

Body Part Measures in Mandarin Chinese

by

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Abstract

This thesis mainly discusses a lexical category known by the name “classifier” or “measure” in Mandarin Chinese. According to Chinese descriptive grammars, which are followed in this thesis, there are at least two types of classifiers, nominal ones (classifiers for nouns) and verbal/ adverbial ones (classifiers for verbs). Within the category of classifiers, there is a subclass that is made of body part terms. Some of them are used for nouns (i.e., NCLs), some of them are used for verbs (i.e., VCLs), and many for both. The correlations between NCLs and VCLs are discussed in this thesis, especially the idea of how both types of classifier can provide delimitation to events. The semantic properties of VCLs and NCLs are explored in this thesis. The [Num+ CL+ N] construction is considered to be a NCLP (nominal classifier phrase) in this thesis and the [V+ [Num+CL]] construction is considered to be a VCLP. I will discuss VCLPs with respect to transitivity of verbs.

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Table of Contents

Abstract	1
Acknowledgement	2
List of Tables	6
Abbreviations	7
Introduction	8
1. Literature Review	14
2. Word Order in Mandarin Chinese	18
2.1 Introduction	18
2.2 Word order in Mandarin Chinese	18
2.3 BA construction and the sentence particle <i>de</i>	24
3. Measures (Classifiers)	26
3.1 Aikhenvald's typology of classifiers across languages	26
3.1.1 Noun classifiers	27
3.1.2 Numeral classifiers	27
3.1.3 Classifiers in possessive constructions	28
3.1.3.1 Possessed classifiers	28
3.1.3.2 Relational classifiers	28
3.1.3.3 Possessor classifiers	29
3.1.4 Verbal classifiers	29
3.1.5 Locative and deictic classifiers	30
3.1.5.1 Locative classifiers	30

3.1.5.2 Deictic classifiers	31
3.2 Introduction of measures	31
3.3 Classification of measures	38
3.3.1 NCLs	39
3.3.1.1 Classifiers, or individual measures (Mc)	39
3.3.1.2 Group measures (Mg)	39
3.3.1.3 Partitive measures (Mp)	40
3.3.1.4 Container measures (Mo)	41
3.3.1.5 Temporary measures (Mt)	42
3.3.1.6 Standard measure (Mm)	42
3.3.1.7 Quasi-measures	43
3.3.2 VCLs	43
3.3.2.1 Measures for verbs (Mv)	43
3.3.2.2 Classifiers specially associated with V-O constructions (Mc')	45
3.4 Body part measures	46
3.4.1 General introduction	46
3.4.2 Container measures	47
3.4.3 Surface measures	48
3.4.4 Measures for verbs	49
4. Cheng and Sybesma's count vs. mass-classifier theory	53
5. Syntax of Body Measures	61
5.1 Measures for nouns	61

5.2 Measures for verbs	61
5.2.1 Measures for verbs are not adverbs	62
5.2.2 Measures for verbs are not cognate objects	63
5.2.3 Matthews and Leung's (2001) theory and the derivational hypothesis	67
5.2.4 Interactions between VPs that contain CLs and transitivity	71
5.2.5 Evidence against the derivational hypothesis	81
5.2.6 Referential index	83
5.3 The nominalization function of measures for verbs	85
6. Conclusion	90
References	93

List of tables

Table 2.1 Features of VO and OV languages.

Table 3.1 Examples of different measures corresponding to different nouns

Abbreviations

DUR	durative aspect
CL	classifier
NCL	nominal classifier
VCL	verbal classifier
CLP	classifier phrase
CRS	current relevance
PFV	perfective aspect
PROG	progressive aspect
GEN	genitive
BA	ba (sentence particle)
NOM	nominalizer
EXP	experiential aspect
MM	modification marker
COC	cognate object construction
N _{obj}	noun as direct object
ART	article

Introduction

In modern Mandarin Chinese, there is a lexical category that is known as a “classifier”, “measure” or “measure word”. It is commonly considered that members of this category are obligatorily used between numerals and nouns, providing countability to entities or events, as in (1):

1. *yi tou niu*¹
one CL cow
'a cow'

In this phrase, *tou* is the measure of the noun *niu* ‘cow’. In this thesis, I am calling the whole phrase (i.e., the [numeral+ classifier+ noun] construction) an NCLP (nominal classifier phrase).

There is another type of classifiers in Mandarin Chinese which serve the verbs rather than nouns. In this thesis, they are called verbal classifiers or measures for verbs. The following example is an illustration of how they are used in a phrase.

2. *qu yi ci*
go one CL
'go once'

In this phrase, *ci* is the measure of the verb/event *qu* ‘go’. It means “time”. The verb

¹ In the examples in this thesis I will put the classifiers/measure words in italics and the gloss in small caps.

qu ‘go’ is delimited by the measure and becomes countable. In this thesis, I will call this kind of phrase a VCLP. It is not only because this VP contains a measure, but also because the measure is serving the verb.

Within the category of measures, there are some measures which are body part terms, i.e., hand, foot, mouth, etc.. They can be used as both measures for nouns and for verbs. Note that not all body part terms can be used as measures. A set of descriptive generalizations and examples is given below.

