasted for a short while. A natural question is: where does this duration reading come from?

Given that reduplication induces iteration of events, the reduplicated form *liao-liao* ‘chat-chat’ in (40b) involves the iteration of instances of the chatting event denoted

by *liao* ‘to chat’. The duration reading is derived from the fact that the denotation of the reduplicated form is the sum of several iterated events, each of which takes up an interval in time. The duration of the denotation of the reduplicated form is the sum of all the intervals covered by its parts. Given the fact that the number of iterated events inside the activity is small, the duration of the activity is accordingly short.

The difference between the case here and a reduplicated form with a semelfactive base is that the iterated events inside the activity are grammatically accessible when the base is a semelfactive but it is not when the base is an activity. This is shown below:

(41) a. Xiaobao qiao-le-qiao Ake de men, ta yigong qiao le san xia.

Xiaobao knock-PERF-knock Ake DE door he in total knock PERF three time

‘Xiaobao made some knocks on Ake’s door, he made three in total.’

b. wo he ta liao-le-liao, women yigong liao le san hui/*xia.

I and he liao-PERF-liao we in total chat PERF three time

‘I chatted with him for a short while, we chatted on three occasions in total (including the one we just did).’

As already noted above, the event quantifier *san xia* ‘three times’ in the second clause in (41a) gives the number of the iterated knocks inside the knocking activity denoted by the reduplicated form in the first clause. Now consider the sentence in (41b) that is parallel in form with the one in (41a). The reduplicated form *liao-liao* ‘chat-chat’ in the first clause denotes a chatting activity, which is the sum of several instances of the chatting activity denoted by *liao* ‘to chat’. Suppose the number of the iterated instances is three. We know independently that chatting activities are counted by event quantifiers with *hui* ‘time’ but not *xia* ‘time’. If the iterated instances were accessible for counting, we would expect, by analogy to (41a), that the event quantifier *san hui* ‘three times’ in the second clause gives

the number of the iterated instances in the sum. But that is not the reading of the sentence in (41b): *san hui* ‘three times’ specifies the total number of the chatting activities between me and him and the one denoted by the reduplicated form in the first clause is one of the three. What (41) illustrates is this: if knocks are summed to form a knocking activity, the iterated parts in the sum are still accessible for counting. If chats are summed to form a chatting activity, the iterated parts in the sum are not accessible for counting. I just point out the fact here and will discuss its theoretical implication in the next chapter.

What the two reduplicated forms in (41) have in common is that they both give rise to a duration, which can be specified by a duration phrase in a following clause:

(42) a. *wo he ta liao-le-liao, women yigong liao le san fenzhong.*

I and he liao-PERF-liao we in total chat PERF three minute

‘I chatted with him for a short while, we chatted for three minutes in total.’

b. *Xiaobao qiao-le-qiao Ake de men, ta yigong qiao le yi fenzhong.*

Xiaobao knock-PERF-knock Ake DE door he in total knock PERF one minute

‘Xiaobao made some knocks on Ake’s door; he knocked for one minute in total.’

Since each of the iterated events in the sum takes up an interval (no matter how short that interval may be), the sum will have a duration that is the sum of all the intervals covered by its parts. This is true whether the iterated events in the sum are knocks or chats.

To summarize: verb reduplication in Chinese triggers event iteration. For the reduplicated form of a verb in the two event-internal reduplication patterns (i.e., X-X and XY-XY), its denotation is an activity that consists of several iterated instances of the event denoted by the base. The denotation of the reduplicated form and that of the base

fall under the same description. If the base is a semelfactive such as *qiao* ‘to knock’, the iterated instances in the denotation of the reduplicated form are accessible for counting, which is not possible if the base is an activity such as *liao* ‘to chat’.

The formula in (43) below is proposed to capture the denotation of a reduplicated form in the two event-internal reduplication patterns ($\| \|$ is the denotation function):

(43) Denotation of a reduplicated form in the two event-internal reduplication patterns

$$\|V-V\| = \lambda V \lambda e_a [V(e_a) \wedge e_a = \uparrow (V(e_1) \cup \dots \cup V(e_n))]$$

(n is a small integer greater than 1 whose exact value is context-dependent)

V-V is the reduplicated form of a verb V. The boldfaced **V** is the corresponding predicate for V in the meta-language. The event variable e_a stands for an activity. The event variables with a numeric subscript are singular events denoted by V. Given that the denotation of a reduplicated form is of the same event type as that of the base, e_a and e_n both fall under the description of V. \uparrow stands for the group formation operation proposed in works like Landman (1996), which is supposed to apply to sums of individuals such as Pat and John to form a singular group individual. I assume that the same operation is also available in the verbal domain. In the formula above, the operation applies to the sum of some iterated instances of the event denoted by V to form a singular activity.

Some remarks about the group formation operation in the verbal domain are in order (see Rothstein 2004 for similar considerations about the event-summing in English secondary predication). The operation has at least two requirements on the iterated events in a sum it applies to: temporal adjacency and identity of event participant(s) with a particular role. To be specific, the iterated events must be temporally adjacent to each other and share the same event participant(s) with the same role(s). Otherwise, the group

formation operation cannot apply to the sum of the iterated events to generate a singular event. For instance, if John made a knock on Pat's door yesterday. Then he came back and made another knock on the door today. It seems that there are two knocking events in this scenario instead of only one because the two instances are not temporally adjacent and therefore cannot form a single event. Note that temporal adjacency is context-dependent. It is up to the context to decide if two events are temporally close enough for them to form a single event. As for identity of participants with roles, it is impossible for the event denoted by *Bill kissed Sue* and that by *Pat kissed Chris* to form a single event because they have different event participants. Also, the event denoted by *Bill kissed Sue* and that by *Sue kissed Bill* do not form a single event because the participants have different roles in the two events. These two requirements on the group formation operation in the verbal domain are assumed to be encoded in the operation, which is viewed as a partial function from sums of events to singular events. The two requirements are restrictions on the domain of the function.

Relying on (43), we can explain some facts about verb reduplication of the event-internal type. We have seen that it is possible to use an event quantifier or a duration phrase in a separate clause to specify the number of iterated events in the activity or the duration of the activity, which is shown in (44a) below:

- (44) a. Xiaobao qiao-le-qiao Ake de men, ta qiao le san
 Xiaobao knock-PERF-knock Ake DE door he knocked PERF three
 xia/fenzhong.
 time/minute

‘Xiaobao made several knocks on Ake’s door. He knocked three times/for three minutes.’

b. *Xiaobao qiao-le-qiao ji xia Ake de men.

Xiaobao knock-PERF-knock several time Ake DE door

‘Xiaobao made several knocks on Ake’s door.’

c. *Xiaobao qiao-le-qiao ji fenzhong Ake de men.

Xiaobao knock-PERF-knock several minute Ake DE door

‘Xiaobao knocked on Ake’s door for several minutes.’

The fact in (44b, c) shows that the event quantifier and the duration phrase cannot appear in the same clause with the reduplicated form.²⁸ The fact here can be explained as follows: assuming that event quantifiers and duration phrases are operators on event variables (the former quantifies over them and that latter can be viewed as temporal trace functions that takes an event variable and returns its duration), the event quantifier *ji xia* ‘several times’ in (44b) and the duration phrase *ji fenzhong* ‘several minutes’ in (44c) therefore both look for an event variable to operate on. The base verb does introduce an event variable, but it gets bound by the pluralizing operations induced by reduplication and is unavailable to either of the two operators in question. Since there are no other event variables present, the sentences become ungrammatical due to vacuous quantification.

The second fact that can be explained is that achievement verbs cannot be reduplicated in the event-internal patterns. Examples have already been reported in the previous section. The example below with the verb *jin* ‘to enter’ is repeated here for discussion:

²⁸ The word *ji* ‘several’ in (44b, c) is chosen on purpose. Although a reduplicated form entails iteration of events, the form all by itself does not specify the number of the iterations, nor does it specify the length of the duration during which the sum of the iterated events hold. If a numeral such as *san* ‘three’ is used, one may argue that the ungrammaticality is due to a semantic conflict between the exact number specified by the numeral and the unspecified value entailed by reduplication.

- (45) a. *wo he Ake tanhua qijian, Xiaobao jin-le-jin, chu-le-chu.
 I and Ake talk duration Xiaobao enter-PERF-enter exit-PERF-exit
 ‘While I was talking with Ake, Xiaobao came in and went out repeatedly.’
- b. wo he Ake tanhua qijian, Xiaobao butingde jin chu.
 I and Ake talk duration Xiaobao nonstop enter exit
 ‘While I was talking with Ake, Xiaobao came in and went out repeatedly.’
- c. wo he Ake tanhua qijian, Xiaobao butingde jinjin-chuchu.
 I and Ake talk duration Xiaobao nonstop enter.enter-exit.exit
 ‘While I was talking with Ake, Xiaobao came in and went out repeatedly.’

The fact above shows that achievement verbs such as *jin* ‘to enter’ cannot be reduplicated in the event-internal X-X pattern but can be reduplicated in the event-external XX-YY pattern. The explanation for the fact goes as follows:

As noted by Rothstein (2004), an achievement involves a change of state from α to $\neg\alpha$. As a result, if an achievement takes place and for the same event to happen again, $\neg\alpha$ has to change back to α first. This means that an event which denotes the change from $\neg\alpha$ to α is necessarily sandwiched between two iterated instances of an achievement. So the sum of several iterated achievements is always heterogeneous and cannot be described by the verb that denotes the achievement. Take the achievement verb *jin* ‘to enter’ for example. Suppose Xiaobao entered the room. If he wanted to enter the room again, he had to exit first. This means that a sum of two instances of an entering event necessarily includes an instance of an exiting event in the middle.²⁹ The sum does not fall

²⁹ There are ways to get rid of exiting events in an iteration of entering events. In the scenario where several doors stand one in front of another in a row, one can enter the doors one by one in succession and therefore brings about several entering events without in-between exiting events. But note that all the entering events

under the description of either *jin* ‘to enter’ or *chu* ‘exit’. It is also not clear if the sum is an activity or not. But the proposal in (43) dictates that a reduplicated form in the event-internal patterns denote an activity that can be described under the description of the base verb. This cannot be done with verbs such as *jin* ‘to enter’. As a result, it is ungrammatical to reduplicate an achievement verb in the event-internal reduplication patterns.³⁰

The Chinese facts support the reasoning above. An observant reader may have noticed that the grammatical reduplication of an achievement verb always involve both the verb and its antonym. For example, the grammatical reduplicated form involving the verb *jin* ‘to enter’ is *jinjin-chuchu* (enter.enter-exit.exit) ‘to enter and exit repeatedly’. Some more examples are given below:

(46) a. shushu-yingying

lose.lose-win.win

‘to lose and win repeatedly’

b. zhangzhang-luoluo

rise.rise-fall.fall

‘to rise and fall repeatedly’

c. duanduan-xuxu

break.break-continue.continue

‘to break/stop and continue repeatedly’

in this scenario are different since one event participant, namely the door, varies from one event to another. As a result, the sum of these entering events falls outside the domain of the group formation operation.

³⁰ Henderson (2012) claims that in the Mayan language Kaqchikel, it is possible for an achievement root to carry a derivational suffix which expresses event-internal pluractionality. But according to Henderson, the achievement base has a different meaning than the derived form, which means that the denotation of the base and that of the whole verb are NOT of the same event type, which may be the reason for the difference between Chinese and Kaqchikel.

d. fenfen-hehe

break up.break up-get together.get together

‘to break up and get together repeatedly’

All the forms above are in the event-external reduplication pattern. They denote repeated events like entering and exiting on different occasions (see Section 4 for more discussion). The denotations are not singular activities that can be described by either of the two bases.

The fact about achievement verbs raises questions about accomplishment verbs, which, as reported above, can be reduplicated. This is quite mysterious given that both are telic. The issue about achievements should also be applicable to accomplishments. In the next subsection, I deal with the reduplication of accomplishments.

3.2 Event-internal reduplication of accomplishment verbs

Let us first look at an example of the reduplication of an accomplishment verb. Take the verb *du* ‘to read’ for illustration:

(47) a. ta du le na pian wenzhang.

he read PERF that Cl paper

‘He read that paper.’

b. ta du-le-du na pian wenzhang.

he read-PERF-read that Cl paper

‘He read that paper for a short while.’

c. ta he wo liao-le-liao na pian wenzhang.

he and I chat-PERF-chat that Cl paper

‘He chatted with me about that paper for a short while.’

The sentence in (47a) has the simple verb *du* ‘read’. The one in (47b) has the reduplicated form of the verb. For comparison, the sentence in (47c) has the reduplicated form of the activity verb *liao* ‘to chat’, which has already been discussed above. The fact is that the reduplicated form of the accomplishment verb *du* ‘to read’ has the same kind of reading as that of the activity verb *liao* ‘to chat’. The sentence in (47b) asserts that a reading activity of that paper holds during a short period of time, just like the one in (47c) where it is asserted that a chatting activity between him and me about that paper was going on during a short interval. How do we account for this fact?

Following Dowty (1979), Parsons (1990), Rothstein (2004) among many others, I assume that an accomplishment consists of two parts. Parsons (1990:23-24) calls the two parts a development portion and a culmination. Rothstein (2004:35), following Dowty’s (1979) spirit, gives the following template for accomplishment and activity verbs:

(48) **Accomplishments:** $\lambda e. \exists e_1 \exists e_2 [e =^s (e_1 \cup e_2) \wedge (\text{DO}(\text{P}))(\text{e}_1) \wedge \text{Cul}(\text{e}) = \text{e}_2]$

Activities: $\lambda e. (\text{DO}(\text{P}))(\text{e})$

In the representation for accomplishments, *e* stands for an accomplishment event and *e*₁ and *e*₂ are its two components: *e*₁ corresponds to Parsons’ development portion and *e*₂ corresponds to his culmination. Rothstein’s templates further make it explicit that *e*₁, the development portion, is an activity, as can be seen from the template for activities above.

I assume that the reduplication focuses on the development portion of an accomplishment. When an accomplishment verb is reduplicated, iteration of events is induced and what is being iterated is instances of the development portion of the accomplishment. The sum is an activity that is of the same description of the development portion. Note that the verb provides a lexical description of the development

portion. As a result, the sum can also be described by the verb. To see the fact, first consider the conversation below:

(49) A: wo du-le-du na pian wenzhang.

I read-PERF-read that Cl paper

‘I read that paper for a short while.’

B: du le duojiu?

read PERF how long

‘For how long did you read it?’

A: zhi du le ban ge xiaoshi.

only read PERF half Cl hour

‘I only read it for half an hour.’

B: du-wan le ma?

read-end PERF SFP

‘Did you finish reading it?’

A: mei-you.

not-have

‘No.’

The reduplicated form of *du* ‘to read’ in the first utterance of A denotes a reading activity. The simple verb is used in following utterances to refer to that activity, which means that the denotation of the reduplicated form falls under the description of the simple verb. The example below further shows that the denotation of the reduplicated form is atelic:

(50) a. ta liang ge xiaoshi du le na liang pian wenzhang.

he two Cl hour read PERF that two Cl paper

‘He read those two papers in two hours.’

b. *ta liang ge xiaoshi du-le-du na liang pian wenzhang.

he two Cl hour read-PERF-read that two Cl paper

‘He read those two papers for a short while in two hours.’

As shown above, the simple verb with a quantized object is compatible with the preverbal duration phrase, which has the interpretation of the time-span adverbial *in two hours*. The reduplicated form with the same object does not allow the same preverbal duration phrase.

A special kind of accomplishment verb in the language needs discussion: resultative verb compounds (for descriptions and discussions of these compounds, see Li and Thompson 1980 and Li 1990). Such a compound consists of two morphemes. The first morpheme is either transitive or unergative. The second morpheme is unaccusative and denotes either an event or state caused by the eventuality denoted by the first morpheme. It is clear that these verb compounds are typical accomplishments since the second morpheme explicitly specifies a resultant state which serves as the inherent endpoint. Some examples of these compounds are given below:

(51) a. kan-duan

chop-break

‘to chop something and break it’

b. qiao-sui

pound-break into pieces

‘to pound into pieces’

c. la-chang

pull-long

‘to pull long’

d. ran-hong

dye-red

‘to dye red’

An interesting fact is that compounds such as the ones above cannot be reduplicated. Two examples are given below:

(52) a. *kan-duan kan-duan

chop-break chop-break

‘to chop something for a short while with the goal of making it break’

b. *ran-hong ran-hong

dye-red dye-red

‘to dye something for a short while with the goal of making it red’

c. kan-kan

chop-chop

‘to chop a couple of times, to chop for a short while’

d. ran-ran

dye-dye

‘to dye for a short while’

The two compounds in (52a, b) are disyllabic. So if they were able to be reduplicated, the XY-XY pattern should be used. As shown above, neither of them can be reduplicated. As argued above, the reduplication of an accomplishment verb focuses on the development

portion of the accomplishment. For resultative verb compounds, the development portion is the denotation of the first morpheme. As shown by (52c, d), the first morpheme in the two compounds can be reduplicated. Given the fact, it is mysterious that the compounds cannot be reduplicated under the intended reading given above.

There is an explanation offered in the literature by Li and Thompson (1980). I will review their account and then propose a new explanation for the fact.

Li and Thompson (1981: 232-236) calls the two event-internal reduplication patterns the *delimitative aspect* (they do not mention the XX-YY pattern): “The delimitative aspect means doing an action ‘a little bit’, or for a short period of time.” Based on this fact, they provide the functional account below to explain why resultative verb compounds cannot be reduplicated:

“This is because the function of a resultative verb compound is to signal that a given event leads to a certain result. The focus on the result of the event with these compounds is incompatible with the delimitative aspect meaning of doing something for a little while. Hence, the resultative verb compound cannot be reduplicated in the delimitative aspect.”

This explanation cannot stand. First of all, since the authors do not provide any definition, it is not clear what they mean by “focus”. It seems pointless to speculate on their intended meaning of the term. Below I provide an example to show that it is not the case that the result is always focused in a commonly accepted sense of the term:

(53) a. wo tui-xing le ta, er bu shi jiao-xing le ta.

I push-wake PERF he but not be call-wake PERF he

‘I pushed him and woke him up. I did not call him and woke him up.’

b. wo rang ta xi-ganjing er bu shi ca-ganjing zhuozi.

I tell he wash-clean but not be wipe-clean table

‘I told him to clean the table by washing but not wiping it.’

In a context like either of the two sentences above where there are two resultative verb compounds that differ by the first morpheme, it is the first morpheme but not the result-specifying second morpheme that is contrastively focused, which is the opposite of what Li and Thompson claims. Out of the blue, it seems to make little sense to assume that one morpheme but not the other in such a compound is focused.

Second, there is no reason for the proposed incompatibility between doing something for a little while and having a goal to achieve. Consider the fact below:

(54) a. wo tui-le-tui ta, tui-xing le ta.