(i) Body part measures for nouns

a. Containers

Body part terms which are used as measures for nouns usually share the feature of being container-like. Within these structures, the numeral is always *yi* ‘one’ and the numeral can be replaced by the adjective *man* ‘full’. Generally speaking, this usage provides a metaphorical meaning. See the following examples:

3. *yi duzi huoqi*
 one STOMACH anger
 ‘full of anger (in one’s stomach)’

4. *man yan tongqing*
 full EYE compassion
 ‘full of compassion (in one’s eyes)’

In example (3), stomach is metaphorically being the container of the anger. In example 4, eye is metaphorically being the container of the compassion.

In Section 4.2, these types of body measure will be further discussed. They belong to the Container Measures category, according to Chao's (1963) classification, which I will discuss in Section 3. Besides the above body parts that are container-like, any nouns which are containers in Mandarin Chinese can be used as measures.

b. Surfaces

Other than being container-like, body parts that can be the surface for other objects (mainly liquids, such as sweat, water, or mud) to attach to can also be used as measures for nouns. See example below:

5. *yi lian han*
 one FACE sweat
 'sweat all over one's face'

Note that for this kind of measure, the numeral is always *yi* 'one' and usually *yi* 'one' denotes an "overall" meaning, or as Li and Thompson (1981:111) suggest "a _____ful of".

So example (3) can be interpreted as "a stomachful of anger", and example (5) can be interpreted as "a faceful of sweat".

This type of measure belongs to the Temporary Measures category, according to Chao's (1963) classification. Temporary measures are fundamentally nouns, they are sometimes used as measures to provide countability to objects. They differ from container measures in measuring the outside extent and only rarely the inside capacities. Body part measures that belong to this category will be further

explored in Section 4.3.

(ii) Body part measures for verbs

Body part terms can also be used as measures for verbs. They delimit events and make them bounded. In other words, measures for verbs serve an adverbial function. Generally speaking, all body part measures for verbs can also be used as measures for nouns. But they have more restrictions than those body part terms that can only be used as nominal measures. Body part terms which can be used as measures for verbs have the following constraints:

a. Visible

Body part terms which are used as measures for verbs have to be exterior, or, be visible. They can't be the body parts that are inside one's body. See examples below:

6. yao liang *kou*
bite two MOUTH

'bite (something) a few times'

7. *yao liang *ya*
bite two TEETH

*bite (something) a few times

b. Colloquial

Some body parts have different names in Mandarin Chinese. People choose the more colloquial ones as measures for verbs. For example:

8. ding yi *naodai*
 push up one HEAD

‘push up by head once’

9. *ding yi *tou*
 push up one HEAD

*push up by head once

Naodai is more colloquial than *tou* in Mandarin. It is likely for people to use *naodai* as the measure for verbs.

The examples below illustrate the same point:

10. *xigai* ‘knee’
 ding yi *xigai*
 push against one KNEE

‘push against something with one’s knee(s)’

11. *xiguanjie* ‘knee joint’
 *ding yi *xiguanjie*
 push against one KNEE JOINT

*push against something with one’s knee(s)

Xigai ‘knee’ is more colloquial than *xiguanjie* ‘knee joint’ in Mandarin Chinese, so that it can be used as a measure for verbs.

Besides the features above, body part measures for verbs and nouns also differ from each other in syntax. Body part measures for nouns obviously take head nouns

and denote an adjective-like function while body part measures for verbs sometimes do not take any head nouns (see example (6), (8) and (10)) and serve an adverbial-like function. This syntactic distinction between measures for nouns and verbs affects the structures of classifier phrases. And this is the major point that will be discussed in this thesis.

In Section 1, a literature review of the previous studies of classifiers/ measures, both inside and outside of China, will be given in chronological order. In Section 2, a discussion about word order in Mandarin Chinese (whether it is SVO or SOV) will be presented. Section 3 briefly introduces Aikhenvald's (2000) typology on classifiers across languages. The basic concept of measures/ classifiers in this thesis and Chao's (1968) classification of measures will be focused on, as well as a detailed introduction of body part measures. Section 4 focuses on Cheng and Sybesma's (2012) mass vs. count classifiers theory. Section 5 analyzes the syntactic structures of measures for both nouns and verbs. The issue of the absence of the head noun and the construal of VCLs as 'adverbial' rather than nominal is discussed in further details in this section. Section 6 concludes the thesis.

1. Literature Review

Classifiers/ measures are currently considered an important syntactic and semantic element in modern Mandarin Chinese. However, in Chinese descriptive grammars, classifiers were not considered to be an independent lexical category until the 1950s. Li (1924) names these words *liang-ci* ‘measure words’ and considers them as nouns which “express a quantity”. Wang (1943) says that measure words are “unit nouns” and they are actually a sub-category of nouns. Lü (1944) is the first to treat them as a separate category, calling them *danwei-ci* “unit words” and finally “measure words” in *Grammar Studies* (Lü, 1952). He treats these words as an independent lexical category based on the fact that measures are semantically bleached and can be used directly with a numeral, whereas true nouns need to have a measure word added before they can be used with a numeral. In 1954, Lü’s “measure words” was adopted as the official name for measures in China. This remains the most common term in use today (see He, 2000). As the founder of modern Chinese linguistics and the very first Chinese linguist who had a major impact on introducing Chinese languages to the western world, Chao (1957) first referred to classifiers/measures as ‘auxiliary nouns’. In a subsequent publication, however, he reanalyzed them as ‘measures’ (Chao, 1968). Chinese linguists had a hard time distinguishing measure words from other lexical categories mainly because most measures for nouns are derived from nouns. Wang (1994) points out that the grammatical meaning of measures is rooted in their original meaning when they are used as nouns. Wang (1994) thinks that some metrical measure words first appeared in Qin Dynasty (221-206 BC) and nouns started to be

used as measures in Han Dynasty (206 BC- 220 AD). Chappell and Peyraube (2011) support this theory, too. They also think almost every classifier is derived from a noun. Moreover, as Wang (1983) suggests, Western² languages do not have such categorical distinctions. Since analyzing Chinese languages using western linguistic theories had become a common trend among Chinese linguists, Wang reintegrated the concept of measures and nouns into a single class.

Li and Thompson (1981, Section 4.2.1) provide a very influential introduction of Mandarin Chinese. They discuss measure words (which they call “classifiers”) in a general way. Their examples can be divided into six classes, as follows:

- a. Nouns that denote measure themselves, basically all units of measurements. For example, *li* ‘mile’, *liang* ‘ounce’, *chi* ‘foot’.
- b. Classifiers that indicate aggregates. For example: *qun* ‘flock’, *dui* ‘pile’.
- c. Classifiers that indicate containers. For example: *ping* ‘bottle’, *xiang* ‘box’.
- d. Abstract classifiers (used before abstract nouns). For example, the word *ju* ‘sentence’ in *liang-ju-hua* ‘two sentences of speech’.
- e. Classifiers that denote an instance or occurrence of an event. For example, the word *chang* ‘arena’ in the phrase *yi-chang-dianying* ‘one play of film’.
- f. Classifiers that include nouns denoting either body parts or enclosed areas. They typically occur with *yi* ‘one’ with a special meaning, ‘a ____ful of’. For example, *lian* ‘face’ in *yi-lian-hui* ‘a faceful of dust’.

Li and Thompson’s (1981) classification is comprehensive but it doesn’t include

² Wang (1983). “Western languages” mainly refers to Indo-European languages.

the most general measure *ge* which has no concrete meaning itself yet can be used before any nouns. Besides Li and Thompson, Chao (1968), Cheng and Sybesma (1997, 1999, and 2012) also provide their ways of classifying measure words (See Section 3).

When it comes to the term classifier, most linguists outside of China³ automatically limit the extension of it to “measures for nouns” while Chinese linguists tend to think there are three kinds of measures: measures for nouns, measures for verbs and measures for time⁴. Matthews and Leung (2001), as well as Matthews and Yip (1999), have done a lot of work on measures for verbs, which they call “verbal classifiers”. They point out the fact that beyond Chinese descriptive grammars, it is hard for verbal classifiers to find a place in current typologies of classifier systems. Matthews and Leung’s point is valid because different linguists have different categorization and names for verbal classifiers. For example, Li and Thompson (1981) call these measures “adverbial phrases” and Zhou (1998) thinks they are “cognate objects”. Aikhenvald (2000) and Grinevald (2000) mention the term “verbal classifiers”, but what they are actually referring to is nominal classification which is marked on the verb, or by the verb. Chao’s (1968) classification of measures includes measures for verbs, but it is not further sub-categorized.

To sum up, because it has not been long since linguists, Chinese or not Chinese, started using modern linguistic theories to explore measures in Chinese, there are

³ For example, Li and Thompson (1981), Cheng and Sybesma (2012), Zhou (1998), Yang (2001).

⁴ See He (2000). In this paper, I’m only going to talk about measures for nouns and verbs. I’ll leave measures for time for further study.

still a lot of unknown facts about them, especially measures for verbs and measures for time. In this thesis, I will analyze the syntax and semantics of body part measures. The main reason that this thesis is restricted to body part measures is that they are primarily nouns but sometimes serve as classifiers. Although this phenomenon is quite common in current classifier typology, the usage of verbal body part classifiers is still rare across languages. Therefore, I would like to focus on body part measures in this thesis and explore their properties.

2. Word Order in Mandarin Chinese

2.1 Introduction

The purpose of this section is to establish the background for the whole thesis. The basic word order in Mandarin Chinese is discussed, so that in later sections, the positions classifiers occur in will be easier to identify. Moreover, I am going to briefly introduce the sentence particles *de* and *ba* because they are going to appear in examples in later sections.

2.2 Word order in Mandarin Chinese

Languages of the world have been shown by Greenberg (1963a) to fall into three main groups with respect to the order of the main constituents of a simple sentence. Given a simple transitive sentence with a subject and a direct object, the verb can occur before both the subject and the direct object, between them, or after them both. We can represent these three basic word-order types in a simple way as: VSO, SVO, and SOV.

The basic word order in Mandarin Chinese is SVO. Generally speaking, all the simple sentences follow the SVO order. See examples below:

12. Wo zai chi fan.⁵
 I DUR eat meal
 ‘I’m having a meal.’

⁵ All unattributed examples in this paper are my own. I’m a native Mandarin speaker from Northern China.

13. Wo you yi zhi mao.

I have one CL cat

‘I have a cat.’