I push-PERF-push push-wake PERF he

‘I gave him a couple of pushes, and woke him up.’

b. qu tui-tui ta, rang ta xing-guolai.

go push-push he make he wake-up

‘Go give him a couple of pushes and wake him up!’

c. *qu tui-xing tui-xing ta!

go push-wake push-wake he

‘Go give him a couple of pushes and wake him up!’

The sentence in (54a) shows that doing something for a little while (namely giving him a couple of pushes) is perfectly compatible with the goal of waking him up. The sentence in (54b) expresses exactly the same meaning the ungrammatical sentence in (54c) intends to express. The contrast between (54b) and (54c) shows that it is a grammatical principle that rules (54c) out and there is nothing wrong with the intended meaning. As I will show below, an independent morphological reason explains why resultative verb compounds like *tui-xing* ‘push-wake’ in (54c) cannot be reduplicated.

My new account is based on the following assumptions: I follow Li (1990, 1993, 1995) to assume that resultative verb compounds are generated in the lexicon but not in the syntax. To put it differently, I assume that compounding involved in resultative verb compounds is a process taking place in the lexicon. Similarly, I assume that verb reduplication is also a lexical process. I follow Kiparsky (1982a, b) to assume that there is an irreversible ordering between morphological processes. Under these assumptions, both compounding and verb reduplication in Chinese are processes in the lexicon which have a relative order between them. Now consider the example below:

(55) a. zhe jian yifu xixi-ganjing/*xi-ganjing xi-ganjing hai neng jixu
 this Cl clothes wash.wash-clean/wash clean-wash clean still can continue
 chuan.

wear

‘This piece of clothes, if washed clean, can still be worn.’

b. ba zhexie dongxi nadao taiyang dixia shaishai-gan/*shai-gan shai-gan.
 BA these thing take sun underneath bask.bask-dry/bask dry-bask dry
 ‘Take these things under the sun to dry them.’

c. ba zhe gen tie-si lala-zhi/*la-zhi la-zhi.

BA this Cl iron wire pull.pull-straight/pull straight-pull straight

‘Pull this iron wire straight.’

The fact above shows that verb reduplication must happen before compounding. Take the sentence in (55c) for example. The contrast between the grammatical form *lala-zhi* ‘pull. pull-straight’ and the ungrammatical one *la-zhi la-zhi* ‘pull-straight pull-straight’ shows that the verb *la* ‘to pull’ is reduplicated first and then gets combined with *zhi* ‘straight’.

Assuming that the form *lala-zhi* ‘pull.pull-straight’ is also a resultative verb compound, the conclusion is that compounding in resultative verb compounds takes place after verb reduplication. Given this fact about the Chinese lexicon, it follows that resultative verb compounds cannot be reduplicated since verb reduplication is a process that happens on a level prior to compounding.

Evidence for the claim that verb reduplication is on an earlier level than compounding can be found. Reduplication of the event-internal type triggers phonological changes. For a reduplicated form X-X or XY-XY, the reduplicated part (X or XY after the dash) loses its original tone and carries the neutral tone. The stress of the whole form is always on the first part (cf. Zhu (1982:26)). Compounding in resultative verb compounds, by contrast, does not trigger these phonological changes. For a resultative verb compound like *la-zhi* ‘to pull straight’, the second morpheme of the compound keeps its original tone and there is no stress difference between the two morphemes. Given the fact, reduplication behaves like primary morphology in English (see Kiparsky 1982) which is on an earlier level than secondary morphology including compounding.

There is a piece of evidence for my new account. As noted by Zhu (1982:126), resultative verb compounds split into two groups. For ease of discussion, let us call the two groups Group One and Group Two. The difference between the two is this: both morphemes in a resultative verb compound from Group One are free in the sense that they can stand alone. By contrast, the second morpheme in a Group Two resultative verb compound is bound. This difference is supported by an expansion test. A resultative compound from Group One can be expanded by the insertion of the morpheme *de* to

express the modal meaning of possibility. By contrast, a resultative verb compound from Group Two cannot be expanded in the same way. Let us use some concrete examples to illustrate the fact here. First consider the example below with the Group One resultative compound *tui-dao* ‘to push down’:

(56) a. *tui-de/bu-dao*

push-de/not-fall down

‘can/cannot push down’

b. (bu) *neng tui-dao*

(not) can push-fall

‘can/cannot push down’

c. *ta tui-de/bu-dao zhe ke shu.*

s/he push-de/not-fall this Cl tree

‘S/he can/cannot push down this tree.’

d. *ta (bu) neng tui-dao zhe ke shu.*

s/he (not) can push-fall this Cl tree

‘S/he can (not) push down this tree.’

As shown by (56a), either the morpheme *de* or the negation *bu* ‘not’ can be inserted in the middle of the compound. The meaning of the form in (56a) is exactly the same as the one in (56b) where the modal *neng* ‘can’ appears before the verb. A sentence is provided for both the form in (56a) and the one in (56b).

Next consider the Group Two resultative compound *tui-guang* ‘to spread; to popularize’:

(57) a. *tui-de/bu-guang

push-de/not-wide

‘can/cannot spread’

b. (bu) neng tui-guang

(not) can push-wide

‘can/cannot spread’

c. *ni de xianjin jingyan zai zhe’er tui-de/bu-guang.

you DE advanced experience at here push-de/not-wide

‘Your advanced experience can/cannot be extended here.’

d. ni de xianjin jingyan (bu) neng zai zhe’er tui-guang.

you DE advanced experience (not) can at here push-wide

‘Your advanced experience can (not) be extended here.’

As shown by (57a), the insertion cannot be applied to the compound. The intended modal meaning has to be expressed by using the modal *neng* ‘can’ before the verb as shown by (57b). Again, I provide a sentence to illustrate the forms in (57c, d).³¹

What is interesting is that, unlike Group One compounds such as *tui-dao* ‘to push down’, Group Two resultative compound can be reduplicated, as shown below:

(58) a. ba ni de xianjin jingyan zai women zhe’er tui-guang tui-guang.

BA you DE advanced experience at we here spread.spread

‘Spread your advanced experience in us here.’

³¹ A further difference between Group One and Group Two is that the meaning of a Group One compound is usually compositional whereas that of a Group Two compound is not. Note that the meaning of *tui-dao* ‘to push down’ is just the composition of *tui* ‘to push’ and *dao* ‘to fall down’. But the meaning of *tui-guang* ‘to spread’ is not a simple composition of *tui* ‘to push’ and *guang* ‘wide’.

b. *ba zhe ke shu tui-dao tui-dao.

BA this CI tree push-down push-down

‘Push down this tree!’

Similar pairs that consist of compounds from the two groups are not difficult to find. Two more examples are provided below to show that the fact is systematic: *shuo-ming* (say-clear) ‘to explain’ versus *shuo-qing* (say-clear) ‘to say something and make it clear’ and *gai-shan* (change-good) ‘to improve’ versus *gai-hao* (change-good) ‘to change something and make it good’ etc. The fact is that the member from Group Two in these pairs can be reduplicated whereas the one from Group One cannot:

(59) a. *shuo-qing* vs. *shuo-ming*

say-clear say-clear

‘to make clear by saying’ ‘to explain’

b. *shuo-de/bu-qing*

say-de/not-clear

‘can/cannot make something clear by saying it’

c. **shuo-de/bu-ming*;

say-de/not-clear

‘can/cannot explain’

d. ni ba qingkuang gei dajia shuoming-shuoming/*shuo-qing shuo-qing.

you BA situation for everybody explain-explain / say clear say clear

‘Explain the situation to everybody.’

(60) a. *gai-hao* vs. *gai-shan*

change-good change-good

‘to make good by changing’ ‘to improve’

b. gai-de/bu-hao

change-de/not-good

‘can/cannot make something good by changing it’

c. *gai-de/bu-shan;

change-de/not-good

‘can/cannot improve’

d. xuesheng de huoshi tiaojian bixu dei gaishan-gaishan/*gai-hao gai-hao.

student DE dining condition must have to improve-improve/change good

‘The students’ dining condition must be improved.’

Two more compounds from Group Two are provided below where they are reduplicated:

(61) a. zheng-ming gai-liang

prove-clear change-good

‘to prove’ ‘to improve’

b. ni lai zheng-ming zheng-ming zhe dao ti.

you come prove prove this Cl problem

‘You come to have a try in proving this problem.’

c. women dei xiang banfa gai-liang gai-liang zheli de turang.

we have to think way improve improve here DE soil

‘We should think of a way to improve the soil here.’

An account that relies on the result state denoted by the second morpheme such as Li and Thompson’s can not explain the fact in (61b, c). To account for the fact about Group Two

resultative verb compounds such as *tui-guang* ‘to spread’, I assume that these words have grammaticalized as simple verbs. In other words, they are not compounds any more like the ones in Group One such as *tui-dao* ‘to push down’. Since they are simple verbs, there is no compounding involved and therefore they can be reduplicated like normal disyllabic verbs. By contrast, there is compounding in Group One compounds like *tui-dao* ‘to push down’ and as a result those compounds cannot be reduplicated due to ordering issues.

In terms of reduplication, verbs like *tui-guang* ‘to spread’ behave like monosyllabic verbs such as *du* ‘to read’ discussed in the beginning of this section. The fact and what has been said about *du* ‘to read’ will not be repeated here. Now we have finished the discussion of the two event-internal reduplication patterns. We turn to the event-external reduplication pattern in the next section.

4. The semantics of the event-external reduplication pattern

In this section, we discuss the semantics of the event-external reduplication pattern. The formula in (62) below is proposed to capture the denotation of a reduplicated form in the event-external pattern:

(62) Denotation of a reduplicated form in the event-external reduplication pattern

$$\|\mathbf{V}_1\mathbf{V}_1\text{-}\mathbf{V}_2\mathbf{V}_2\| = \lambda\mathbf{V}_1\lambda\mathbf{V}_2\lambda e[e = \mathbf{V}_1(e_1) \cup \mathbf{V}_2(e_2) \cup \dots \cup \mathbf{V}_1(e_1) \cup \mathbf{V}_2(e_2)]$$

(... stands for omitted conjuncts, the number of which is dependent on the context.)

\mathbf{V}_1 and \mathbf{V}_2 are used to represent the two verbal base morphemes and $\mathbf{V}_1\mathbf{V}_1\text{-}\mathbf{V}_2\mathbf{V}_2$ is the reduplicated form. The boldfaced \mathbf{V}_1 and \mathbf{V}_2 are the corresponding predicates in the meta-language for the two bases. e_1 and e_2 are the event variables introduced by \mathbf{V}_1 and \mathbf{V}_2 respectively. e stands for the eventuality that is the denotation of the reduplicated form.

For comparative reasons, I repeat (43) above below as (63) to illustrate the difference between the two reduplication patterns:

(63) Denotation of a reduplicated form in the two event-internal reduplication patterns

$$\|V-V\| = \lambda V \lambda e_a [V(e_a) \wedge e_a = \uparrow (V(e_1) \cup \dots \cup V(e_n))]$$

(n is a small integer greater than 1 whose exact value is context-dependent)

There are three differences between the two as listed below:

- (64) a. The group formation operation \uparrow is necessarily required for event-internal but not event-external reduplication;
- b. The denotation of a reduplicated form in the event-internal type is an activity that can be described by the base verb, which is not true for a reduplicated form in the event-external type in most cases.
- c. The number of iterations in an event-internal reduplication is small, but that in an event-external one is not necessarily small.

I provide facts below to illustrate the differences spelled out above. First consider the one in (64a). As already discussed in previous sections, the denotation of a reduplicated form in the two event-internal reduplication patterns is always a singular sum, which motivates the group formation operation in (63). We noted that the iterations in the denotation of a reduplicated form in the event-external reduplication pattern may be confined within one occasion as shown by the example in (65a) below:

(65) a. cong ba-dian dao shi-dian, ta yizhi zai qiaoqiao-dada.

from eight o'clock to ten o'clock he all the time PROG knock.knock-beat.beat

‘From eight to ten, he was knocking on and beating (something) all the time.’

b. ta shi ge tie-jiang, yi beizi dou zai qiaoqiao-dada.

he be Cl blacksmith one lifetime all PROG knock.knock-beat.beat

‘He is a blacksmith and has been knocking on and beating (metals) all his life.’

The iterated knocking events and beating events in (65a) are confined within a two-hour period, during which he did nothing else. The reason why the group formation operation is not written down in the formula in (62) is that it is context-dependent. Given a different context, the iterations may have happened over different occasions and the sum cannot be a singularity. This is shown by (65b) where the iterations (repeated knocking and beating) in the denotation of the same reduplicated form do not happen within one single occasion. This is in contrast to event-internal reduplication where the denotation of a reduplicated form is always a singularity. Due to this difference, the group formation operation needs to be written down as a grammatical rule for event-internal reduplication. The example in (66) has two more cases to show that the iterations in event-external reduplication do not happen on one occasion to form a singularity:

(66) a. ni dada-shasha le zheme duo nian, hai meiyou yanjuan ma?

you fight.fight-kill.kill PERF this many year still not get bored SFP

‘You have been fighting and killing people for so many years, haven’t you got bored yet?’

b. ta shushu-yingying, dao rujin sai le bu xia yi-bai chang bisai le.

he lose.lose-win.win till now play PERF not less one hundred Cl game SFP

‘He lost and won and has played no less than one hundred games so far.’

Besides the issue about multiple occasions as illustrated above, there is another fact that prevents the denotation of a reduplicated form in the event-external pattern from being a singular event. It has been observed in different languages that pluractionals on

the verb cause plural readings of its arguments (see Cusic 1981, Newman 1990 for examples from different languages). To be specific, if the verb carries, say, a pluractional affix, either the subject or the object of the verb will get a plural reading. In Chinese, a reduplicated form in the XX-YY pattern does not necessarily trigger plural readings of the arguments. But it can involve plural arguments, as shown below:

(67) a. malu-shang lailai-wangwang de che, ni yiding yao xiaoxin.

road-top come.come-go.go DE car you definitely need careful

‘There are cars coming and going on the road. You must be careful.’

b. gongyuan-li dao chu shi bengbeng-tiaotiao de xiaohai.

park-inside everywhere be leap.leap-jump.jump DE child

‘Everywhere in the park are children that are leaping and jumping.’

che ‘car’ in (67a) and *xiaohai* ‘child’ in (67b) both have a plural reading. In cases like (67) here, the denotation of the reduplicated form cannot be a singular event since a singular event cannot hold for multiple event participants (cars and children in the example here) unless all the participants form a singularity that takes part in the event as a group, which is not the case in (67).

Next let us see the second difference. For a reduplicated form in the event-internal type, its denotation is always an activity that falls under the description of the base. This does not hold for reduplicated forms of the event-external type, which can be seen from cases like the example below:

(68) a. jintian huiyi qijian ta butingde jinjin-chuchu.

today meeting duration he nonstop enter.enter-exit.exit

‘During today’s meeting, he came in and out repeatedly.’

b. *duijiangji de shengyin duanduan-xuxu.*

intercom DE sound break.break-continue.continue

‘The sound of the intercom broke and continued repeatedly.’

The denotation of the reduplicated form in (68a) is a sum of iterated entering events and exiting events. The denotation does not fall under the description of either of the two base verbs. Note that this reduplication pattern always involves two verbal morphemes, so the denotation of a reduplicated form in this pattern is always a sum of the iterations of two kinds of events. The sum therefore cannot be described by either morpheme in the base.

Now consider the last difference. We have noted that the number of iterated events in the denotation of a reduplicated form in the event-internal patterns is small. This is shown by the example below in (69a), where the sentence is infelicitous due to the conflict between the small number entailed by the reduplicated form and the large number specified by the event quantifier in the second clause (the # before the sentence is used to indicate infelicity, which can be fixed by replacing *wubai* ‘five hundred’ with another one denoting a smaller number such as *wu* ‘five’):

(69) a. #*Xiaobao qiao-le-qiao, ta yigong qiao le wubai xia.*

Xiaobao knock-PERF-knock he in total knock PERF five hundred time

‘Xiaobao made a couple of knocks, and he made five hundred in total.’

b. *Xiaobao qiaoqiao-dada, ta yigong qiao le wubai xia.*

Xiaobao knock.knock-beat.beat he in total knock PERF five time

‘Xiaobao repeatedly knocked on and beat (something), and he made five hundred knocks in total.’

As shown by (69b), the number of iterated events in the denotation of a reduplicated form in the event-external pattern does not have to be small. It can be a large number like 500.

5. Summary and noun reduplication

In this chapter, we introduced three verb reduplication patterns in Chinese. We argue that the X-X pattern and the XY-XY pattern both express event-internal pluractionality while the XX-YY pattern expresses event-external pluractionality. We give a semantic account for both event-internal and event-external reduplication and point out their difference. We explain why achievement verbs and resultative verb compounds cannot be reduplicated in the event-internal reduplication patterns. This chapter provides both empirical facts and theoretical discussions about pluractionality.

In the rest of this chapter, I want to introduce noun reduplication in the language because there is an interesting parallel between verb reduplication and noun reduplication.

Noun reduplication in Chinese is generally neglected by grammarians due to the fact that it is not as productive as verb reduplication. Nevertheless, nouns can also be reduplicated. What is interesting is that they can be reduplicated in the X-X and XX-YY pattern, which makes it possible to compare reduplication of the two major lexical categories since verbs can also be reduplicated in these two patterns as we have seen above.

Let us first look at the X-X pattern. This pattern of reduplication is found in the following cases. The first is monosyllabic kinship terms that can be reduplicated. Examples of base forms are given below:

(70) Monosyllabic kinship terms that can be reduplicated:

ma ‘mom’, *ba* ‘dad’, *ye* ‘grandpa (on father’s side)’, *nai* ‘grandma (on father’s side)’,
lao ‘grandma (on mother’s side)’, *ge* ‘elder brother’, *jie* ‘elder sister’, *di* ‘younger
 brother’, *mei* ‘younger sister’, *shu* ‘uncle (father’s younger brother)’, *bo* ‘uncle

(father's elder brother)', *jiu* 'uncle (mother's brother)', *gu* 'aunt (father's sister)',
gong 'father-in-law (of a woman)', *po* 'mother-in-law (of a woman)'.

Some of the forms are bound and the others are free. All of them can be reduplicated. The reduplicated form can be used to both refer and address people.

The second case includes only several members: *bao-bao* 'babe', *guo-guo* 'green cricket', *qu-qu* 'cricket', *wa-wa* 'kid', *xing-xing* 'star', *xing-xing* 'ape' etc. Some of the base forms in these reduplicated forms are free and the others are bound.

Except the two cases above, the majority of mono-syllabic nouns cannot be reduplicated except in a special social dialect, namely baby talk (or infant/child-directed speech). This fact has already been noted by Chao 1968:202), who provided the two examples below to illustrate the fact:

(71) a. *chi fan-fan*

eat rice-rice

'to eat the rice'

b. *chuan xie-xie*

put on shoe-shoe

'to put on the shoes'

As noted by Chao (1968), the phenomenon illustrated by (71) "is quite productive in this type of artificial language ["children's language" in his term]. Usually, a growing child discards this language as soon as he notices that grown-ups don't talk that way to each other." The word "artificial" in the quote should be taken to mean a social dialect but not a man-made language because the forms above are used by both children and adults who interact with children, especially mothers and baby-sitters.

In Mandarin, forms like the ones in (71) are only used in baby talk. But there are Chinese dialects that use these forms in everyday language. Chao (1968:202) notes that “a rather productive reduplication [he means the X-X pattern] does exist in the dialect of Kunming, Yunnan, and some Szechuan dialects, where reduplication has the class meaning of ‘small objects of obvious shape’”. The example *qiu-qiu* [ball-ball] ‘small ball, bead’ is provided by him for illustration.

For all those cases reported in Mandarin (kinship terms, those limited lexical items, baby talk) and the case in the Kunming dialect which I have checked with a native speaker, reduplication does not yield pluralization. Consider the following example:

(72) a. zhe shi tamen de ma-ma/ba-ba.

this be they DE mom.mom/dad.dad

‘This is their mom/dad.’ or ‘These are their moms/dads.’

b. wo mai le yi zhi guo-guo.

I buy PERF one CI green cricket.green cricket

‘I bought a green cricket.’

c. bao-bao, kan! ma-ma gei ni mai le yi zhi xiao gou-gou.

babe-babe look mom.mom for you buy PERF one CI little dog-dog

‘Babe, Look! Mommy bought a little doggie for you!’

The reduplicated form *ma-ma* or *ba-ba* in the sentence in (72a) can be either singular or plural, which is typical of Chinese nouns that are not marked for number. If reduplication of *ma* ‘mom’ or *ba* ‘dad’ involves pluralization, the singular reading will not be possible. As shown by (72b), the reduplicated form *guo-guo* is compatible with *yi zhi* ‘one CI’, which means that it is singular. There are three reduplicated forms in (72c) and none of

them is plural. The first one, namely *bao-bao*, is used to address the hearer, who is a little kid. The second one, *ma-ma*, is used to refer to the speaker herself. The third one, *gou-gou* is fine with *yi zhi* ‘one CI’ and cannot be plural.

Now let us consider the XX-YY pattern. Four examples are provided in (73) below (see the appendix for more examples):

(73) a. zizi-sunsun

son.son-grandson.grandson

‘sons and grandsons’

b. riri-yeye

day.day-night.night

‘days and nights’

c. pingping-guanguan

bottle.bottle-jar.jar

‘bottles and jars’

d. nannan-nünü

man.man-woman.woman

‘men and women’

A sharp contrast between this reduplication pattern and the previous one is that this one necessarily involves pluralization. For example, if there is only one man and one woman, one cannot use the form *nannan-nünü* ‘men and women’ to refer to them. There must be more than one man and more than one woman in the denotation of the form. The number of both men and women is by all means quite big. It is not possible to be, say, only two men and two women. This is shown below:

(74) a. yi dui pingping-guagua

one pile bottle.bottle-jar.jar

‘one pile of bottles and jars’

b. *si ge pingping-guagua

four Cl bottle.bottle-jar.jar

‘four bottles and jars’

c. xuduo ge riri-yeye

many Cl day.day-night.night

‘many days and nights’

d. ??ji ge riri-yeye

several Cl day.day-night.night

‘several days and nights’

e. ?si qian ge zizi-sunsun

four thousand Cl son.son-grandson.grandson

‘four thousand sons and grandsons’

f. *si ge zizi-sunsun

four Cl son.son-grandson.grandson

‘four sons and grandsons’

The denotation of a reduplicated form may or may not be a singularity, depending on the context. Consider the following example:

(75) a. jie-shang daochu shi ganji de nannan-nünü.

street-above everywhere be go-market DE man.man-woman.woman

‘There are men and women everywhere in the street who come for the fair.’

b. naxie nannan-nünü ba yuanzi wei-de shui-xie-bu-tong.

those man.man-woman.woman BA yard surround-de water cannot leak out

‘Those men and women surrounded the yard so tightly that even a drop of water couldn’t leak out.’

The denotation of the reduplicated form *nannan-nünü* ‘man.man-woman.woman’ is the sum of some men and some women. The sum may form a singularity as in (75b) or not as in (75a).

It is not hard to see the parallel between verb reduplication and noun reduplication. For a reduplicated form in the X-X pattern, whether the base is a verb or noun, it always refers to a singularity. For a reduplicated form in the XX-YY pattern, whether the base forms are verbal or nominal, it refers to a sum that consists of many parts and the sum does not necessarily form a singularity (whether it forms a singularity is dependent on the context).

The current chapter ends here. The facts about verb and noun reduplication in this chapter will be revisited in the next chapter when we discuss the semantic implications of event quantifiers and the parallel between the verbal and nominal domain.

Appendix: Common examples of the XX-YY reduplication pattern

Due to the fact that the XX-YY pattern for both verbs and nouns are generally ignored in grammars and works on reduplication, this appendix is made to provide some common examples for both categories. The two lists are by no means exhaustive and the number of members in both lists indicates that this reduplication pattern is not uncommon at all.

(I) Verbs:

a. bengbeng-tiaotiao

leap.leap-jump.jump

‘leap and jump repeatedly’

b. chaochao-naonao

quarrel.quarrel-fight.fight

‘quarrel and fight a lot’

c. chaochao-rangrang

make noise.make noise-yell.yell

‘shout and yell a lot’

d. chichi-hehe

eat.eat-drink.drink

‘eat and drink a lot’

e. chuichui-dada

blow.blow-beat.beat

‘blow (a musical instrument such as a flute) and beat (a drum etc.) a lot’

f. dada-naonao

hit.hit-fight.fight

‘hit and fight a lot’

g. dada-shasha

fight.fight-kill.kill

‘fight and kill a lot’

h. diedie-zhuangzhuang

fall.fall-bump.bump

‘dodder and stagger along’

i. duoduo-shanshan

hide.hide-get out of the way.get out of the way

‘to dodge a lot’

j. fenfen-hehe

break up.break up-get together.get together

‘to break up and get together repeatedly’

k. fengfeng-bubu

sew.sew-repair.repair

‘to sew and repair repeatedly’

l. gougou-dada

bend around.bend around-hang over.hang over

‘to bend over one’s arm around someone’s waist and hang one’s arm over someone’s shoulder a lot’

m. hanhan-jiaojiao

yell.yell.scream.scream

‘to yell and scream repeatedly’

n. jinjin-chuchu

enter.enter-exit.exit

‘to enter and exit repeatedly’

o. kuku-titi

weep.weep.cry.cry

‘to cry a lot’

p. lala-cheche

pull.pull-jerk.jerk

‘to pull and jerk repeatedly’

q. lailai-huihui

come.come-return.return

‘to come and go repeatedly’

r. lailai-ququ

come.come-go.go

‘to come and go repeatedly’

s. lailai-wangwang

come.come-go.go

‘to come and go repeatedly’

t. loulou-baobao

hug.hug-cuddle.cuddle

‘to hug and cuddle a lot’

u. momo-cengceng

idle (away time).idle (away time)-drag along.drag along

‘to dillydally a lot’

v. paopao-tiaotiao

run.run-jump.jump

‘to run and jump repeatedly’

w. qiaoqiao-dada

knock.knock-beat.beat

‘to knock and beat repeatedly’

x. shanshan-jianjian

delete.delete-reduce.reduce

‘to delete and reduce’

y. shangshang-xiaxia

ascend.ascend-descend.descend

‘to go up and down repeatedly’

z. shushu-yingying

lose.lose.win.win

‘to lose and win repeatedly’

aa. shuoshuo-xiaoxiao

say.say-laugh.laugh

‘to talk and laugh a lot’

bb. tuitui-sangsang

push.push-shove.shove

‘to push and shove a lot’

cc. toutou-momo

steal.steal-fumble for.fumble for

‘to steal and fumble for’

dd. wanwan-shuashua

play.play-play.play

‘to play a lot’

ee. xixi-haha

giggle.giggle-titter.titter

‘to giggle and titter a lot’

ff. xixi-shuanshuan

wash.wash-rinse.rinse

‘to wash and rinse a lot’

gg. xunxun-mimi

look for.look for-seek.seek

‘to look for something continuously’

hh. yaoyao-baibai

shake.shake-swing.swing

‘to shake and swing a lot’

ii. yaoyao-huanghuang

shake.shake.rock.rock

‘to shake and rock a lot’

jj. zouzou-tingting

walk.walk-stop.stop

‘to walk/go and stop repeatedly’

(II) Nouns:

a. bianbian-jiaojiao

side.side-corner.corner

‘sides and corners’

b. diandian-didi

dot.dot-drop.drop

‘dots and drops’

c. enen-yuanyuan

gratitude.gratitude-grudge.grudge

‘gratitudes and grudges’

d. fenfen-miaomiao

minute.minute-second.second

‘minutes and seconds’

e. fengfeng-yuyu

wind.wind-rain.rain

‘winds and rains’

(metaphorically) ‘a lot of adversity and tough experience’

f. huahua-caocao

flower.flower-grass.grass

‘flowers and grasses’

g. kengkeng-wawa

hole.hole-pit.pit

‘holes and pits’

h. laolao-shaoshao

old.old-young.young

‘old people and young people’

i. nannan-nünü

man.man-woman.woman

‘men and women’

j. pingping-guanguan

bottle.bottle-jar.jar

‘bottles and jars’

k. riri-yeye

day.day-night.night

‘days and nights’

l. shanshan-shuishui

mountain.mountain-water.water

‘mountains and waters’

m. shenshen-guaguai

god.god-monster.monster

‘gods and monsters’

n. shishi-daidai

century.century-generation.generation

‘centuries and generations’

o. shishi-feifei

right.right-wrong.wrong

‘rights and wrongs’

p. tiaotiao-kuangkuang

bar.bar-frame.frame

‘bars and frames’

(metaphorically) ‘rules and regulations’

q. zhaozhao-mumu

morning.morning-evening.evening

‘mornings and evenings’

r. zhizhi-chacha/yaya

twig.twig-branch.branch

‘twigs and branches’

s. zizi-juju

word.word-sentence.sentence

‘words and sentences’

t. zizi-sunsun

son.son-grandson.grandson

‘sons and grandsons’

u. zuzu-beibei

ancestor.ancestor-generation.generation

‘many generations’

CHAPTER 5

IMPLICATIONS OF EVENT QUANTIFIERS FOR THE VERBAL DOMAIN

0. Introduction

This chapter explores the semantic implications of event quantifiers for the verbal domain based on what we have seen so far. We will examine what kind of eventuality each of the event quantifiers we have discussed counts and see the implication of the two structures identified in Chapter 2. Then we will compare counting in the nominal and verbal domain and establish parallels between them. Lastly, we will discuss the aspectual properties of semelfactives.

The chapter is organized as follows: in Section 1, based on Bach's (1986) definitions for atomic events and plural events and the facts about Chinese event quantifiers reported in the previous chapters, I make a hypothesis about the relative structural height of event quantifiers for atomic events and those for plural events. I claim that event quantifiers for plural events are structurally higher than those for atomic ones. The claim is shown to be also true in English and the Mayan language Kaqchikel. In Section 2, I discuss counting in the nominal and verbal domain. I argue that both Chinese and English facts show that accomplishments, achievements and semelfactives have two counting options like count nouns whereas activities and states have only one counting option like mass nouns. Based on this, I claim that the verbal analogs to count nouns in terms of counting are the three kinds of predicates but not all verbs as claimed by Rothstein (1999, 2004). In Section 3, I discuss the aspectual nature of semelfactives. Relying on *xia* 'time' as a probe to identify Chinese semelfactives and using reduplication as a test, I demonstrate that semelfactives are atelic and differentiated by

the grammar from achievements, which are telic. I show that Rothstein's (2004, 2008) claim that semelfactives are interval predicates involving a trajectory is inadequate to characterize semelfactives. I propose that semelfactives denote minimal activities which do not have grammatically relevant internal structure. Section 4 summarizes the chapter.

1. The structural heights of event quantifiers

This section discusses the relative structural height of event quantifiers for atomic events and those for plural events. I will make a generalization based on Chinese facts and show that it also holds for English and the Mayan language Kaqchikel.

1.1 A generalization

What atomic events and plural events are must be given as a prerequisite for discussion. I will adopt Bach's (1986) definitions. Let me briefly introduce Bach's main ideas below.

Bach uses *eventuality* as the generic term for all kinds of verbal denotations. Eventualities are divided into states and non-states, the latter of which is split into events and processes. Processes are denotations of atelic predicates whereas events are denotations of telic ones. He claims that the distinction between processes and events is parallel to the mass-count distinction in the nominal domain. He generalizes Link's (1983) views about the nominal domain in the eventuality domain "by considering events to be analogous to the singular and plural individuals". The claim is that atomic events are like singular individuals while plural events are like plural individuals. Given all these assumptions, an atomic event is a singular event denoted by a telic predicate and a plural event is the sum of atomic events.

Now let us look at some concrete examples provided by Bach (1986). The two sentences *Sally build a cabin* and *Sally pound in a nail* both denote an atomic event. This

is because both have a telic predicate and denote one event. The two sentences *People discover the hidden cove* and *Mary stumble and Mary twist her ankle* both denote a plural event. This is because the denotation of the first sentence is the sum of atomic events with the atomic event being that of each person discovering the hidden cove, and the denotation of the second sentence is the sum of the denotations of the two conjuncts, both of which are atomic events. The latter example about plural events is in parallel to *the children* and *John and Mary*, where the first is the sum of singular individuals (i.e., each child) and the second is the sum of the denotations of the two conjuncts, both of which are singular individuals.

Bach's (1986) assumptions and claims spelled out above are widely accepted in the field. I will assume his definitions for atomic and plural events as the working hypothesis in the discussion below. His view about the verbal parallel to the mass-count distinction, which has been challenged by Rothstein (1999, 2004), will be discussed in Section 2. Below we will examine the event quantifiers for both atomic events and plural ones. Our strategy is this: in this subsection we focus on the clearest cases, based on which a generalization will be made. Then we will look at complications in subsection 1.2 to see if they can be covered by the generalization.

Now let us see what Chinese event quantifiers are used to count atomic events and plural events respectively. First consider atomic events. Recall that we have reported in Chapter 3 that event quantifiers with the two verbal classifiers *bian* 'time' and *tang* 'time' always count accomplishments. This is shown below:

- (1) a. ta du le san **bian** Zhanzheng yu Heping.
 he read PERF three time War and Peace

‘He read War and Peace three times.’

b. ta qu le san **tang** Xianggang.

he go PERF three time Hong Kong

‘He went to Hong Kong three times.’

Both the event of him reading War and Peace and the event of him going to Hong Kong are accomplishments. An accomplishment is an atomic event. As shown by (1a), to count the instances of the atomic reading event, an event quantifier with *bian* ‘time’ is used. (1b) shows that *tang* ‘time’ is used in the event quantifier to count the instances of the atomic going event. So we have here two event quantifiers that always count atomic events.

What about plural events? Recall that it has been pointed out before that event quantifiers with the verbal classifier *hui* ‘time’ always count occasions³². An occasion can be the sum of atomic events, and when that is the case, the occasion is a plural event by definition. Consider the following example to see this:

(2) a. zhe bu dianying wo daxue shi kan guo yi **hui**. na **hui** wo

this Cl movie I college time watch GUO one time that time I

yilian kan le liang bian.

in succession watch PERF two time

‘(As for) this movie, I watched it once [on an occasion] when I was in college. That time [On that occasion] I watched it twice in succession.’

³² Given the scope of the current chapter, I will not provide a detailed discussion of the notion “occasion” here. One thing to note is that “occasion” is a context-dependent notion and it is up to the context to decide whether one is dealing with one or more occasions in a given scenario. The fact is that once an occasion has been identified, there can be more than one instance of an atomic event on it (as shown by the example in the text below). I will not go into the issue of how an occasion is identified for the reason that it is not directly relevant to the topic here. I will also purify an occasion as the sum of the events on it by ignoring all the irrelevant information that may also be considered to be part of the occasion for some non-linguistic purposes such as the atmosphere on an occasion, which might be relevant for literary analysis.

b. wei zhe jian shi, wo yijing pao le liang **hui** le. di-yi **hui** wo pao

for this CI thing I already run PERF two time SFP first time I run

le liang **tang**, di-er hui wo pao le san **tang**.

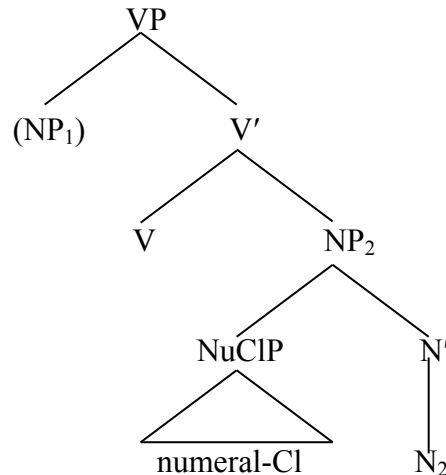
PERF two time second time I run PERF three time

‘For this matter, I have already run (the errands) twice [on two occasions]. The first time [On the first occasion] I ran an errand-trip twice and the second time [on the second occasion] I ran an errand-trip three times.’

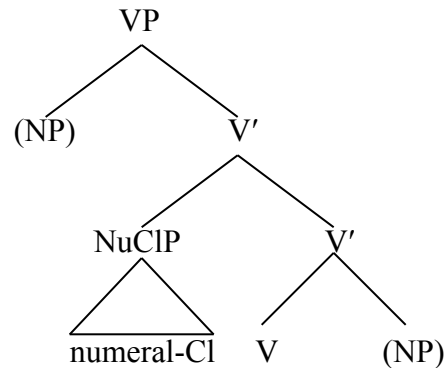
First consider (2a). Watching a movie is an atomic event. I watched that movie twice in a row on an occasion. The two instances of the atomic watching event are counted by the event quantifier with the word *bian* ‘time’ whereas the occasion is counted by the event quantifier with the word *hui* ‘time’. Note that the occasion is the sum of the two instances of the atomic watching event and therefore a plural event. Now consider (2b). Running an errand for a matter is an atomic event. To count the instances of such an atomic event, the verbal classifier *tang* ‘time’ is used in the event quantifier. If one runs an errand more than once on an occasion, the occasion is the sum of the instances of the atomic event and thus a plural event. As shown above, the plural event is counted by event quantifiers with the verbal classifier *hui* ‘time’.