However, according to Li and Thompson (1981), Mandarin is not an easy language to classify in terms of word order. They claim that both SVO and SOV orders are possible in Mandarin. The following table presents some of the features Greenberg claims correlate with the relative position of verb and object:

Table 2.1 Features of VO and OV languages.

VO Languages	OV Languages
Head/ Modifier	Modifier/ Head
Verb/ Adverb	Adverb/ Verb
Noun/ Adjective	Adjective/ Noun
Noun/ Relative clause	Relative clause/ Noun
Noun/ Possessive	Possessive/ Noun
Auxiliary/ Verb	Verb/ Auxiliary
Preposition/ Noun	Noun/ Preposition
No sentence-final question particle	Sentence-final question particle

The following examples (based on those presented by Li and Thompson) illustrate the SVO and SOV features in Mandarin Chinese:

SVO:

(i) SVO sentences occur:

14. Wo taoyan ta.
I hate 3SG
'I hate him/her.'

(ii) Prepositions exist:

15. Ta cong Xianggang lai le.
3SG from HongKong come CRS
'S/He has come from Hongkong.'

(iii) Auxiliaries precede the V:

16. Ta neng shuo Guangdong hua.
3SG can speak Guangdong speech
'S/He can speak Cantonese.'

(iv) Complex sentences are almost always SVO:

17. Wo kanjian ni mai-le ta-de shu-dian.
I see you buy-PFV 3SG-GEN book-store.
'I saw that you bought his/her bookstore.'

SOV:

(i) SOV sentences occur:

18. Zhangsan ba ta da le.
 Zhangsan ba 3SG hit PFV/CRS
 ‘Zhangsan hit him/her.’

(ii) Prepositional phrases precede the V, and postpositions exist (if we consider locative particles to be postpositions):

19. Ta zai chufang li chao mian.
 3SG at kitchen in fry noodle
 ‘S/he’s frying noodle in the kitchen.’

(iii) Relative clauses precede the head noun, and genitive phrases precede the head noun:

20. Hui jiang guoyu de nei-ge xiaohai shi wo-de nver.
 Know speak Chinese NOM that-CL child be I- GEN daughter
 ‘The child who knows how to speak Chinese is my daughter.’

(iv) Aspect markers follow the V:

21. Wo qu - guo Beijing.
 I go - EXP Beijing
 ‘I have been to Beijing.’

(v) Certain adverbials precede the verb:

22. Ta man bu zaihu.
3SG completely not care
'S/he is completely indifferent.'

23. Ni man-man-de zou.
you slow-slow-MM walk
'You walk slowly.'

Mandarin, then, is a language that has many SVO features as well as many SOV features.

Since there is slightly more evidence for SOV order over SVO, Li and Thompson conclude that Mandarin Chinese is more of an SOV language than an SVO language. They further claim that Mandarin Chinese is currently in the middle of an order drift from SVO to SOV, and has been undergoing this gradual process for a number of centuries. But other linguists have suggested that VO or OV word order seems to be affected by presence or absence of the BA construction. For example, Sun and Givon (1985) examine quantified text-based data and find Li and Thompson's conclusion rather implausible. Sun and Givon's statistical analysis shows that VO is the overwhelming order in text, in both the written and spoken languages, in both definite and indefinite object categories, at the level of 90% and over. Overall, the written language is 94% VO, and the spoken language 92% VO. And although Sun and Givon have no complete proof that OV order is in every case an emphatic/contrastive

discourse device, nevertheless all the evidence currently available points in that direction. Their conclusions thus support the special and marked status of Mandarin OV order. Moreover, Sun and Givon (1985:348) present the following reasons to argue for the unreliability of Li and Thompson's diachronic assumption:

- (a) In current Mandarin written and spoken texts, the distribution of VO and OV order is similar to other SVO languages, for example, Biblical Hebrew. If Mandarin had been changing from SVO to SVO for centuries as Li and Thompson assumed, the distribution would be different.
- (b) OV order does occur in Mandarin Chinese, but mostly with the presence of the object marker BA. As Sun and Givon (1985) point out, it is a typical phenomenon of having object markers and that leads to the fact the positions of V and O get switched in some VO languages (e.g., English, Biblical Hebrew, etc.). Also, OV order is normally used to show contrastive or emphatic meaning. So it cannot be a strong argument to suggest that Mandarin is changing to a VO language.
- (c) Erbaugh's (1982) study of acquisition of Mandarin by native speakers in Taiwan has discovered that first, BA construction is hard to manipulate for young children, and they barely use it. Second, the caretakers use less BA construction and OV order when they talk to children.

Given the convincing arguments provided by Sun and Givon (1985), I am going to take position that Mandarin has an SVO order.

2.3 BA construction and sentence particle *de*

As we can see from previous examples, the BA construction occurs when the sentence is in SOV order. The BA construction is widely discussed in the grammar of Mandarin (see Li and Thompson (1981), Zou (1993) for example). In a BA construction, the object of a verb is preceded by the function word *ba*, and the verb follows the object, forming an SOV sentence. Following examples are for illustration.

24. a. Wo chi le fan.
 I eat PFV meal
 ‘I had the meal.’

b. Wo ba fan chi le.
 I BA meal eat PFV
 ‘I had the meal.’

There is a slight difference in meaning between (24a) and (24b). (24b) can emphasize the subject *wo* ‘I’ or the object *fan* ‘meal’ if the speaker stresses either one or the other word. BA construction is a marked construction that involves emphasis or focus but is truth-conditionally equivalent to the same sentence without *ba*. Therefore, I am not going to distinguish them in this thesis.

The sentence particle *de* that has appeared many times in previous examples has multiple functions. It can be used as a modification marker following adjectives and adverbs (See Li and Thompson (1981), pp. 122). Sometimes it can be used between verbs and adverbs to suggest the modifying relation between them (See Li and Thompson (1981), pp. 629). *De* in this thesis serves these two functions is glossed as

MM (modification marker). Sometimes *de* is preceded by pronouns/ nouns to indicate possession (See Li and Thompson (1981), pp. 39). In this case, *de* is glossed as GEN (genitive). Moreover, Li and Thompson (1981) tend to think that *de* can also link two noun phrases and form an associative phrase. However, in this thesis, phrases like *yi-he* ‘a box of’ and *yi-pingzi* ‘a bottle of’ are considered as classifier phrases, so I am still going to gloss the *de* in most examples as MM because there is a certain modifying relation between the classifier and the noun that is being measured. However, the technical details of why some classifiers cannot take *de* will be left for further study.

3. Measures (Classifiers)

3.1 Aikhenvald's typology of classifiers across languages

Classifiers appear to be a common lexical category across languages. In this section I am going to give a brief introduction of Aikhenvald's (2000) typology of classifiers as an example to show the framework of classifiers. However, I am going to make one small addition to her work in terms of the category of "verbal classifiers".

Aikhenvald (2000) defines classifiers as the following:

"Classifiers are defined as morphemes which occur in surface structures under specifiable conditions, denote some salient perceived or imputed characteristics of the entity to which an associated noun refers, and are restricted to particular construction types known as classifier constructions. Classifier constructions are understood as morphosyntactic units which require the presence of a particular kind of a morpheme, the choice of which is dictated by the semantic characteristics of the referents of the head of a noun phrase."

(Aikhenvald, 2000, pp. 13)

According to the definition above, we can see that Aikhenvald (2000) limits the extension of classifiers to elements that only occur in noun phrases, therefore, her definition fits those classifiers which are called "nominal classifiers" or "measures for

nouns” in this thesis. Aikhenvald (2000) categorizes classifiers into five classes. They are namely “noun classifiers”, “numeral classifiers”, “classifiers in possessive constructions”, “verbal classifiers” and “locative and deictic classifiers”. Here I am going to briefly introduce each category with quoted examples.

3.1.1 Noun classifiers

Noun classifiers categorize nouns according to their animacy, shape, size and structure. See the example below in Yidiny, an Australian language.

25. *bama* *wajuja*
 CL: PERSON man
 ‘a man’

(Dixon 1982, pp. 192, as cited in Aikhenvald (2000:2.1.3))

In (25), *bama* is a noun classifier by Aikhenvald’s (2000) definition.

3.1.2 Numeral classifiers

Numeral classifiers normally precede nouns and follow numerals or quantifiers. They are the most commonly recognized type of classifier system. Note that classifiers/ measure words which are used to measure/ classify nouns in Mandarin Chinese all belong to this category. See the example below in Mandarin.

28. na *me-qu* yaqona
 ART⁶ CL:DRINKABLE-my kava

‘my kava’ (which I intend to drink)

(Aikhenvald, 2000:3.1.5)

29. na *no-qu* yaqona
 ART CL:GENERIC-my kava

‘my kava’ (that I grew, or that I will sell)

(Aikhenvald, 2000:3.1.6)

Me is the relational classifier in (28), similarly *no* is the relational classifier in (29).

3.1.3.3 Possessor classifiers

Possessor classifiers categorize the possessor in a possessive construction. See the following example in *Dâw*, a language spoken on the Brazil/ Columbia boarder.

30. yud *dâw* *tôg-ěj*
 clothing human daughter-CL: ANIMATE. POSSESSOR

‘The clothing is girl’s; the girl’s clothing’

(Aikhenvald, 2000:139.5.45)

3.1.4 Verbal classifiers

Aikhenvald (2000) defines verbal classifier as classifiers which appear on the verbs but categorize nouns according to their shape, consistency, size, structure, position and animacy. Note that the verbal classifiers Aikhenvald (2000) discusses are completely different from “verbal classifiers” or “measures for verbs” in this thesis.

Aikhenvald (2000) names these classifiers as verbal classifiers but they actually serve

⁶ ART stands for “article”, as Aikhenvald’s (2000) glosses.

the nouns instead of verbs. See the following example in Waris, a Papuan language.

31. *sa ka-m put-ra-ho-o*
 coconut 1SG-to VCL: ROUND-GET-BENEFACT-IMPERATIVE

‘Give me a coconut’ (literally translated as ‘coconut to-me round.one-give’)

(Aikhenvald, 2000:3.1.7)

As we can see from (31), the VCL *put-* appears with the verb “get” but it still serves the noun *sa* ‘coconut’. It is different from classifiers that are being called “verbal classifiers” in this thesis, which in fact provide countability to verbs, therefore serve the verbs.