Now we have clear cases where atomic events and plural events are counted by different event quantifiers. Note that the two event quantifiers for atomic events project a different structure than the one for plural events. The two structures are both repeated below with irrelevant details omitted:

(3)



(4)



The structure in (3) is for the event quantifiers containing the two verbal classifiers *bian* ‘time’ and *tang* ‘time’ and the one in (4) is for the event quantifier containing the verbal classifier *hui* ‘time’. The structures show that the event quantifiers for atomic events are inside the complement of the verb whereas the event quantifier for plural events is a VP-internal adjunct that c-commands the verb and its complement. The fact suggests that the event quantifier for plural events is structurally higher than those for atomic events. The generalization below is formulated to capture the fact:

(5) Generalization about Syntactic Heights of Event-quantifiers

The structural height of an event quantifier over atomic events is lower than that of one over plural events.

Below I will show that the hypothesis above also holds in English. Since English does not exhibit much variety in event quantifiers, the hypothesis can only be tested with examples where two event quantifiers are stacked such as the ones below:

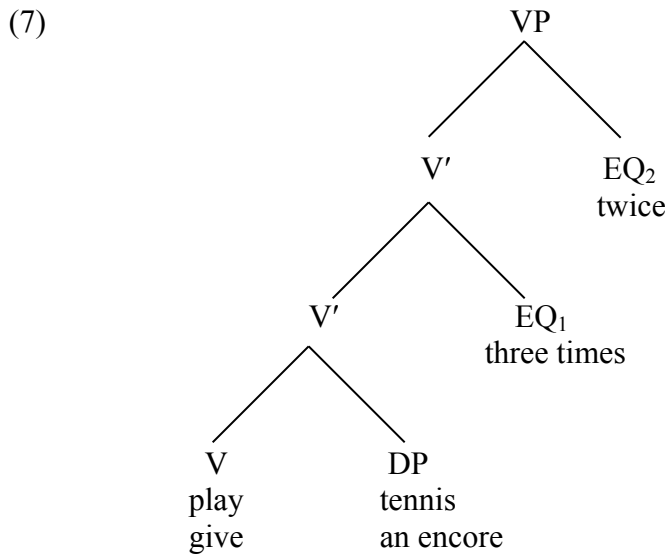
(6) a. John played tennis three times twice.

b. Pavarotti gave an encore three times twice (during his tour in Belgium).

Due to the presence of two event quantifiers in the same sentence, the two sentences in (6) may not sound perfect to some native speakers out of the blue. According to the native speakers I have consulted, given a context, the two sentences sound natural and are also perfectly interpretable. An important fact about the interpretation of the two sentences is that the inner event quantifier counts atomic events and the outer one counts plural events but not the other way around. For example, (6a) describes a situation where John played three games of tennis on two occasions, say in the morning and evening. Playing a game of tennis is an atomic event and the inner event quantifier *three times* is used to count the instances of the atomic event. The occasion on which the games are played is the sum of the instances of the atomic event and therefore a plural event. The outer event quantifier *twice* is used to count the plural event. The sentence in (6a) cannot have the reading that John played two games of tennis on three occasions. Similarly, the sentence in (6b) has the meaning that Pavarotti gave three encores on two occasions but cannot mean that he gave two encores on three occasions.

Now we need to figure out the structure for the two sentences in (6). First of all, I assume a binary-branching structure for English sentences. Second, since the event quantifiers do not bear thematic relation with the verb and there seems no evidence that either of them is in the complement of the verb, I assume that both are verbal adjuncts.

Based on these two assumptions, I propose (7) below for the sentences in (6) with irrelevant details omitted:³³



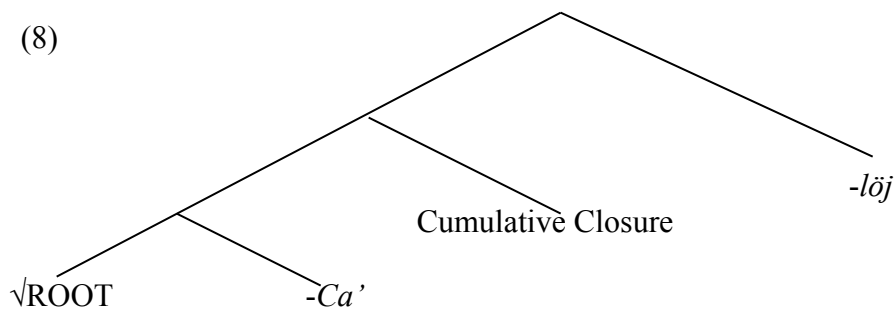
EQ₁ and EQ₂ stand for the two event-quantifiers *three times* and *twice* respectively. The structure shows that EQ₂ is structurally higher than EQ₁, which supports the hypothesis in (5).

Next we turn to the Mayan language Kaqchikel, which is genetically non-related to both Chinese and English. According to Henderson (2012), Kaqchikel is a language that marks pluractionality with verbal suffixes. The two pluractional suffixes we are interested in are *-Ca'* and *-løj*. According to Henderson, *-Ca'* yields event-internal pluractionality and *-løj* gives rise to event-external pluractionality. We have already introduced the two kinds of pluractionality in Chapter 4. Recall that the difference between them is that event-internal pluractionality always involves event iteration on a

³³ Under Kayne's (1994) LCA which dictates that earlier means higher, EQ₁ should be higher than EQ₂. But under Kayne's theory, the only way to generate a sentence with adverbials on the right would be to do movement via the so-called "roll-up derivation". See Li, Shields and Lin (2012) for an empirical argument against the "roll-up" way to derive post-verbal mirror order adverbials and Li (2005) for discussion of the problems of the LCA.

single occasion whereas it is possible for the event iteration induced by event-external pluractionality to happen over different occasions. In the case of the two Kaqchikel pluractional suffixes, Henderson argues that the event-internal suffix *-Ca'* derives “group predicates in the verbal domain”, which are like group nouns such as *grove*, *bouquet* and *horde* which “are defined in terms of their spatiotemporal properties” (2012:94-95). According to Henderson (2012:95), “*-Ca'* will act to superimpose a plurality on some spatiotemporal interval that is shared by an atomic event.” As for the event-external *-løj*, he (2012:48) claims that it generates plural event predicates “by placing conditions on an event’s temporal trace that could only be satisfied by non-atomic events”. Readers are referred to the original work for the technique details. The conclusion here is that *-Ca'* gives arise to an atomic event whereas *-løj* yields a non-atomic event.

What does this have to do with the issue under discussion? Note that the two pluractional suffixes here and the Chinese event quantifiers discussed above are all operators on event variables. Given a verb in Chinese or a verbal root in Kaqchikel, an event quantifier with *bian* ‘time’ or *tang* ‘time’ and the event-internal suffix *-Ca'* both generates a reading of atomic events whereas an event quantifier with *hui* ‘time’ and the event-external suffix *-løj* both yields a reading of non-atomic events. Henderson (2012:28) gives the structure in (8) below for the two suffixes, where the event-external *-løj* is structurally higher than the event-internal *-Ca'*:



The relative structural height of the two pluractional suffixes is parallel to that of the two kinds of event quantifiers in Chinese and English.

In this subsection, we made a generalization based on Chinese facts and show that it also holds in English and Kaqchikel. Next we discuss some complications about the structure in (3).

1.2 Subevents and semelfactive events

Note that besides event quantifiers containing *bian* ‘time’ and *tang* ‘time’, the structure in (3) is also for event quantifiers containing the following verbal classifiers: *xia* ‘time’, *kou* ‘mouth’, *bi* ‘stroke’, *bu* ‘step’ and *sheng* ‘sound’. A natural question is: do all these event quantifiers also count atomic events just like those containing *bian* ‘time’ and *tang* ‘time’? We will discuss this issue in this subsection. For ease of discussion, I put the five verbal classifiers in two groups: *kou* ‘mouth’, *bi* ‘stroke’, *bu* ‘step’ belong to the first group and *xia* ‘time’ and *sheng* ‘sound’ form the second group.

Event quantifiers with one of the three verbal classifiers in the first group count subevents. The notion “subevent” is a theoretical construct proposed by semanticists such as Krifka (1998) who discuss the incremental relation between objects and events. The claim is that an incremental relation is a homomorphism between the part-whole relation on the object side and that on the event side. So if an object stands in such a relation with an event, then a proper part of the object also stands in the relation with a proper part of the event. This is formally captured by the formula below provided by Krifka (1998:211):

(9) θ shows mapping to subevents iff

$$\forall x, y \in U_P \forall e \in U_E [\theta(x, e) \wedge y <_P x \rightarrow \exists e' [e' <_E e \wedge \theta(y, e')]]$$

That is, whenever θ holds for an object x and an event e , then every proper part y of

x stands in the relation θ to some proper part e' of e.

Chinese provides empirical evidence for the notion “subevent” because the language has event quantifiers that count subevents. To see this, first consider the example below:

(10) a. ta chi le san **kou** na ge pingguo.

he eat PERF three mouth that CI apple

‘He took three bites of that apple.’

b. ta chumen qu mai dongxi. zou le ji **bu** you huilai le.

he leave home go buy thing walk PERF several step then return SFP

‘He left home to go buy things. He took several steps and then came back.’

It is not hard to prove that an incremental thematic relation θ exists in an event of eating an apple. If θ holds for an apple and an eating event, then every proper part of the apple also stands in the relation θ to some proper part of the eating event. This is because if an apple is consumed in an eating event, then every piece of the apple is consumed in a bite taken in the eating. The bites are subevents in the eating event. (10a) shows that the event quantifier *san kou* ‘three mouth’ is used to count the subevents.

As for (10b), note that walking from home to a store is an accomplishment. Krifka (1998) generalizes the incremental relation to include cases such as the walking event here. Note that the incremental relation holds between the walking event and the distance covered by the walking event. If θ holds for a distance and a walking event, then every proper part of the distance stands in the relation θ to some proper part of the walking event. Consider the case in (10b). The distance from home to the store stands in θ to the walking event. A proper part of the distance, namely the distance covered by one step

taken in the walking event also stands in θ to the step-taking event. The step-taking events are subevents and the event quantifier *ji bu* ‘several steps’ is used to count them.

The facts we have seen so far show that Chinese has event quantifiers for atomic events, plural events and subevents. To better illustrate the fact, below I give an example where the same verb *xie* ‘write’ is used with three different event quantifiers:

(11) a. na ge zi wo xie le san **bian**.

that CI character I write PERF three time

‘(As for) that character, I wrote it three times.’

b. na ge zi wo xie le san **hui**.

that CI character I write PERF three time

‘(As for) that character, I wrote it on three occasions.’

c. na ge zi wo xie le san **bi**.

that CI character I write PERF three stroke

‘(As for) that character, I wrote three strokes (of it).’

Writing a Chinese character is an atomic event. The verbal classifier *bian* ‘time’ is used in the event quantifier to count the instances of the atomic event as shown by (11a). (11b) illustrates that occasions where the character is written are counted by an event quantifier with *hui* ‘time’. Suppose the character being written is the one for the word *fu* ‘happiness, blessing’ which has thirteen strokes, the event of writing the character consists of thirteen subevents, each of which is an event of writing one stroke. (11c) shows that the subevents are counted by an event quantifier with the verbal classifier *bi* ‘stroke’. To see the fact a bit more clearly, consider the example below where two event quantifiers appear in each sentence to contrast each other:

(12) a. na ge zi wo xie le san **hui**, yi **hui** xie le san **bian**,
 that CI character I write PERF three time one time write PERF three time
 yi **hui** xie le liang bian, hai you yi hui zhi xie le yi bian.
 one time write PERF two time still have one time only write PERF one time
 ‘(As for) that character, I wrote it on three occasions. On one occasion I wrote
 it three times, on another occasion I wrote it twice, on the third occasion I
 wrote it only once.’

b. na ge zi wo xie le san **bian**, zuihou yi **bian** zhi xie le
 that CI character I write PERF three time last one time only write PERF
 shi **bi** jiu xie-wan le.
 ten stroke then write-up PERF
 ‘(As for) that character, I wrote it three times. The last time I wrote only ten
 strokes to write it up.’

The sentence in (12a) has seven event quantifiers. The three ones with *bian* ‘time’ count atomic events and the four ones with *hui* ‘time’ count plural events. The sentence in (12b) also has event quantifiers with two verbal classifiers. The one with *bi* ‘ten strokes’ count the ten subevents in the last instance of the atomic event.

The fact that event quantifiers counting subevents (the ones with *kou* ‘mouth’, *bu* ‘step’ and *bi* ‘stroke’) and event quantifiers counting atomic events (the ones with *bian* ‘time’ and *tang* ‘time’) share the structure in (3) suggests that the conceptual difference between these two kinds of events is ignored in the Chinese grammar. The conceptual difference is that a subevent is a proper part of an atomic event. If the part-whole relation is ignored, a subevent is just an atomic event of a minimal size. Take (12b) for example: both the atomic event and all its subevents are writing events. Both the atomic event and

each of the subevents are telic accomplishments. This is presumably why they are treated in the same structural way in Chinese.

Now let us turn to the second group of verbal classifiers that have the structure in (3). The two members in this group, namely *xia* ‘time’ and *sheng* ‘sound’, are illustrated below:

(13) a. ta ke le san xia/sheng.

he cough PERF three time/time

‘He coughed three coughs.’

b. ta qiao le san xia men.

he knock PERF three time door

‘He made three knocks on the door.’

(14) a. dianhua xiang le san sheng/xia.

phone ring PERF three sound/time

‘The phone made three rings.’

b. ta dasheng han le san sheng/xia.

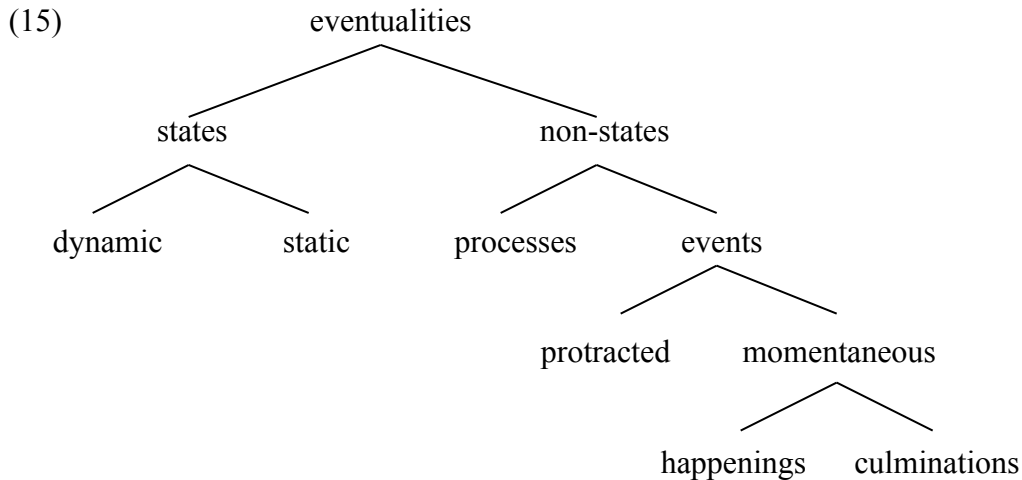
he loudly shout PERF three sound/time

‘He made three loud shouts.’

As introduced in Chapter 2, event quantifiers with the verbal classifier *xia* ‘time’ only co-occur with so-called semelfactive verbs that denote punctual events like coughs, knocks, jumps etc, which is illustrated by (13). Event quantifiers with the verbal classifier *sheng* ‘sound’ count the same kind of events except that they must be sound-related like shouts, coughs, phone rings etc, which is why *xia* ‘time’ and *sheng* ‘sound’ are interchangeable

in cases like (13a) and (14). Below I will focus on *xia* ‘time’ since it can co-occur with more verbs.

Bach (1986) implicitly treats events denoted by semelfactives as atomic events. He does not mention semelfactives in his paper, but his assumption can be seen from the examples he uses. Let us first see his classification system:



The examples he gives for happenings are in (16a) below. The tenseless sentence in (16b) is one of the six examples he provides for atomic events.

(16) a. recognize, notice, flash once

b. John kiss Mary: atomic event

As can be seen from above, single flashes and kisses are treated as atomic events on a par with what is generally called achievements.

In Chinese, single flashes and kisses are denoted by semelfactives, which can be told by the presence of *xia* ‘time’ in the event quantifier:

(17) a. zhaoxiangji shan le yi **xia**.

camera flash PERF one time

‘The camera flashed once [made a flash].’

b. Yuehan qin le Mali yi **xia**.

John kiss PERF Mary one time

‘John kissed Mary once [gave Mary a kiss].’

About semelfactives, I make the following two claims and will defend them in the rest of this chapter:

- (18) a. Semelfactives have two counting options, which makes them in parallel to count nouns just like accomplishments and achievements.
- b. Semelfactives do not involve a **grammatically relevant** change of state, which makes them different from achievements.

In Section 2, I will provide evidence to show that semelfactives are like accomplishments and achievements in terms of counting. The three kinds of predicates have two counting options, which makes them parallel to count nouns because count nouns also have two counting options. Note that Bach’s definition of “atomic event” is based on the analogy between verbal predicates and count nouns. I agree with Bach’s implicit assumption that semelfactives denote atomic events just like accomplishments and achievements if the assumption is based on the fact that semelfactives are the verbal analog of count nouns. In that case, it is no surprise that event quantifiers with *xia* ‘time’ and *sheng* ‘sound’ have the same structure as event quantifiers with *bian* ‘time’ and *tang* ‘time’ because they are all for atomic events.

However, I disagree with Bach on treating semelfactives as a subtype of achievements. I will provide empirical evidence to show that the two have different aspectual properties. I argue that achievements are telic predicates whereas semelfactives

are atelic because they do not involve a grammatically relevant change of state in Section 3.

2. Counting in the nominal and verbal domain

In this section, we compare counting in the nominal and verbal domain and try to make parallels. Let us first look at counting in the nominal domain in both English and Chinese to find a criterion for identifying parallels in the verbal domain. Consider the English fact below:

- (19) a. three apples
 b. three bags of apples
 c. *three waters
 d. three bottles of water

The example above shows that for a count noun such as *apple*, two options are available for counting its denotation: either by using a numeral directly before the noun or through a construction where a classifier is used. For a mass noun such as *water*, only the second option is possible while the first option is unavailable. The fact that count nouns have two counting options whereas mass nouns have only one is also true in Chinese, although it is manifested in a different way. Consider the Chinese example below:

- (20) a. san ge pingguo
 three Cl apple
 ‘three apples’
 b. san dai pingguo
 three Cl_{bag} apple
 ‘three bags of apples’

c. *san ge shui

three Cl water

‘three waters’

d. san ping shui

three Cl_{bottle} water

‘three bottles of water’

In Chinese, a classifier is needed whenever a noun is modified by a numeral. For nouns such as *pingguo* ‘apple’, two kinds of classifiers can appear between the numeral and the noun, which is shown by (20a) and (20b). For nouns like *shui* ‘water’, only one kind of classifier is available, which is shown by (20d) and the ungrammatical (20c). The kind of classifier which is available to both *pingguo* ‘apple’ and *shui* ‘water’ can be also found in English because they are just lexical nouns used as classifiers. The kind of classifier that is unavailable to *shui* ‘water’ is not present in English and unique to classifier languages like Chinese. These classifiers are functional words which do not have lexical meanings. Besides the difference in lexical meaning, there are other facts that distinguish functional classifiers like *ge* in (20a) and lexical classifiers like *dai* ‘bag’ in (20b) such as whether it is possible to insert the nominal modification marker *de* between the classifier and the noun (functional classifiers do not allow insertion whereas lexical ones do) and whether it is possible to modify the classifier with an adjective such as *da* ‘big’, *xiao* ‘small’ or *man* ‘full’ (functional classifiers do not allow modification whereas lexical ones do). See Chao (1968), Cheng and Sybesma (1998) and references cited there for the two facts mentioned

here. See Deng (2013) for discussion of issues about identifying the functional classifiers among all the types of classifiers in Chinese.

Despite the differences about classifiers and plural morphology, the facts in (19) and (20) show that English and Chinese have something in common: nouns such as *apple* in both languages have two counting options whereas nouns such as *water* have only one. This descriptive fact will be used as the criterion to establish the parallel between the nominal and verbal domain.

Given the criterion, if we want to find verbal parallels to count nouns, the parallels should also have two counting options. Although Bach (1986) does not approach the issue from this perspective, his claims seem to pass the criterion. In Bach's view, telic predicates are parallels to count nouns. Bach's telic predicates include three subtypes: protracted events, happenings and culminations. If we adopt the more familiar Vendler-Dowty terminology, which I will do in the discussion below, protracted events correspond to accomplishments and the other two correspond to achievements. Also, Bach (1986) implicitly assumes that semelfactives are happenings, if we separate semelfactives out and there are good reasons that they should be separated out (which will be given in the next section), there are three kinds of predicates that are the verbal parallels to count nouns: namely accomplishments, achievements and semelfactives. Next I will show that these three predicates all have two counting options, which make them parallel to count nouns. We will first look at Chinese and then turn to English.

First consider accomplishments. We have seen that event quantifiers with the two verbal classifiers *bian* 'time' and *tang* 'time' count accomplishments. Let us use *bian* 'time' for discussion. Consider the example below:

(21) a. du san bian na pian wenzhang

read three time that Cl paper

‘to read that paper three times’

b. du san hui na pian wenzhang

read three time that Cl paper

‘to read that paper on three occasions’

c. san ge pingguo

three Cl apple

‘three apples’

d. san dai pingguo

three Cl_{bag} apple

‘three bags of apples’

With *bian* ‘time’ in the event quantifier, the verb phrase in (21a) means three instances of the accomplishment of reading that paper. This is like the noun phrase in (21c) where the functional classifier *ge* is used and the phrase means three single apples. With *hui* ‘time’ in the event quantifier, the verb phrase in (21b) means three occasions where the reading event takes place. It is not specified how many instances of the event each occasion has. Similarly, with the lexical classifier *dai* ‘bag’, the reading of the noun phrase in (21d) is three bags of apples and it is unspecified how many single apples there are in each bag.

Next consider achievements. Unlike accomplishments, achievements do not have special verbal classifiers such as *bian* ‘time’ and rely on the general verbal classifier *ci* ‘time’ for counting. But the fact about two counting options still holds for these events.

Let me use the typical achievement verb *si* ‘to die’ for illustration. Consider the following example:

(22) a. *si le san ci*

die PERF three time

‘died three times’

b. *si le san hui*

die PERF three time

‘died on three occasions’

c. *ta yijing si le liang ci le, zhi shengxia zuihou yi tiao ming le.*

he already die PERF two time SFP only be left over last one Cl life SFP

‘He already died twice, and only had the last life left.’

d. *shang ge yue ta si le san hui ye mei neng da-tong na ge youxi.*

last Cl month he die PERF three time still not can play-pass that Cl game

‘Last month he died on three occasions and still cannot pass the game.’

The fact in (22a) and (22b) shows that the verb *si* ‘to die’ can co-occur with two verbal classifiers. This fact alone does not prove that the verb has two counting options because the interpretation of the general verbal classifier *ci* ‘time’ is dependent on the context. To prove that achievements like *si* ‘to die’ do have two counting options, we need to show that *ci* ‘time’ can count instances of dying whereas *hui* ‘time’ counts sums of the atomic event. The two sentences in (22c) and (22d) are supposed to show this.

In some computer games, a character is assigned a number of lives. One can keep playing as long as his character still has a life. Imagine that John was playing a game where each character has three lives. John was not quite good at the game and his

character had only one life left when the sentence in (22c) was uttered. Given this context, it is clear that the event quantifier *liang ci* ‘two times’ counts the two instances of the dying event of John’s character. Right after the utterance of the sentence in (22c), John lost his character’s last life and quitted the game. John played the game again on two later occasions in the same month and unfortunately for him he failed on both of them. In total John played the game on three occasions and did not pass it on any of them. The sentence in (22d) describes the situation. Given the context, *san hui* ‘three times’ counts the occasions. The example thus shows that the achievement *si* ‘to die’ has two counting options: *san hui* ‘three times’ in (22d) counts the three occasions where the dying event happened and *liang ci* ‘two times’ in (22c) counts two of the three instances of the event on the first occasion.

Lastly, let us consider semelfactives, which also have two counting options as shown by the example below:

- (23) a. qiao san xia men
 knock three time door
 ‘to make three knocks on the door’
- b. qiao san hui men
 knock three time door
 ‘to knock on the door on three occasions’
- c. san ge pingguo
 three Cl apple
 ‘three apples’

d. san dai pingguo

three CL_{bag} apple

‘three bags of apples’

Semelfactives like *qiao* ‘to knock’ can co-occur with both *xia* ‘time’ and *hui* ‘time’. The verb phrase in (23a) with *xia* in the event quantifier means three single knocks, which is in parallel to the noun phrase in (23c) with the functional classifier *ge*. The verb phrase in (23b) with *hui* in the event quantifier means three occasions where the knocks are made and it is not specified how many knocks each occasion has. This is in parallel to the noun phrase in (23d) with the lexical classifier *dai* ‘bag’, which means three bags of apples and has no specification about how many single apples there are in each bag.

To summarize what we have seen so far: a numeral in a Chinese noun phrase or an event quantifier can denote either the number of atoms or that of sums of atoms, depending on the classifier. If the classifier is a functional classifier such as *ge* or a verbal classifier that has the structure in (3) such as *bian* ‘time’ or *xia* ‘time’, the numeral denotes the number of atoms. If the classifier is a lexical classifier such as *dai* ‘bag’ or the verbal classifier *hui* ‘time’, the numeral denotes sums of atoms. The facts show that one counting is about atoms and the other is about sums of atoms. I will put aside the issue whether the atoms are directly available in the denotation of the predicate or indirectly obtained through the semantic function of the classifier since the issue involves the discussion of the semantics of nouns. Some authors such as Chierchia (1998) argue that all nouns in Chinese are mass. This means that there are no atoms in the denotation

of a noun and that the atoms have to be obtained through the classifier (see, for example, Krifka 1995, Rothstein 2010, X. Li 2011 for how this can be done).

Now let us see English. Counting atoms (*three apples*) and counting sums of atoms (*three bags of apples*) seem to be quite clear in the English nominal domain. Without the help of words with different shapes in event quantifiers, counting in the English verbal domain is not as transparent as in Chinese. But the same fact about counting in the verbal domain we have seen in Chinese is also manifested in English. To see this, let us first see English semelfactives, which allow two event quantifiers stacked in the same sentence as shown by the example below from Henderson (2012:76):

- (24) a. John jumped many times twice. (many jumps on two occasions)
 b. John jumped twice many times. (two jumps on many occasions)

Henderson's focus is on scope but not counting when he discusses the example. Based on the paraphrases in parentheses provided by him, it is clear that the inner event quantifier in each sentence counts atomic events whereas the outer one counts occasions, which can be viewed as sums of atomic events. The fact in (24) therefore shows that semelfactives in English have two counting options, which means that they are like count nouns.

Accomplishments and achievements in English also allow stacked event quantifiers just like semelfactives. The example in (25) involves accomplishments whereas the one in (26) has two achievement verbs:

- (25) a. John played tennis three times twice.
 b. Pavarotti gave an encore three times twice (during his tour in Belgium).
 (26) a. John fell three times twice.

b. John won the game three times once.

We have already discussed the example in (25) above. For the sentence in (26a), imagine that John is a toddler who is learning to walk. He tried to walk on two occasions and fell three times on each of them. As for (26b), imagine that there was an occasion where John won a game (say, rock-paper-scissors) three times in a row.

To complete the discussion, next we will examine counting options available to activities and states. Consider the Chinese example below:

(27) a. wo jintian ku le san ci.

I today cry PERF three time

‘I cried three times today.’

b. wo jintian ku le san hui.

I today cry PERF three time

‘I cried three times today.’

(28) a. wo hen guo ta san ci.

I hate GUO he three time

‘I hated him three times.’

b. wo hen guo ta san hui.

I hate GUO he three time

‘I hated him three times.’

The activity verb *ku* ‘to cry’ and the stative verb *hen* ‘to hate’ can co-occur with both *hui* ‘time’ and the general verbal classifier *ci* ‘time’. As noted above, the fact alone does not mean that the predicate has two counting options because the general verbal classifier *ci* ‘time’ can appear with any kind of predicate and gets its interpretation depending on the

context. If these two predicates here did have two counting options, we would expect to find a context such as the one we get for the achievement verb *si* ‘to die’ above where *ci* ‘time’ and *hui* ‘time’ have different interpretations. The fact is that such a context does not seem to exist. The two sentences below both sound contradictory:

(29) a. #wo jintian ku le yi hui, yigong ku le san ci.

I today cry PERF one time in total cry PERF three time

‘I cried on an occasion today, and cried three times in total.’

b. #wo hen guo ta yi hui, yigong hen le san ci.

I hate GUO he one time in total hate PERF three time

‘I used to hate him on an occasion, and hated him three times in total.’

The two sentences are supposed to express the following meaning: there was an occasion where there were three instances of the crying activity or the hating state. The fact is that the event quantifier with the general verbal classifier *ci* ‘time’ in the second clause has the same kind of interpretation as the one with *hui* ‘time’ in the first clause, which is why the two sentences sound contradictory.

Achievements, states and activities in Chinese do not have verbal classifiers of their own and use *hui* ‘time’ and the general verbal classifier *ci* ‘time’ in their event quantifiers. The difference is that for an achievement like *si* ‘to die’, it is possible to construct a context in which an event quantifier with the general classifier *ci* ‘time’ counts atomic events and an event quantifier with *hui* ‘time’ counts sums of atomic events. For states and activities, *ci* ‘time’ and *hui* ‘time’ have the same interpretation and there does not seem to be an option for counting atomic events. If we follow Bach (1986) to assume that activities (processes) and also states (which are not included in Bach’s

claim though) are the verbal parallels to mass nouns, the fact can be explained. First of all, it is natural that the option of counting atoms is unavailable to them because there are no atoms in mass denotations. Second, as noted by Link (1983) and many others, mass denotations share properties with pluralities. If activities and states are like mass nouns, it is no surprise that they are counted by event quantifiers that count pluralities (sums of atoms).

The fact in Chinese seems to hold in English too:

- (30) a. #I cried twice three times.
 b. #I hated him twice three times.

According to my consultants, it is very hard, if not impossible, to come up with a context where the two English sentences would sound natural but not contradictory.

The table below summarizes the Chinese facts we have seen in this section:

Counting options Domains		First counting option (counting atoms)	Second counting option (counting sums of atoms or mass denotations)
Nominal domain	Count nouns (<i>pingguo</i> ‘apple’)	Functional classifiers (<i>ge</i> ‘Cl’)	Lexical classifiers (<i>dai</i> ‘Cl _{bag} ’)
	Mass nouns (<i>shui</i> ‘water’)	Unavailable (no functional classifiers)	Lexical classifiers (<i>ping</i> ‘Cl _{bottle} ’)
Verbal domain	Accomplishments (<i>du</i> ‘to read’)	Atomic event quantifiers (<i>bian</i> ‘time’, <i>tang</i> ‘time’)	Plural event quantifiers (<i>hui</i> ‘time’)
	Achievements (<i>si</i> ‘to die’)	Atomic event quantifiers (<i>ci</i> ‘time’, context needed)	Plural event quantifiers (<i>hui</i> ‘time’)
	Semelfactives (<i>qiao</i> ‘to knock’)	Atomic event quantifiers (<i>xia</i> ‘time’)	Plural event quantifiers (<i>hui</i> ‘time’)
	Activities (<i>ku</i> ‘to cry’) States (<i>hen</i> ‘to hate’)	Unavailable (General verbal classifier <i>ci</i> ‘time’ always interpreted as plural event quantifier)	Plural event quantifiers (<i>hui</i> ‘time’)

Before I turn to the next section, I examine the arguments in Rothstein (1999, 2004) who challenges Bach’s claim and proposes that the denotations of all verbs are in

the count domain. She argues that all verbs are like count nouns and adjectives are like mass nouns. Rothstein (1999) provides four tests to support her claim and her proving strategy is this: she assumes that statives like *to know* are “the least count-like of all verbal eventualities”. Then she compares statives and adjectives in the four tests, which show that statives have count-like properties whereas adjectives do not. Based on the assumption and the four tests, she claims that all verbs are count while adjectives are mass. Below I examine her tests one by one.

Rothstein’s first test relies on what she calls the “countability property”, which refers to the fact that “count nouns do and mass nouns don’t appear with numeral determiners” in English. She claims that “this countability property shows up in the verbal domain in the distribution of counting adverbials”. The example below is used by her to illustrate the point ((31) is her (48)):

(31) a. I made Mary know the answer three times.

b. I made Mary angry/clever (in class) three times.

According to Rothstein, (31a) is ambiguous between “the reading that there were three acts of ‘making Mary know the answer’” and “the reading in which there was one event of ‘making’, which caused Mary to know the answer three times”. Under the first reading, *three times* modifies the matrix verb *make* whereas it modifies the embedded verb *know* under the second reading. By contrast, (31b) “has only the first reading, and *three times* cannot modify *clever*”.

The only conclusion which can be drawn from her judgment about the possible reading(s) of the two sentences in (31) is that the stative *know* is countable while adjectives such as *clever* are not. The test alone cannot give her the claim she wants,

namely that the stative *know* is like count nouns. To see this, we need to see the situation about counting in the nominal domain:

- (32) a. three apples
- b. three bags of apples
- c. *three waters
- d. three bottles of water

Rothstein's "countability property" is about the contrast between (32a) and (32c), which ignores cases like (32b) and (32d). But (32b) and (32d) are both grammatical examples of counting. When Rothstein makes the claim that the stative *know* is like count nouns based on (31), she implicitly assumes that how *three times* counts the denotation of *know* is like the counting in *three apples* but not that in *three bags of apples* or *three bottles of water*. But this is exactly what she needs to prove. She simply points out that the stative *know* is countable, which does not prove that the verb is like count nouns since mass nouns like *water* can also be counted as illustrated by (32d). As discussed above, the fact in (32) shows that count nouns such as *apple* have two counting options (illustrated by (32a) and (32b)) whereas mass nouns like *water* have only one (cf. (32d)). To establish the parallel between the two domains, we should look at the counting options available to different kinds of eventualities. Facts from both Chinese and English suggest that states are like mass nouns because they both have only one counting option.

Her second test is temporal locatability, which is supposed to show that states denoted by statives such as *know* "can be given a temporal location" whereas "a state [denoted by an adjective] cannot be temporally located". The contrast between the two sentences below is used by her to support her claim:

(33) a. Yesterday, the witch made John know the answer last night and forget it this morning.

b. *Yesterday, the witch made John clever last night and stupid this morning.

The grammatical example in (33a) shows that the states denoted by the two statives *know* and *forget* can both be temporally located by temporal adverbials. By contrast, the states denoted by the two adjectives *clever* and *stupid* cannot be temporally located by the same temporal adverbials.

The relevance of the test in determining the verbal parallel to mass/count nouns is unclear because temporal locatability does not seem applicable to nouns. The problem originates in Rothstein's proving strategy noted above. Unlike Bach (1986) and the current study which directly compare the verbal and the nominal domain, Rothstein compares statives and adjectives. Even if statives have temporal locatability that adjectives do not have, it is not clear whether the result means anything in terms of the verbal parallel to nouns, since she does not show that count nouns have temporal locatability but mass nouns do not. For the sake of discussion, I will discuss spatial locatability of nouns. Note that the entities in the denotation of a typical count noun like *apple* have inherent boundaries that spatially define the entities. By contrast, stuff in the denotation of a typical mass noun like *water* does not have inherent and clear boundaries to help define its spatial limit. However, this does not mean that stuff under a specific description cannot be spatially located. Consider the following example:

(34) A: Where did you put the water you drew from the well?

B: I put it in a bucket and then dad poured it into the jar in the kitchen.

Stuff like the water speaker B drew from the well can be spatially located (it was first in a bucket and ended up in the jar) because speaker A's question presupposes that. If that is the case, it is not clear if statives are like count nouns since mass nouns are also locatable.

Rothstein's third test is about "adverbial modification by event quantifiers". The relevant example provided by her is as follows:

(35) a. I made Jane worry every time the bell rings.

b. *I made Jane nervous/excited every time the bell rings.

According to Rothstein, *every time the bell rings* in (35a) is an adverbial modifier of the embedded stative verb *worry* and the sentence asserts that there was an event of Jane's worrying for every event of the bell ringing. By contrast, the adverbial cannot modify the embedded adjective in (35b), which is ungrammatical.

The fact that there is a mapping between the worrying states and the ringing events does not necessarily mean that the verb *worry* is like count nouns since a similar mapping can be established between portions of matter denoted by mass nouns and some other entities. Consider the example below:

(36) a. I gave water to every child who was thirsty.

b. I gave an apple to every child who was hungry.

The sentence in (36a) describes a scenario where there is a mapping between a portion of water and every thirsty child. There is also a mapping between an apple and every hungry child as described by (36b). To claim that the verb *worry* is count but not mass, Rothstein has to prove that (35a) is more parallel to (36a) than to (36b). Since she does not provide any evidence, it is not clear whether *worry* is like *water* or *an apple*.

Rothstein's last test is called distributivity and her evidence is as follows:

(37) a. The medicine made Jane and Mary each feel sick.

b. *The medicine made Jane and Mary each sick.

According to her, the floating quantifier *each* in (37a) shows that the state denoted by the embedded predicate can distribute over the two embedded subjects. But stuff denoted by mass nouns can be distributed too, as illustrated by the sentence in (38a):

(38) a. I gave water to each of the two girls.

b. I gave an apple to each of the two girls.