3.1.5 Locative and deictic classifiers

3.1.5.1 Locative classifiers

These types of classifiers occur in locative noun phrases and they are chosen based on the semantic features of the nouns. See the following example from Palikur, an Arawak language from Brazil.

32. *pi-wan min*
 2SG-arm CL: on+VERTICAL

‘on your (vertical) arm’

(Aikhenvald, 2000:3.1.8)

3.1.5.2 Deictic classifiers

Deictic classifiers often appear with deictics and articles yet they still categorize nouns. See the following example from Mandan, a Siouan language.

33. *dε-mãk*

this-DEICTIC.CL: LYING

‘this one (lying)’

(Aikhenvald, 2000:177.7.8)

In this section, we have seen a brief introduction Aikhenvald’s (2000) typology on classifiers across languages. It is noteworthy that all the “nominal classifiers”/ “measures for nouns” in this thesis belong to the “numeral classifiers” category by Aikhenvald’s (2000) definition. Because of the fact that Aikhenvald’s (2000) typology only includes classifiers that serve nouns, the “verbal classifiers”/ “measures for verbs” in Mandarin Chinese that being focused on in later sections in this thesis do not fit in any category in Aikhenvald’s (2000) typology. This in fact suggests the unique nature of these classifiers.

3.2 Introduction of measures in Mandarin Chinese

In modern Mandarin Chinese, words known as classifiers or measure words are obligatorily used along with numerals to define the quality of a given object, or with demonstratives such as *zhe* "this" and *na* "that" to identify specific objects. See examples below:

34. *yi ge ren*
 one CL person
 ‘one person’

35. *zhe ge ren*
 this CL person
 ‘this person’

Some measures do not have any meaning by themselves and are always used in conjunction with a noun or another content word. However, some other measures, such as body part measures, which are going to be discussed in this thesis, as most classifiers in Mandarin, are derived from nouns. See examples below:

36. *wo you liang zhi jiao.*
 I have two CL foot
 ‘I have two feet.’

37. *wo nong le yi jiao ni.*
 I get PFV one FOOT mud
 ‘I got a footful of mud.’

In example (36), *jiao* ‘foot’ is a noun and preceded by the classifier *zhi*. In example (37) *jiao* ‘foot’ becomes the classifier of *ni* ‘mud’.

Measures in Mandarin that are used to provide countability to nouns (as in example (34)-(35)) are well-known in modern linguistics. However, most Chinese linguists (see Lü, 1982; He, 1991; and Zhu, 1997, for example) agree on the

assumption that there are two kinds of measures, nominal measures and verbal measures. In Chinese descriptive grammars, nominal measures serve to measure nouns while verbal measures serve to delimit verbs/events. In this thesis, I will call the [Num+ CL+ N] construction an NCLP standing for nominal classifier phrase, and the [V+ Num+ CL] constructions a VCLP⁷ as abbreviation for verbal classifier phrase. See the example below:

38. *qu yi tang*
 go one CL
 ‘go once’

In the VCLP in (38), we see that the action/ event of *qu* ‘go’ is delimited by the measure *tang*. The word *tang* here in the phrase can be interpreted as “time”. There are other measures that express the same meaning as *tang* “time”, for example, *ci*, *hui*, *bian*, ‘time’ etc.. These measures no longer have any independent meaning and can be used along with almost any verb.

Nominal and verbal measures cannot be randomly picked to use in phrases. There are certain selectional relations between the measures and the things they are modifying or delimiting. The following table lists several examples of measures for nouns:

⁷ VCLPs do not include [V+ [Num+ CL+ \emptyset]] constructions as I will show in Section 5.2.4.

Table 3.1 *Examples of different nominal measures corresponding to different nouns*

Measure	Selected Noun	Semantic Feature
<i>Zhang</i>	paper, table, etc.	flat objects
<i>Zhi</i>	dog, cat, tiger, etc.	animals
<i>Tai</i>	computer, AC, TV, etc.	machines
<i>zuo</i>	tower, mountain, etc.	tall and large objects

Within these categories there are further subdivisions. Take animals for example, while most animals take *zhi*, domestic animals (e.g., cow, sheep, etc.) take *tou*, long and flexible animals (e.g., snake, fish, etc.) take *tiao*, and horses take *pi*.

Measures for nouns also vary in how specific they are; some are basically only used with one item, such as *cu* for flowers, *hu* for family; whereas others are much less restricted. For example, *tiao* can be used both for long and flexible animals and abstract items like messages. There is not a one-to-one relationship between nouns and measures, that is, the same noun may be selected by different measures in different situations.

Greenberg (1972) and others see measures for nouns as performing individuation of the nominal referent. Such individuation is prerequisite for counting/ quantification.

Bisang (1999) sketches this relationship as follows:

Classification > Identification > Individualization

↓

Counting

Nominal classifiers provide countability to nouns as the above sketch shows. These classifiers delimit nouns and make them no longer generic. Here a noticeable phenomenon in Mandarin has to be discussed. As Tieu (2007) points out, many verbs that are commonly used intransitively in English, appear with generic objects in Mandarin Chinese. The object in the VO construction, henceforth N_{obj} , gets a non-referential reading⁸. See examples below:

39. Ta chang le ge.
 3SG sing PFV song
 ‘S/he is singing.’

40. Wo chi le fan.
 I eat PFV meal
 ‘I’m eating.’

In (39) and (40), generic bare noun objects are following the verbs. However, these object nouns do not delimit. The VO constructions in the above sentences are activities. One way to delimit the event is to add a nominal classifier to the N_{obj} . As Cheng and Sybesma (1999: 528) point out, bare nouns in Mandarin Chinese are indefinite. However, nouns become definite if they are preceded by classifiers. See examples below:

⁸ See more in Section 5.2.6.

41. Ta chang le yi *shou* ge.
 3SG sing PFV one CL song

‘S/he sang a song.’

42. Wo chi le yi *dun* fan.
 I eat PFV one CL meal

‘I had a meal.’

As we can see from the above sentences, when the N_{obj} is delimited by a classifier, the event is also delimited.

Following Bisang’s hypothesis, Matthews and Leung (2001) suggest the following as a semantic function of measures for verbs in parallel:

Classification > Delimitation



Counting

That is, given an unbounded predicate, the event can be bounded by addition of a measure phrase which delimits the whole event:

43. a. zou

walk (unbounded)

b. zou liang *tang*

walk two CL

‘walk two times’ (bounded)

The above example shows another way to delimit an event, that is, by adding a VCL to the verb. The VCL construction measures out the event by providing telicity. In example 43, the verbal event is transformed from an atelic to a telic one because of its delimitation by the verbal classifier phrase *liang tang* ‘two times’. VCL constructions emphasize the number of times an action has been done.

We have seen that unbounded predicates can be delimited in two ways: by providing an extent (i.e., adding a NCL phrase to the bare N_{obj}), e.g., She sang a song; or by counting iterations (i.e., adding a [NUM+VCL] construction to the verb), e.g., walk two times. VCLs delimit in the second way. Adding a NCL phrase to the bare N_{obj} to provide an extent to the action, as Hopper and Thompson (1980) point out, is to make a non-individuated patient become an individuated one so that an activity becomes a specific event. Hence the aspect of the VP changes from atelic to telic. Moreover, an action can be transferred to an individuated patient more effectively than to a non-individuated one.

Matthews and Leung (2001) have applied the same process of using VCLs to delimit events in Cantonese and Thai. They point out that this phenomenon illustrates Tenny’s (1989) hypothesis:

“Internal arguments can serve to construe the aspectuality of events, whether the syntactic category of internal arguments is a NP, or a verbal classifier phrase.”

(Matthews and Leung, 2001, pp.454)

Matthews and Leung (2001) suggest that in Cantonese and Thai (also in Mandarin), VCLs can even make atelic verbs bounded. They take the verb “sleep” as an example

to illustrate this strategy. See the corresponding phrase in Mandarin below:

44. shui liang *jiao*
 sleep two CL
 ‘sleep two turns’

The CL in this phrase is derived from a verb *jue*, it originally means “to wake”. In the above phrase it assigns an endpoint to the activity sleeping and makes it telic. Since the CL *jiao* makes the activity of sleeping become countable, I would assume that it is an iteration-delimiter. In modern Chinese, *jiao* no longer has a concrete meaning. It is either a complement of the compound *shuijiao* ‘sleep’ or the VCL for the verb *shui* ‘sleep’.

The two different ways of delimiting events also lead to the issue of categorizing VCLs and NCLs into count vs. mass classifiers (i.e., sortal vs. mensural classifiers). I will discuss this later in Section 4.

Besides the measuring/delimiting function that is shared by both measures for nouns and for verbs, the parallel between the two can be further illustrated by the way both assign a boundary to the resulting entity/event.

Beyond roughly dividing measures into VCLs and NCLs, there are different further classifications of measures in Mandarin. In the next section, I’m going to present Chao’s (1968) since it is more comprehensive than others’.

3.3 Classification of Measures

Chao classifies measures into nine categories. I am going to divide all the measures

into NCLs (nominal classifiers, i.e., measures for nouns) and VCLs (verbal classifiers, i.e., measures for verbs) first, then introduce them based on Chao's further classification with my own descriptions and examples.

3.3.1 NCLs

3.3.1.1 Classifiers, or individual measures (Mc)

Each individual noun has its own classifier but there is a general classifier *ge* which can appear with almost all the individual nouns, as shown below:

45. yi *ba/ge* yizi
 one HANDLE/CL chair
 'a chair'

46. liang *zhan/ge* deng
 two DISH/CL lamp
 'two lamps'

Ge does not have any concrete meaning by itself. It is a pure function word that appears between the numeral and the noun.

3.3.1.2 Group measures (Mg)

A group measure is used for a group or collection of individuals. Group measures can be reduplicated to express the meaning of 'many' or 'several', as shown in the (b) examples below.

47. (a) yi *shuang* xie
 one PAIR shoe
 ‘one pair of shoes’

(b) yi *shuang shuang* xie
 one PAIR PAIR shoe
 ‘several/many pairs of shoes’

48. (a) yi *qun* yang
 one FLOCK sheep
 ‘one flock of sheep’

(b) yi *qun qun* yang
 one FLOCK FLOCK sheep
 ‘several/many flocks of sheep’

3.3.1.3 Partitive measures (Mp)

Partitive measures are similar to group measures except that very few of them can be reduplicated. Semantically, they are the opposite of group measures, and represent portions of things instead of groups of them.