(38a) illustrates that the stuff denoted by the mass noun *water* can be distributed to the two girls, just like apples can be distributed to them as illustrated by (38b). Without any evidence to show that (37a) is more parallel to (38a) than to (38b), Rothstein's claim that the predicate *feel sick* is count-like cannot stand.

To summarize: in this section we discuss counting in both the nominal and verbal domain. Based on facts from both Chinese and English, we show that the verbal parallels to count nouns in terms of counting are accomplishment, achievement and semelfactive predicates since they all have two counting options. We scrutinize the four tests given by Rothstein (1999) which are supposed to prove that even stative verbs like *know* are count and show that they cannot support her claim. States and activities are like mass nouns because they all have only one counting option.

The fact that semelfactives pattern with achievements and accomplishments in counting does not mean that they have the same aspectual properties. In the next section we turn to the discussion of the aspectual nature of semelfactives.

3. The aspectual nature of semelfactives

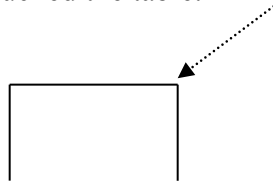
I discuss the aspectual nature of semelfactives by comparing them with achievements in this section. Many authors such as Bach (1986) assume that semelfactives are a subtype of achievements. Some others like Rothstein (2004, 2008) argue that semelfactives are like achievements in terms of telicity but differ from achievements by instantaneousness. I follow Smith (1991) to claim that semelfactives are atelic, which is the opposite of both Bach's and Rothstein's view. I will also discuss the issue of instantaneousness and argue that semelfactives denote a minimal activity and cannot be further decomposed into parts that are grammatically relevant.

I will discuss the issue of telicity first. It is generally assumed that achievements involve a change of state, which is why they are telic because the resultant state in the change defines the endpoint of the event. For example, in Dowty's (1979) reductionist approach to Aktionsart, an achievement is treated as a formula consisting of the operator BECOME and a stative predicate P, which denotes a resultant state that serves as the endpoint of the event. The issue here is that it is not always easy to know whether the change of state one identifies is grammatically relevant, especially when one has no linguistic tests to rely on. Take verbs such as *touch*, *wink*, *tap*, *flap*, *kick*, *knock* etc. for example. If you think about the denotations of these verbs, it is not hard to identify a change of state involved in the events. For example, there is a change of state of the eyelid in a winking event. But how can we know the change of state is linguistically relevant in deciding telicity? To show that the issue is real and to avoid any personal conjecture, I discuss an argument in the literature below.

The following argument is quoted directly from Rothstein (2004:185) where she tries to show the difference between *touch*, which is assumed by her to be an achievement, and *kick*, which is assumed by her to be a semelfactive. (6a) and (6b) in the quoted argument are repeated below as (39a) and (39b):

(39) a. I touched the table.

b.



“Achievements are genuinely near-instantaneous changes from $\neg \phi$ to ϕ If I assert I touched the table, as in (6a), and move my finger toward the table as in (6b), then all the time my finger is moving along the dotted line, the assertion (6a) fails to be true, but the instant it touches the table’s surface, the change from $\neg \phi$ to ϕ takes place. In contrast, semelfactive predicates cannot denote (near)-instantaneous events, because the events in their denotation have internal structure. Events in the denotation of jump, flap a wing, kick and so on, have trajectories, and consist of a series of movements which must occur as part of the event. ... Kicking a door involves moving one’s foot with force so as to bring it in contact with a door... and if being an event in the denotation of P involves following a trajectory, then we require information about at least two instants between the starting point and stopping point of e in order to determine if e is in P. So they do not look like near-instantaneous events”

Note that Rothstein is correct in saying that there is a change of state in a touching event.

As is very clearly explained in the quote above, before the touching event, the state of her finger being in contact with the table does not hold; when the touching event happens, the state holds. The question is: does this change of state identified by her prove that *touch* is telic? It does not. The reasons are as follows:

Rothstein’s argument above incorrectly predicts that some activity verbs such as *push* and statives like *lie on the bed* should be telic. It is a fact that for a push to happen, whether it is a single push or a continuous pushing, one’s hand(s) must be in contact with the entity being pushed. The situation about the contact between one’s hand and the relevant object is exactly the same in pushing and the touching event Rothstein discusses

in her argument. Given her reasoning, *push* should be telic. But evidence from both temporal modification and the imperfective paradox (see Dowty 1977, 1979) suggest that *push* is atelic, which is why all the authors in the literature that I know of including Rothstein herself (2004:17) treat *push* as atelic. But if *push* is atelic, then there is no reason to rely on the fact about contact to treat *touch* as telic. The problem involves verbs like *rub*, *scrape*, *scratch*, *scrub* etc, which are commonly assumed to be atelic activities, and also statives like *lie on the bed*. Suppose John's body was not in contact with the bed, the assertion *John lay on the bed* fails to be true. However, we cannot base on this fact to claim that the predicate *to lie on the bed* is telic because it is not, which can be told by the widely used test of temporal modification: *John lay on the bed for/*in two hours*.

The discussion above suggests that the conceptual change of state identified by Rothstein is not grammatically relevant in determining telicity. The problem of her argument is due to the fact that she does not have tests that can identify semelfactives in English and tests that can separate semelfactives from achievements. In both Rothstein (2004) and (2008), she only gives a semantic definition for English semelfactives. For example in Rothstein (2008), she defines semelfactives as “verbs such as *kick*, *knock*, *jump*, *skip*, *flap (its wings)*, *wink* which denote single actions, in the sense that *knock (on the door)*, for example, may be understood as denoting a single event in which an object is brought in contact sharply with a door once”. With the semantic definition and without any test, she assumes that *touch* is an achievement and *kick* is a semelfactive. But as far as I know, there is no convincing evidence to show that her assumption is grounded. The conceptual difference between *touch* and *kick* assumed by her does not stand at all. As

shown below, adopting her way of reasoning, we can arrive at the opposite conclusion about kicking a door and touching the table:

“... If I assert I kicked a door, and move my foot toward the door, then all the time my foot is moving along the path, the assertion fails to be true, but the instant it touches the door’s surface, the change from $\neg\phi$ to ϕ takes place. ... Touching the table involves moving one’s finger so as to bring it in contact with the table. ...”

The only difference between the argument above and her original argument quoted above is that the positions of the two examples in question are switched. The argument here can stand if her original argument can stand, which means the conclusion about the two verbs can be reversed simply due to a change in example order.

To avoid similar problems, we need both linguistic tests that can identify semelfactives and linguistic tests that can distinguish semelfactives from achievements. We have shown in Chapter 2 that the verbal classifier *xia* ‘time’ can be used to identify semelfactives in Chinese because event quantifiers with the word can only co-occur with semelfactives. Using *xia* ‘time’ as a probe, the Chinese *mo* ‘to touch’ and *ti* ‘to kick’ can be identified as semelfactives because they can co-occur with *xia* ‘time’. For more examples of Chinese semelfactives, see the lists given in Chapter 2. To save space, I omit the examples where the verbs are used with *xia*. Next we need a test that can help distinguish semelfactives from achievements. I rely on verb reduplication to show that semelfactives are different from achievements in terms of a grammatically relevant change of state that is present in achievements only.

Verb reduplication in Chinese has already been discussed in Chapter 4. An important fact we reported there is that achievement verbs are banned in the event-internal reduplication patterns whereas semelfactives are not. This is illustrated by the example below:

(40) a. Xiaobao qiao-le-qiao men.

Xiaobao knock-PERF-knock door

‘Xiaobao make a couple of knocks on the door.’

b. *Xiaobao jin-le-jin men.

Xiaobao enter-PERF-enter door

‘Xiaobao entered the door a couple of times.’

c. Xiaobao jin le ji ci men.

Xiaobao enter PERF several time door

‘Xiaobao entered the door several times.’

The fact above illustrates that semelfactives such as *qiao* ‘to knock’ can be reduplicated in the event-internal X-X pattern whereas achievements such as *jin* ‘to enter’ cannot. An event quantifier has to be used with the simple verb to express the intended meaning.

Note that achievements can be reduplicated in the event-external XX-YY pattern. What is interesting is that, for a reduplicated form XX-YY, if X is an achievement, Y is usually the antonym of X. Some examples are provided below (for sentences with these forms, see Chapter 4):

(41) a. jinjin-chuchu

enter.enter-exit.exit

‘to enter and exit repeatedly’

b. shushu-yingying

lose.lose-win.win

‘to lose and win repeatedly’

c. zhangzhang-luoluo

rise.rise-fall.fall

‘to rise and fall repeatedly’

d. fenfen-hehe

break up.break up-get together.get together

‘to break up and get together repeatedly’

The contrast between (40b) and (41a) shows that the achievement *jin* ‘to enter’ cannot be reduplicated alone. Chapter 4 gives examples with the verb *jin* ‘to enter’ which illustrate that nothing is wrong with the intended meaning. It is a grammatical rule that dictates that the verb cannot be reduplicated all by itself. I provide examples below with the achievement verb *si* ‘to die’ to further illustrate the fact. First consider the example in (42):

(42) a. *zai gangcai de youxi-li, wo si-le-si.

at just now DE game-inside I die-PERF-die

‘I died a couple of times in the game (played) just now.’

b. zai gangcai de youxi-li, wo si le liang ci.

at just now DE game-inside I die PERF two time

‘I died twice in the game (played) just now.’

The fact above shows that the verb *si* ‘to die’ cannot be reduplicated alone. If *si* ‘to die’ is to be reduplicated, its antonym *sheng* ‘to live’ has to be included in the reduplicated form, which is shown below:

(43) bu xiuxing de ren shengsheng-sisi, sisi-shengsheng, zai liu-dao

not practice Buddhism DE person live.live-die.die die.die-live.live at six-way

lunhui-zhong zhuan-lai-zhuan-qu, zhou er fu shi, yong wu zhijin.
 samsara-inside turn-come-turn-go circle and again start forever not have end

‘Those who do not practice Buddhism will repeatedly live and die, die and live. They circulate in the Six Great Divisions in the Wheel of Karma. They make a circle and start again from the beginning, and there will be no end.’

The fact can be explained under the assumption that achievements denote the transition from a state P to its opposite state $\neg P$ (i.e., a change of state). We have argued in Chapter 4 that verb reduplication triggers event iteration. The iteration of an achievement (P-to- $\neg P$) necessarily involves sandwiched instances of an event that denotes the transition from $\neg P$ to P since for P-to- $\neg P$ to happen again, $\neg P$ has to be changed back to P first. The fact about verb reduplication in Chinese is the linguistic manifestation of this state of affairs about achievements. See Chapter 4 for more discussion.

The fact that semelfactives can be reduplicated in the event-internal pattern is evidence to show that a conceptual change of state like the contact between one’s finger and the thing being touched in a touching event is not grammatically relevant in terms of telicity. This is shown below:

(44) a. wo mo-le-mo zhuozi.

I touch-PERF-touch table

‘I touched the table a couple of times.’

b. wo ti-le-ti zhuozi.

I kick-PERF-kick table

‘I kicked the table a couple of times.’

c. ta zha-le-zha yanjing.

he wink-PERF-wink eye

‘He winked his eyes a couple of times.’

d. niao’er pai-le-pai chibang.

bird flap-PERF-flap wing

‘The bird flapped its wings a couple of times.’

To support her claim that semelfactives are telic, Rothstein (2004) provides two pieces of evidence, which I will examine below. Her first piece of evidence is as follows ((45) is (4b, c) in Rothstein (2004:184)):

(45) a. John was laughing when he saw me, so he turned it into a cough (and didn’t laugh.)

b. Mary was winking at her friend when the teacher shouted at her (so she turned the wink into a grimace instead.)

According to Rothstein, the two sentences above show that semelfactive verbs “can also induce the imperfective paradox”, which is a property of telic predicates (see Dowty 1977, 1979). For the two sentences here to work, one needs to construct a context where things happen really slowly. This is actually what happened to my consultants. None of the three native speakers I consulted thinks the two sentences in (45), especially the one in (45b), describe a natural scenario. According to one of them: “A wink takes place in such a short span of time that it’s weird to think about someone only getting halfway through a wink and then being able to stop this process without the wink ever occurring.” So I asked them to imagine the scenario where Mary is really slow at doing things including winking. But under this assumption, they also accept the sentence with *wink* being replaced by *smile*, a member on Dowty’s (1979:67) list of activities. The same situation holds for (45a). In a scenario where John is slow at doing everything including laughing,

the verb *cry*, another member on Dowty's activity list, is also accepted by my consultants when used in the place of *laugh*. The fact therefore suggests that the example in (45) cannot prove that semelfactives are telic.

Rothstein's (2004:185) second piece of evidence is illustrated below ((46) is her (5)):

- (46) a. John jumped in three seconds.
 b. The bird flapped its wings in an instant.

The two sentences in (46) are used to show that semelfactive verbs like *jump* and *flap* can occur with time-span adverbials such as *in three seconds*, which is generally considered to be only compatible with telic predicates. When I present the two sentences to my three consultants, the reading of the adverbials in the two sentences they get is different from the reading of the same adverbials in examples like *John solved that puzzle in three seconds* and *The bird skimmed over the stream in an instant*, where there are two accomplishments. In the two examples provided by me, the adverbials give the duration of the event; for example, it took John three seconds from beginning to end to solve the puzzle. Rothstein (2004) intends the adverbials in (46) to have this reading. However, for my consultants, the same adverbial in (46a) gives the time that elapsed between some reference event and the time of the onset of the event denoted by the verb. In other words, something else happened before, and three seconds after that, John jumped. But this is not the reading Rothstein (2004) wants. In Rothstein (2008), she explicitly invokes "a context of a pole vault or a slow motion film" for her intended reading to be acceptable. Even if her contexts work, the fact that time-span adverbials with verbs like *jump* require a highly specific context to get the intended reading whereas they can get the same

reading with true telic predicates like *solve that puzzle* out of the blue means something. Smith (1991:57) shares the same intuition with my consultants and here is her example:

(47) John coughed in 5 minutes.

According to Smith, “the adverbial can only have a temporal location reading in this sentence: five minutes after something-or-other the event [John cough] occurred.” Under Smith’s view, although the time-span adverbial “*in 5 minutes* can indicate temporal location as well as completion”, the semelfactive verb *cough* forces the temporal location reading, which means it cannot be telic.

Smith’s and my consultants’ intuition about the interpretation of time-span adverbials with semelfactives seems to be true cross-linguistically. Consider the following example from Mandarin:

(48) a. Chris san fenzhong xiu-hao³⁴ le Pat de diannao.

Chris three minute fix-good PERF Pat DE computer

‘Chris fixed Pat’s computer in three minutes.’

b. *Chris san miaozhong qiao le Pat de men.

Chris three second knock PERF Pat DE door

‘Chris made a knock on Pat’s door in three seconds.’

c. Chris san miaozhong qiao-kai le Pat de men.

Chris three second knock-open PERF Pat DE door

‘Chris knocked open Pat’s door in three seconds.’

³⁴ The English verb *fix*, when used in the simple past, entails the thing being fixed becomes functional/good. The simple verb *xiu* ‘fix’ in Mandarin used with the perfective aspect marker *le* does not have such an entailment. To express the meaning expressed by the English *fix* in its simple past, the compound verb in (48a) is required where the second morpheme *hao* ‘good’ in the compound explicitly indicates the resultant state of the fixing activity denoted by the first morpheme.

In (48a), the main verb *xiu-hao* ‘to fix-good’ is a resultative verb compound. As I already introduced before, the first morpheme in this verb compound denotes an activity whereas the second one denotes a resultant state caused by the activity that serves as the endpoint terminating the activity. This kind of verb compounds is the most typical accomplishment verbs in Mandarin. The preverbal duration phrase *san fenzhong* ‘three minutes’ in (48a) denotes the time it took Chris to fix Pat’s computer. If semelfactive verbs are telic and interval predicates as claimed by Rothstein, we would expect the sentence in (48b) with the verb *qiao* ‘to knock’ to be grammatical and have the interpretation that it took Chris three seconds to make a single knock on Pat’s door. But the sentence is ungrammatical and cannot have that meaning. The point is further confirmed by the contrast between (48b) and (48c). The only difference between the two sentences is that one has a simple verb *qiao* ‘to knock’ whereas the other has a compound verb *qiao-kai* ‘to knock open’. The compound verb, in virtue of the second morpheme *kai* ‘to open’ which denotes a resultant state caused by the event denoted by the first morpheme, is an accomplishment. The contrast between the two sentences in terms of grammaticality strongly supports the fact that semelfactives such as *qiao* ‘knock’ cannot be telic.

It is possible for a semelfactive verb to co-occur with another kind of temporal adverbials, namely durative expressions such as *for three minutes*. Both the Chinese and the English sentence in the following example are grammatical ((49b) is from Smith (1991:56)):

(49) a. Chris qiao le Pat de men san fenzhong.

Chris knock PERF Pat DE door three minute

‘Chris knocked on Pat’s door for three minutes.’

b. John coughed for 5 minutes.

But note in these examples, the semelfactive is forced to have an iterative activity reading just like in the progressive. Both the Chinese and the English example mean that an activity of a series of knocks/coughs but not a single knock/cough lasted for a period of time. This is cross-linguistically true. Smith (1991: 291) has the following remarks about French: “They [semelfactives] are incompatible with expression of duration, simple or completive. One cannot *cesser* (stop) or *x pendant une heure* (do something for an hour) for a one-stage atelic event.” For Russian, she (1991:324) says that “semelfactives are incompatible with expressions of duration.” The same situation is also reported by Kiss (2011) to be true in Hungarian.

To summarize: facts about verb reduplication and temporal modification in Chinese show that semelfactives are atelic whereas achievements are telic. This fact seems to hold cross linguistically. Marín and McNally (2011) provide a series of diagnostics to test telicity in Spanish, which can be used to show that Spanish semelfactives are atelic³⁵. Henderson (2012) provides facts about pluralional suffixes in Kaqchikel to argue that semelfactive events produce “no linguistically relevant changes”. He says that “since semelfactive events do not have an end state, they are correctly predicted to be infelicitous in the perfect, which Moens & Steedman (1988) argue targets this end state”. The examples below are due to Henderson:

(50) Semelfactive

a. #John has coughed.

b. #John has kicked.

(51) Achievement

³⁵ I thank Dr. Grant Armstrong for confirming this for me.

- a. John has arrived.
- b. John has won the race.

Next I will turn to the other issue about semelfactives, namely if they are instantaneous. Despite the controversy about telicity, most authors such as Bach (1986) and Smith (1991) agree that semelfactives are instantaneous except Rothstein (2004, 2008) who claims that they are interval predicates. Since what counts as an instant is vague, the real issue here is not about the length of the interval covered by a semelfactive event, but has to do with the internal structure of the event. My claim is that a semelfactive verb denotes a minimal activity which cannot be further decomposed into grammatically relevant parts. I do not deny the fact that semelfactive events have conceptual parts. The crucial part in my claim is that the internal structure of a semelfactive event is not grammatically relevant.

My proposal goes against Rothstein's (2004, 2008) claim that semelfactives are interval predicates which involve a trajectory. Readers can go back to the quotation above to see her argument that semelfactives such as *kick* involve a trajectory which achievements do not have because achievements, according to her, are truly instantaneous. A problem of her argument is that the notion "trajectory" is only applicable to a few verbs. The reason why Rothstein thinks that there is a trajectory associated with semelfactives may be due to the fact that the few semelfactives she focuses on (*jump, knock, kick, wink, flap, skip*) all involve movement that implies a trajectory. The fact that some semelfactives seem to involve a trajectory is an accidental phenomenon that is due to the lexical semantics of the verbs. As a matter of fact, semelfactives cover a wide range of events, of which those involving movements and

therefore implying a trajectory are only one subtype. There are many semelfactives that cannot be associated with a trajectory. Take one of Rothstein's (2004:28) own semelfactives, namely *cough*, for example. What would a trajectory inside a single cough be? Of course one can argue that a cough can be further decomposed into muscle movements, which may be used to define a trajectory. Even if such a trajectory can be identified, there does not seem to be any linguistic relevance of it.

Since we have a linguistic test to identify semelfactives in Chinese, Rothstein's argument about trajectory can be tested in Chinese. Due to its conceptual nature, it should work in Chinese as well as in English. The fact is that the notion only works with some Chinese semelfactives. I provide some verbs in the example below, to which the notion trajectory does not seem to apply:

(52) a. ta qingmiede heng le yi xia, yi shi buman.

he contemptuously snort PERF one time in order to show discontent

'He gave a snort of contempt to show his discontent.'

b. youyu jiechu buliang, diandeng dakai-shi shan le haoji xia.

due to contact bad lamp turn on-time flicker PERF several time

'Due to bad contact, the lamp flickered several times when it was turned on.'

c. ta shengqide deng le wo yi xia.

he angrily glare PERF I one time

'He gave me an angry glare.'

d. ni de shouji gangcai xiang le san xia.

you DE cell-phone just now sound PERF three time

'Your cell-phone made three rings just now.'

The four verbs in the example above are all semelfactives because they can co-occur with *xia* ‘time’. It is difficult, if not impossible, to define a trajectory in any of the four events.

Russian is a language which marks its semelfactives by the suffix *-nu* (see Makarova and Janda 2009). Like in Chinese, it is not hard to find examples of semelfactives in Russian that cannot be analyzed as involving a trajectory. Let us consider the semelfactive *xixik-nu-t* ‘to giggle (once)’. What is the trajectory inside a single giggle? It is hard to tell. The examples from Chinese and Russian show that Rothstein’s (2004) conceptual argument about trajectory is both inadequate and irrelevant to characterize semelfactives.

Besides the conceptual argument, Rothstein (2004:184) also uses the sentence below (her (4a)) to argue that “semelfactives appear to be interval predicates, since they appear in the progressive.”

(53) John was just jumping/kicking the door when I came in.

The sentence above is intended by her to have the meaning that John was in the process of making a single jump or kick at the time of my arrival. However, Rothstein’s judgment about this intended reading seems to be in conflict with other native speakers’ intuition. My consultants insist that the sentence only gets an activity reading and their judgment is shared by Smith who discusses semelfactives in the progressive in different languages including English. The sentences below are all from Smith (1991), where (54a, b) is her (4) on page 67 and (54c) is her (10a) on page 223.

(54) a. Mary was coughing.

b. The canary was flapping its wing(s).

c. Jane was knocking at the door.

According to Smith, the sentences in (54a, b) “have only the reading of derived multiple-event activities”. The one in (54c) “cannot be taken to refer to a single knock”. Smith’s intuition about English seems to be true cross-linguistically. Besides English, she (1991: 291) points out that in Russian and French, semelfactives “do not allow the imperfective viewpoint”. For Russian, she (1991:324) says that “semelfactives are incompatible with the imperfective viewpoint. They are always in the perfective; sentences with a semelfactive verb constellation and the imperfective viewpoint are interpreted as a multiple-event activity or habitual stative.” For French, she (1991:291-292) comments that “when semelfactive verb constellations appear with the *Imparfait*, the only interpretation is a shifted one, that of a multiple-event activity consisting of semelfactives as internal stages.” The French example below comes from her on page 292:

(55) H  l  ne frappait    la porte.

Helen knock-IMPF at the door

‘Helen was knocking at the door.’

According to Smith, the French sentence above “has only the multiple-event reading and cannot mean that Helene was engaged in the preliminary stages of giving a single knock”.

Smith’s observation of English, Russian and French also holds for Mandarin.

Consider the following minimal pair in (56) below:

(56) a. Hailun zheng zai qiao men.

Helen just PROG knock door

‘Helen was just knocking on the door.’

b. Hailun zheng yao qiao men.

Helen just will knock door

‘Helen was just about to knock on the door.’

Imagine the scenario where Hailun stood at the door and her hand was raised and was approaching the door but has not yet got in contact with the door. Under this scenario, Hailun was in the process of making a knock on the door but has not yet done so. To describe the scenario, the sentence in (56b) with the modal *yao* ‘will’ will be used. The sentence in (56a) with the progressive marker *zai*, by contrast, describes a scenario where Hailun was engaged in the activity of knocking on the door. For the sentence to be true, at least one knock needs to have been made. Due to this difference, the discourse in (57a) below is coherent whereas the one in (57b) sounds contradictory, which is marked by the # symbol:

(57) a. Hailun zheng yao qiao men, hai mei qiao-xiaqu, men kai le. suoyi ta

Helen just will knock door yet not knock-down door open SFP so she
yi xia dou mei qiao.

one time even not knock

‘Helen was just about to knock on the door and did not knocked down yet, the door opened. So she did not even knock once.’

b. #Hailun zheng zai qiao men, hai mei qiao-xiaqu, men kai le. suoyi

Helen just PROG knock door yet not knock-down door open SFP so
ta yi xia dou mei qiao.

she one time even not knock

#‘Helen was just knocking on the door and did not knocked down yet, the dooropened. So she did not even knock once.’

Rothstein’s English example in (53) corresponds to the Chinese sentence in (58a) below.

The Chinese sentence in (58b) only differs from (58a) in that the progressive marker *zai* is replaced by the modal *yao* ‘will’:

(58) a. wo jinlai de shihou, Yuehan zheng zai tiao/ti men.

I come in DE time John just PROG jump/kick door

‘John was just jumping/kicking the door when I came in.’

b. wo jinlai de shihou, Yuehan zheng yao tiao/ti men.

I come in DE time John just will jump/kick door

‘John was just about to jump/kick the door when I came in.’

c. danshi hai mei tiao/ti.

but yet not jump/kick

‘But (he) did not jump/kick (the door) yet.’

A clear intuition about (58a) and (58b) is that John has already jumped or kicked the door in the case of (58a) whereas he was in the process of making a jump or kick but has not yet done so in the case of (58b). If the sentence in (58c) is appended to (58a), a contradiction would arise. By contrast, if (58c) is attached to (58b), the two form a coherent and natural discourse.

The facts from English, French and Mandarin discussed above suggest that semelfactives are not compatible with the progressive. When a semelfactive is used in the progressive, an iterative activity reading is always forced. The progressive example in (53) used by Rothstein cannot support her claim that semelfactives are interval. Cross-linguistic facts suggest the opposite: semelfactives are not compatible with the progressive, which only allows durative predicates and thus forces the iterative reading of semelfactives.

Besides the progressive, Smith (1991:57) has a test to show that English semelfactives do not have grammatically relevant structure. Consider the following example provided by her:

(59) a. Mary slowly knocked at the door.

b. John coughed quickly.

According to Smith, certain manner adverbs like *slowly* and *quickly* imply duration. But “with semelfactive verb constellations they refer to the onset of the event.” The example above “may be paraphrased as *Mary was slow to knock, John was quick to cough.*” This is also true in French as reported by her (1991: 291). The phenomenon can be explained under the claim that semelfactives do not have grammatically relevant internal structure, which is why they are incompatible with the duration implied by these adverbs.

To summarize: semelfactives are atelic and do not have a grammatically relevant internal structure. Based on these two facts, I claim that they denote minimal activities, which can be summed to form protracted activities. For instance, single knocks can be summed to form a knocking activity. The formula in (60) below provides a specification about when and how semelfactive parts are summed to form an activity:

$$(60) \forall e_1 \dots \forall e_n [[V(e_1) \wedge \dots \wedge V(e_n) \wedge R(e_1, \dots, e_n)] \rightarrow \exists e_a [e_a = (e_1 \cup \dots \cup e_n) \wedge V(e_a)]]$$

(**V** is the predicate in the meta-language for a semelfactive verb such as *knock*. The event variables with a numerical subscript stand for semelfactive events whereas the event variable e_a stands for an activity. \cup stands for the summing operation. **R** is an n-place relation between eventualities that requires all its arguments to have the same event participants and be temporally adjacent to each other. Temporary adjacency is context-dependent. See Chapter 4 for more discussion.)

Rothstein (2004, 2008) also sees the close relation between semelfactives and activities and according to her (2004:29), “activities have minimal, non-homogenous event parts, the natural conclusion is that semelfactives are activities used in this minimal way.” She (2004:186) derives semelfactives from activities as follows:

*“An activity predicate P will denote a set of events \mathbf{P} , and will contain a subset \mathbf{P}_{min} , which is the set of minimal events in its denotation. If a predicate has a semelfactive use, then there will be a **natural atomic function** which picks out the set \mathbf{P}_{min} , and \mathbf{P}_{min} will be an atomic set. If the predicate does not have a semelfactive use, then \mathbf{P}_{min} will be a singular set and not an atomic set, containing minimal singular but overlapping entities.”*

Under the view above, Rothstein needs to explain why some activities are associated with a “natural atomic function” whereas others are not. In Rothstein (2008), she answers this question by claiming that activities associated with a natural atomic function “are those where the minimal events are naturally atomic”. She defines a naturally atomic event as “one which has a natural beginning and end point, determined by the trajectory which defines the event”. But we have shown above that the notion “trajectory” is inadequate to characterize semelfactives. If the notion “naturally atomic event” loses empirical ground, the pick-out function of the “natural atomic function” becomes an ad hoc stipulation.

One way to avoid Rothstein’s problem is to grant semelfactives independent status like Smith (1991) does. Semelfactives have distinct semantic properties in terms of counting and Aktionsart, which make them form an independent class. If we have semelfactives to start with, activities like knocking that have semelfactive parts are derived through event summing as specified in (60). Activities like chatting do not have semelfactive parts since there are no such semelfactives in the first place. The latter kind of activities is like mass nouns as we have argued above, and it is natural that they do not have atoms in their mass denotations.

Now we can answer the question raised at the end of Chapter 2, namely why verbs which are syntactically compatible with the structure proposed for *xia* ‘time’ cannot co-occur with *xia* ‘time’. I repeat the examples given at the end of Chapter 2 below:

Achievement verbs:

(61) a. ta ying le san *xia/ci na ge youxi.

he win PERF three time that CI game

‘He won that game three times.’

b. ta dao le san *xia/ci shanding.

he reach PERF three time summit

‘He reached the summit three times.’

Accomplishment verbs:

(62) a. ta du le san *xia/bian na pian wenzhang.

he read PERF three time that CI paper

‘He read that paper three times.’

b. ta kan le san *xia/bian na bu dianying.

he watch PERF three time that CI movie

‘He watched that movie three times.’

Some unergative verbs:

(63) a. ta pao le san *xia/bu pao le wu mi.

he run PERF three time/step run PERF five meter

‘He ran three steps and ran five meters.’

b. ta zou le san *xia/bu you huilai le.

he walk PERF three time/step then return PERF

‘He walked three steps and then returned.’

I have argued in Chapter 2 that *xia* ‘time’ is a verbal classifier for event nouns denoting semelfactive events. It is a fact that classifiers agree with the nouns they co-occur with according to semantic properties of the nouns. We argued above that semelfactives have different aspectual properties than achievements and accomplishments. I assume that *xia* as a classifier agrees with the event nouns in terms of their aspectual properties, which is why *xia* can not co-occur with accomplishments and achievements in (61) and (62) since it only picks event nouns denoting semelfactive events. As for the two unergatives in (63), the fact is that they denote accomplishments when they co-occur with *bu* ‘to step’, which is why *xia* cannot be used. There is some complication involved and I will elaborate on the fact a bit below

A sentence with *zou* ‘to walk’ or *pao* ‘to run’ as the main verb used with *bu* ‘step’ in the event quantifier can be ambiguous. Consider the following example:

(64) a. Xiaobao zou le san bu/mai.

Xiaobao walk PERF three step/mile

‘Xiaobao walked three steps/miles.’

b. Xiaobao zou le san bu/mai yuan.

Xiaobao walk PERF three step/mile far

‘Xiaobao walked three steps/miles far.’

c. Xiaobao zou le san bu cai zou le yi bu yuan.

Xiaobao walk PERF three step only walk PERF one step far

‘Xiaobao took three steps in walking and only walked the distance of one step.’

d. Xiaobao liang fenzhong zou le san bu (yuan).

Xiaobao two minute walk PERF three step (step)

‘Xiaobao walked three steps far in two minutes.’ (with yuan ‘far’)

‘Xiaobao took three steps in walking in two minutes.’ (without *yuan* ‘far’)

The first reading is illustrated by the sentence in (64a) where *san bu* ‘three steps’ denotes the distance covered by the walking, which is why the word *bu* ‘step’ can be replaced by words like *mai* ‘mile’. Note that under this reading, it is unspecified how many steps one takes to cover that distance. Under this reading, the word *yuan* ‘far’ can be attached to the phrase denoting the distance as shown by (64b). The second reading is illustrated by *san bu* ‘three steps’ in (64c), which denotes three steps created through walking. The distance covered by the three steps is specified by *yi bu* ‘one step’, which is followed by the word *yuan* ‘far’. It is possible that three steps cover the distance of one step in a scenario such as that Xiaobao was a toddler who just learned how to walk and walked the distance of an adult step with three steps. Note that both readings yield an accomplishment as shown by the fact in (64d), where the preverbal duration phrase *liang fenzhong* ‘(in) two minutes’ is compatible with both readings. Due to this fact, it is predicted that *bu* ‘step’ cannot be replaced by *xia* because the eventuality denoted by the predicate is an accomplishment.

Now imagine a scenario where a person is trying new shoes in a store. She puts on a pair of shoes and takes a few walking/running steps to see if the shoes fit the feet. Under this scenario, the sentence below is grammatical:

(65) ta chuan-zhe xin xie zou/pao le ji bu/xia, juede tai jin.

she wear-ZHE new shoe walk/run PERF several step/time feel too tight

‘She took a few walking/running steps wearing the new shoes and felt that they are too tight.’

Note that *xia* can replace *bu* ‘step’ above. This is because taking a few walking/running steps in the given scenario can be an activity. When trying new shoes in a store, one can stay in the same place to take steps. The following example further illustrates the point:

(66) Xiaobao yuan-di ta le san bu/xia.

Xiaobao same place step PERF three step/time

‘Xiaobao stepped three steps at the same place.’

The expression *yuan-di ta bu* in the sentence above, which literally means ‘same-place step step’, refers to military mark-time march where one moves the legs as in marching without stepping forward or changing the place. Such a step-taking is an activity and it is predicted that *xia* should be able to replace *bu* ‘step’ in this case and as shown by (66) the prediction is born out.

The same fact we have seen about *bu* ‘step’ and *xia* also applies to other verbal classifiers. The three verbal classifiers *sheng* ‘sound’, *kou* ‘mouth’ and *bi* ‘stroke’, when they count accomplishments, they cannot be replaced by *xia*. But when they count minimal activities, they can be replaced by *xia*. Let us see the word *sheng* ‘sound’ first:

(67) ta han/jiao le san sheng/xia.

s/he call out/scream PERF three sound/time

‘S/he made three calls/screams.’

Sheng ‘sound’ in the sentence above is used to count calls/screams in a calling/screaming activity, which is why it can be replaced by *xia*.

Now consider the verbal classifier *kou* ‘mouth’:

(68) a. Xiaobao chi le san kou/*xia na ge pingguo.

Xiaobao eat PERF three mouth/time that CI apple

‘Xiaobao took three bites from that apple.’

b. Xiaobao ken le san kou/xia na ge pingguo.

Xiaobao nibble PERF three mouth/time that CI apple

‘Xiaobao took three nibbles from that apple.’

As shown above, *kou* ‘mouth’ cannot be replaced by *xia* in (68a) where the verb is *chi* ‘to eat’. This is because the event quantifier *san kou* counts minimal eating events, which are accomplishments. *Kou* ‘mouth’ can be replaced by *xia* in (68b) where the verb is *ken* ‘to nibble’. This is because nibbling an apple can be an activity consisting of single nibbles³⁶.

The point here is further supported by the following fact:

(69) a. John qin le Mary san kou/xia.

John kiss PERF Mary three mouth/time

‘John gave Mary three kisses.’

b. na kuai kouxiantang ta jiao le liang kou/time jiu tu le.

that CI-piece gum he chew PERF two mouth/time then spit PERF

‘(As for) that piece of gum, he chew it a couple of times and then spit it out.’

³⁶ The difference between nibbling and eating is further illustrated by the following example:

(i) a. laoshu ken le na kuai mutou, danshi mei neng ken-dong.

rat nibble PERF that CI_{piece} wood but not be able to nibble-RS

‘A rat nibbled at that piece of wood, but it was not able to nibble any of the wood.’

b. #laoshu chi le na kuai mutou, danshi mei neng chi-dong.

rat eat PERF that CI_{piece} wood but not be able to eat-RS

‘A rat ate that piece of wood, but it was not able to eat any of the wood.’

The morpheme *dong* in the resultative compound at the end of the two sentences is a resultative suffix (RS) to indicate the effect on the theme caused by the event/activity denoted by the first morpheme. Note that the sentence in (ia) is felicitous but the one in (ib) sounds contradictory. The contrast shows that it is possible for a nibbling to not cause change to the theme but it is infelicitous to express the same idea with an eating.

Kissing and chewing gum are both activities composed of minimal parts. *Xia* can be used to count those minimal parts.

Lastly, let us consider the verbal classifier *bi* ‘stroke’:

(70) a. zhe ge zi ta zhi xie le liang bi/*xia.

this Cl character he only write PERF two stroke/time

‘(As for) this character, he wrote only two strokes (of it).’

b. ta zai caogaozhi-shang huluan xie/hua/tu le liang bi/xia.

he at scratch paper-above randomly write/draw/scribble PERF two stroke/time

‘She randomly wrote/drew/scribbled two strokes on the scratch paper.’

The event quantifier *liang bi* ‘two strokes’ in (70a) counts subevents in the atomic writing event, which are accomplishments. This is why *bi* ‘stroke’ cannot be replaced by *xia*. As for the sentence in (70b), a random writing/drawing/scribbling on a piece of scratch paper is an activity. It is predicted that the strokes inside the writing/drawing/scribbling activity can be counted by *xia*.

4. Summary

In this chapter, we discussed the implication of event quantifier for the verbal domain. It has been shown that event quantifiers for atomic events are structurally lower than those for plural events in both Chinese and English. We also discussed counting in the nominal and verbal domain and show that accomplishments, achievements and semelfactives have two counting options: one for atomic events and one for sums of atomic events. This is in parallel to count nouns, which also have a counting option for atoms and one for sums of atoms. We show that states and activities have only one counting option like mass nouns. We also discuss the aspectual properties of semelfactives and argue that they are atelic

and have no grammatically relevant internal structure. We claim that they denote minimal activities that can be summed to form protracted activities. We claim that the Chinese grammar is sensitive to semelfactivity and manifests it through event quantifiers with the verbal classifier *xia* ‘time’, which counts semelfactive events only.

CHAPTER 6

CONCLUSION AND FUTURE RESEARCH

In this last chapter, I conclude the whole dissertation and point out some remaining issues for future research.

In this dissertation, I call attention to a group of words in Mandarin, which are used with numerals to count the eventualities denoted by the predicate of a sentence. The following nine words are discussed in this dissertation: *xia* ‘time’, *hui* ‘time’, *ci* ‘time’, *kou* ‘mouth’, *bi* ‘stroke’, *bu* ‘step’, *sheng* ‘sound’, *bian* ‘time’ and *tang* ‘time’. In order to sort out the types of the event quantifiers consisting of a numeral and each of these words, we set out to examine the syntax of the event quantifiers. Based on their distributions, we argue that these words are all classifiers for event nouns and propose two structures for them. We then discuss verb reduplication in Chinese. We show that the two kinds of pluractionality (event-internal vs. event-external) are overtly manifested in the language by two verb reduplication patterns. We provide a semantic account for each pattern and compare verb and noun reduplication in the language. Based on all the facts about event quantifiers and verb reduplication, we explored the implication of event quantifiers for the verbal domain. We show that event quantifiers for atomic events are lower than those for plural events. We argue for Bach’s (1986) claim that the verbal parallels to count

nouns are accomplishments, achievements and semelfactives whereas the verbal parallels to mass nouns are activities and states. We show that semelfactives are atelic and denote minimal activities without a grammatically relevant internal structure.

Below I list three issues about event quantifiers encountered in the course of the writing of the dissertation, for which I do not have a satisfactory answer yet. I report the facts and will leave the questions raised by the facts for future research.

1. A puzzle about the English word *time*

This unsolved issue is about the English word *time* as in *three times a day*. My question is very simple: why is the word required in an event quantifier as illustrated by (1a) below?

(1) a. John won that game three *(times).

b. John ying le na ge bisai san *(ci).

John win PERF that Cl game three time

‘John won that game three times.’

As shown above, *time* is obligatory in (1a). The Chinese sentence in (1b) shows that the word *ci* ‘time’ is also obligatory. There is a reason for the obligatory presence of *ci* ‘time’. We argued that words like *ci* ‘time’ in an event quantifier for atomic events such as *san ci* ‘three times’ in (1b) are underlying classifiers for event nouns, which is why *ci* ‘time’ is required because Chinese is a classifier language where nouns require a classifier when modified by numerals. The explanation here cannot be applied to English for two reasons. First, event quantifiers such as *three times* in (1a) are VP adverbials that do not seem to be related to event nouns. Second, English is not a classifier language. If we think about the parallel between the verbal and the nominal domain, the puzzle becomes even more

mysterious. Despite their disagreement on atelic predicates, Bach (1986) and Rothstein (1999, 2004) both claim that telic predicates such as *win that game* are the verbal parallel to count nouns. But numerals can be directly put before a count noun in English whereas the word *time* is obligatorily needed when numerals modify verbal predicates.

It is unclear to me why numerals alone cannot function as event quantifiers in English³⁷. If we look at other languages, the situation seems to become more complicated. A language that might be relevant to the issue here is classical Chinese. Like in English, numerals can directly modify nouns in classical Chinese. But unlike in English, numerals can directly modify verbal predicates as event quantifiers. To illustrate the fact, I provide below some examples from *The Analects of Confucius*, which reflects the spoken language during his time (551 B.C.-479B.C.) because most of the contents of the book are direct quotations of his words.

Let us first look at the nominal domain (the name in parentheses after the example is the name of the passage from which the sentence comes):

(2) a. Kongzi yue: Yin you **san ren** yan. (Wei Zi)

Confucius say Yin have three person of virtue SFP

‘Confucius says, “The Yin dynasty has three righteous persons.”’

b. Zi yue: **san ren** xing, bi you wo shi yan. (Xue Er)

master say three person walk must have my teacher therein

‘The Master says, “three persons walk, there must be someone among them I can learn from.”’

³⁷ One may argue that this is because numerals are adjectival in nature and an adjective cannot function as an adverbial. First, numerals do not function like adjectives since they can appear in the object position of a verb (*I ate three*) whereas adjectives cannot (**I ate red*). Second, adjectives can function as adverbials in at least colloquial English such as *Come here real quick, I want to show you something*.

The two boldfaced noun phrases consist of a numeral and a noun and there is no classifier. See the appendix for more examples. For the sake of comparison, the relevant phrases in modern Chinese are given below, where a classifier is obligatorily needed:

(3) a. *san* *(ge) ren-ren
 three Cl righteous-person
 ‘three righteous persons’

b. *san* *(ge) ren
 three Cl person
 ‘three persons’

Now consider the verbal domain:

(4) a. Liu Xiahui wei shi-shi, **san** chu. (Wei Zi)
 Liu Xiahui be chief criminal judge three dismiss from office
 ‘Liu Xiahui, being chief criminal judge, was thrice dismissed from his office.’

b. **san** xiu er zuo. (Xiang Dang)
 three smell and rise
 ‘Thrice it smelled him and then rose.’

As shown above, the numeral *san* ‘three’ is used alone before the verb to function as an event quantifier. For more examples, see the appendix. A verbal classifier like *ci* ‘time’ will be necessarily required in modern Chinese:

(5) a. Liu Xiahui bei bamian le *san* *(ci).
 Liu Xiahui BEI dismiss from office PERF three time
 ‘Liu Xiahui was dismissed from his office three times.’

b. ta wen le ta san *(ci).
 it smell PERF he three time

‘It smelled him three times.’

What makes the issue even more complicated is the fact that classical Chinese behaves like modern Chinese in that bare nouns in classical Chinese can function as arguments without articles, which do not exist in the language. Examples of the fact abound in texts and one from the analects is given below, where the bare nouns are marked in bold:

(6) **Zi** yue: Mengzhifan bu fa. ben er dian, jiang ru **men**,
 master say Mengzhifan not boast run and bring up the rear will enter gate
 ce qi ma, yue: fei gan hou ye, **ma** bu jin ye. (Yong Ye)
 whip his horse say not dare fall behind SFP horse not advance SFP

‘The Master said, “Mengzhifan does not boast of his merit. Being in the rear on an occasion of flight, when they were about to enter the gate, he whipped up his horse, saying, ‘It is not that I dare to be last. My horse would not advance.’”

The noun *zi* ‘master’ is a common noun. Confucius falls in the denotation of the noun but he is not the only person who can be referred to by the noun. For example, Lao-tzu, the father of Taoism, is also referred to by the noun. But the bare noun used in the example above means the master, namely Confucius. Similarly, the bare noun *men* ‘gate’ refers to the gate of the city, which can be recovered from the common background. The last bare noun *ma* ‘horse’ refers to the horse which has already been mentioned in the discourse.

Some authors such as Chierchia (1998a) argue that all nouns in modern Chinese are mass based on the fact that bare nouns in the language can function as arguments directly. If all the nouns are mass, it is explained why a classifier is always needed whenever a noun is modified by numerals. But now we have classical Chinese, where

bare nouns can be used as arguments directly just like modern Chinese but no classifiers are needed between a numeral and a noun.

A small survey has been done with *The Analects of Confucius* and *The Works of Mencius*. I searched the numeral *yi* ‘one’ in the two texts to look for noun phrases consisting of the numeral. The following generalization seems to hold: when a count noun is modified by a numeral, the norm is that no classifier is needed. But when a mass noun is modified by a numeral, the norm is to have a lexical classifier. Several examples are given below (note that all the noun phrases in (7) are ungrammatical in modern Chinese unless a classifier is used):

(7) a. *yi ji*

one chicken

‘one chicken’

b. *yi qin*

one bird

‘one bird’

c. *yi ren*

one person

‘one person’

d. *yi qi*

one wife

‘one wife’

(8) a. *yi dan shi*

one round bamboo basket food

‘one basket of food’

b. yi piao yin

one gourd ladle drink

‘one ladle of drink’

c. yi dou geng

one cup with a long foot stew

‘one cup of stew’

d. yi bei shui

one cup water

‘one cup of water’

A descriptive fact seems to be this: mass nouns in English, classical Chinese and modern Chinese require a classifier when modified by numerals. Count nouns in these languages, by contrast, may or may not need a classifier when modified by numerals, and this does not seem to have to do with whether the noun can be used as arguments directly, since in both classical and modern Chinese bare nouns can be used as arguments but classifiers are needed in one but not the other. Given this fact, if we assume that the English word *time* is a verbal classifier, the conclusion is that all verbal predicates in English have mass denotations and need a classifier to generate atoms. Like in Chinese, telic predicates and semelfactives in English have two verbal classifiers (one for atomic events and one for plural events but both have the same form *time*) whereas atelic predicates have only one (the one for plural events). I do not have a fully worked out theory for the issue here yet and will leave it for future research.

2. Interaction between the verb, its object and an event quantifier

In the discussion above we did not talk much about the interaction between the verb, its object and an event quantifier in the same sentence. The fact is that the three parties are all involved to determine the grammaticality of the sentence. Relevant factors of the verb include its Aktionsart and whether it is a simple verb or a resultative verb compound. As for the object, what matters seems to be whether it is a bare noun or a full fledged phrase, indefinite or definite. Lastly for the event quantifier, its position (is it after the object or between the verb and its object?) and its semantic nature (is it for atomic events or plural events?) both matter. All these factors yield quite a lot of possibilities, some of which can be explained and some of which cannot. Below I provide three sets of examples, each of which illustrates the role played by one of the three parties mentioned above.

I will start with the event quantifier. Consider (9) below:

(9) a. ta shang ge yue kan le san hui dianying.

he last Cl month watch PERF three time movie

‘He watched movies on three occasions last month.’

b. *ta shang ge yue kan le san bian dianying.

he last Cl month watch PERF three time movie

‘He watched movies three times last month.’

c. ta shang ge yue kan le san bian na ge dianying.

he last Cl month watch PERF three time that Cl movie

‘He watched that movie three times last month.’

The fact in (9) shows that when the object is a bare noun, it is ungrammatical to use *bian* ‘times’ in the event quantifier. To make the sentence grammatical, either *bian* ‘time’ has

to be changed to *hui* ‘time’ or the object has to become definite. The fact has to do with the nature of the event quantifier. We noted that event quantifiers with *bian* ‘time’ always count accomplishments. But a bare noun object, even used with an accomplishment verb, yields an activity, which is why *bian* ‘time’ is not allowed.

Next see an example that illustrates the role of the object. The fact is that when the object is an indefinite noun phrase, an event quantifier cannot appear between the verb and the object. This is shown below:

(10) a. *Xiaobao du le san hui san ben shu.

Xiaobao read PERF three time three Cl book

‘Xiaobao read three book three times.’

b. *Xiaobao qiao le san xia san shan men.

Xiaobao knock PERF three time three Cl door

‘xiaobao made three knocks on three doors.’

c. *Xiaobao chi le san kou san ge pingguo.

Xiaobao eat PERF three mouth three Cl apple

‘Xiaobao took three bites from three apples.’

d. *Xiaobao kan le san bian san bu dianying.

Xiaobao watch PERF three time three Cl movie

‘Xiaobao watched three movies three times.’

e. *Xiaobao qu le san tang san ge chengshi.

Xiaobao go PERF three time three Cl city

‘Xiaobao went to three cities three times.’

A mystery about this fact is that it ignores the difference between the two kinds of event quantifiers. As shown above, an event quantifier for plural events (the one with *hui* ‘time’ in (10a)) is equally bad as one for atomic events. I do not have an account for the fact yet.

The examples below are to show that the nature of the verb also plays a role in determining grammaticality of the sentence. First consider the example below:

(11) a. Xiaobao *ti le san hui* Aobai de men.

Xiaobao kick PERF three time Aobai DE door

‘Xiaobao kicked Aobai’s door on three occasions.’

b. Xiaobao *ti le Aobai de men san hui*.

Xiaobao kick PERF Aobai DE door three time

‘Xiaobao kicked Aobai’s door on three occasions.’

c. *Xiaobao *san hui ti le Aobai de men*.

Xiaobao three time kick PERF Aobai DE door

‘On three occasions, Xiaobao kicked Aobai’s door.’

The fact in (11) shows that with a simple verb such as *ti* ‘to kick’, the event quantifier can appear postverbally (either between the verb and its object or after the object) but not preverbally. Now let us see the situation with a resultative verb compound:

(12) a. Xiaobao *san hui ti-kai le Aobai de men*.

Xiaobao three time kick-open PERF Aobai DE door

‘Xiaobao kicked open Aobai’s door on three occasions.’

b. *Xiaobao *ti-kai le san hui Aobai de men*.

Xiaobao kick-open PERF three time Aobai DE door

‘Xiaobao kicked open Aobai’s door on three occasions.’

c. Xiaobao ti-kai le Aobai de men san hui.

Xiaobao kick-open PERF Aobai DE door three time

‘Xiaobao kicked-open Aobai’s door on three occasions.’

The fact above shows that with a resultative verb compound, one position is not allowed, namely between the verb and its object. I do not have an answer for the fact yet.

If all the relevant factors are taken into consideration, there are quite a lot of possibilities. A full discussion of all these possibilities goes beyond the scope of this study because there are factors that are irrelevant to the topic of the dissertation like (in-)definiteness of nouns getting involved. We may also need to look at other post-verbal constituents like complement clauses to examine their interaction with event quantifiers. This will be a future project.

3. Event quantifiers and duration phrases

Temporal modification is another important phenomenon in aspect and event semantics. We mentioned above that Chinese uses word order but not prepositions to distinguish the two kinds of temporal modification: a post-verbal phrase has the interpretation of *for a time* whereas a preverbal phrase has the interpretation of *in a time*.

There seems to be both similarity and difference between event quantifiers and duration phrases. I do not discuss the topic much above, but it seems worth a project. For example, there is parallel between event quantifiers with *hui* ‘time’ and duration phrases in terms of the interpretation of idioms. As reported above, event quantifiers with *hui* ‘time’ keep the idiomatic reading, so do duration phrases. This is shown below:

(13) a. ta pai le laoban yi ge xiaoshi mapi.

he pat PERF boss one CI hour horse buttock

‘He flattered the boss for an hour.’

b. ta bei le san ge yue heiguo.

he carry on the back PERF three CI month black wok

‘He has been a scapegoat for three months.’

But the distribution of duration phrase is not exactly the same as event quantifiers with *hui* ‘time’. One difference can be seen from a comparison between (14) and (15) below on one hand and (11) and (12) above on the other:

(14) a. Xiaobao ti le san fenzhong Aobai de men.

Xiaobao kick PERF three minute Aobai DE door

‘Xiaobao kicked Aobai’s door for three minutes.’

b. Xiaobao ti le Aobai de men san fenzhong.

Xiaobao kick PERF Aobai DE door three minute

‘Xiaobao kicked Aobai’s door for three minutes.’

c. *Xiaobao san fenzhong ti le Aobai de men.

Xiaobao three minute kick PERF Aobai DE door

‘Xiaobao kicked Aobai’s door in exactly three minutes.’

(15) a. *Xiaobao ti-kai le san fenzhong Aobai de men.

Xiaobao kick-open PERF three minute Aobai DE door

‘Xiaobao kicked open Aobai’s door for three minutes.’

b. *Xiaobao ti-kai le Aobai de men san fenzhong.

Xiaobao kick-open PERF Aobai DE door three minute

‘Xiaobao kicked open Aobai’s door for three minutes.’

c. Xiaobao san fenzhong ti-kai le Aobai de men.

Xiaobao three minute kick-open PERF Aobai DE door

‘Xiaobao kicked aobai’s door in three minutes.’

The project of duration phrase will be left for future research.

Appendix: *San* ‘three’ as modifiers for both nouns and verbs in *The Analects of*

Confucius

Noun phrases:

(1) san bian (三变) (Zi Zhang)

three change

‘three changes’

(2) san jie (三戒) (Ji Shi)

three thing to guard against

‘three things to guard against’

(3) san wei (三畏) (Ji Shi)

three thing to be awed by

‘three things to be awed by’

(4) san you (三友) (Ji Shi)

three friend

‘three friends’

(5) san le (三乐) (Ji Shi)

three enjoyment

‘three enjoyments’

(6) san qian (三愆) (Ji Shi)

three error

‘three errors’

(7) san ji (三疾) (Yang Huo)

three failing

‘three failings’

(8) san zi (三子) (Xian Wen)

three scholar

‘three scholars’

(9) san yue (三月) (Yong Ye)

three month

‘three months’

(10) san yu (三隅) (Shu Er)

three corner

‘three corners’

San ‘three’ used as an event quantifier:

(1) Nanrong **san** fu Bai-gui, Kongzi yi qi xiong zhi zi qi zhi.

Nanrong three repeat Bai-gui Confucius with his brother POSS. daughter wife him

‘Nan Rong repeated the lines about Bai-gui three times. Confucius gave him the

daughter of his elder brother to wife.’

(Xian Jin)

(2) Taibo **san** yi tianxia rang. (Tai Bo)

Taibo three with throne offer

‘Thrice Taibo declined the kingdom.’

(3) Zengzi yue: wu ri **san** xing wu shen. (Xue Er)

Zengzi say I daily three examine my self

‘Zengzi said, “I examine myself three times daily.”’

(4) Lingyin Ziwen **san** shi wei lingyin, wu xi-se; **san**

Lingyin Ziwen three take office as minister not have happy countenance three

yi zhi, wu yun-se. (Gong Ye Chang)

resign it not have angry countenance

‘Lingyin Ziwen took office as the minister three times, and he did not look happy. He resigned from office three times, and he did not look angry.’

(5) Ji Wenzi **san** si erhou xing. (Gong Ye Chang)

Ji Wenzi three think and then act

‘Ji Wenzi acts after thinking three times.’

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