49. yi *fen* liwu
 one PORTION/SHARE gift
 ‘a gift’

50. yi *ba* kuaizi
 one HANDFUL/BUNCH chopstick
 ‘a bunch of chopsticks’

3.3.1.4 Container measures (Mo)

Container measures are nouns which are containers used as measures and can always take *de*⁹ before a following noun.

51. yi *he* (de) huochai
 one BOX MM match
 ‘a box of matches’

52. yi *pingzi* (de) shui
 one BOTTLE MM water
 ‘a bottle of water’

In the introduction part of this thesis, we have established some semantic features of body part measures. One of the features is to be container-like. For example, body part terms like *duzi* ‘stomach’, *yan* ‘eye’ and *zui/ kou* ‘mouth’ can be used as measures for nouns to provide countability to objects that may be (metaphorically) contained by these body parts. These body part measures belong to the Mo category. More examples will be shown in Section 4.

⁹ See Section 2.2.

3.3.1.5 Temporary measures (Mt)

Temporary measures are like container measures in being primarily nouns and used directly after determinatives to measure the amount of things. They differ from container measures in measuring the outside extent and only rarely the inside capacities. They take *de* before a following noun more frequently than do container measures.

53. yi *lian* (de) han
 one FACE MM sweat
 ‘a faceful of sweat’

54. yi *shou* (de) you
 one HAND MM oil
 ‘a handful of oil’

As the above examples show, there are a lot of body part terms being used as temporary measures. In the introduction we saw that surface-like body part terms (e.g., *shou* ‘hand’, *jiao* ‘foot’, *lian* ‘face’) can be used as measure words to express the amount of a substance attached to a surface. These body part measures clearly belong to the Mt category. See further discussion in Section 3.4.

3.3.1.6 Standard measures (Mm)

Standard measures are units of measurement.

55. yi li lu
 one 1/3 MILE road
 ‘1/3 mile road’

56. yi gongjin rou
 one KILOGRAM meat
 ‘a kilogram of meat’

3.3.1.7 Quasi-measures

Quasi-measures are measures in that they follow numerals and other determinatives directly but not followed by nouns.

57. yi xueqi
 one TERM
 ‘one term’

58. yi beizi
 one ONE’S LIFETIME
 ‘one’s lifetime’

3.3.2 VCLs

3.3.2.1 Measures for verbs (Mv)

Measure for verbs provide extent to events or count iterations of an action. They may be cognate objects¹⁰ expressing the action of the verb (example (59)), or the

¹⁰ The issue of whether measures for verbs are in fact cognate objects will be discussed in Section 4.2. Here I am using Chao’s (1963) classification.

parts of the body which perform certain actions (example (60)), or the instruments with which the actions are performed (example (61)).

59. kan yi kan
look one LOOK
'take a look'

60. ti yi jiao
kick one FOOT
'kick once'

61. da yi qiang
hit one GUN
'shoot once'

There are a few frequently used measures for verbs in Mandarin. They do not bear any concrete meaning (except *ci* 'time', which still carries a fairly abstract meaning).

See examples below:

62. ku yi chang
cry one CL
'cry once'

63. qu yi ci
go one time
'go (somewhere) one time'

64. lai yi hui
 come one CL

‘come once’

65. tiao yi xia
 jump one CL

‘jump once’

All of the measures above are measures for verbs. They delimit the verb/event and provide countability to both intransitive and transitive verbs.

3.3.2.2 Classifiers specially associated with V-O constructions (Mc’)

These classifiers are associated with transitive verbs (i.e. verbs that take a direct object). They differ from measures for verbs (Mv) in that measures for verbs (Mv) can be used with intransitive verbs also¹¹.

66. shuo yi ju hua
 say one SENTENCE speech

‘say one sentence of speech’

67. da yi shou hao pai
 play one HAND good card

‘play a good game of cards’

In (66), *ju* ‘sentence’ can be understood as the classifier of the verb *shuo* ‘say’ or the

¹¹ Some measures belong to both Mc’ and Mv categories. The categorization can be contextual.

V-O construction *shuo-hua* ‘say speech’. Similarly, in (67), *shou* ‘hand’ can be understood as the classifier of the verb *da* ‘play’ or the V-O construction *da-pai* ‘play cards’. The ambiguity will be further discussed in Section 5.2.4.

3.4 Body part measures

3.4.1 General Introduction

In this section I am going to focus on body part measures, including how they are categorized and why they are not cognate objects. As mentioned in the previous sections, there are measures in Mandarin Chinese which are body part terms such as, *shou* ‘hand’, *jiao* ‘foot’, *lian* ‘face’. They can be roughly categorized into two types: measures for nouns and measures for verbs. Measures for nouns provide countability to objects and delimit them. Measures for verbs bound events/ actions and make them telic. According to Chao’s (1968) classification, these measures typically fall into four classes: classifiers associated with V-O (Mc’), measures for verbs (Mv), container measures (Mo) and temporary measures (Mt). Generally speaking, temporary measures are surface measures because they are surface-like and measure the substance attached to them. They and container measures are measures for nouns, measures for verbs are Mvs and Mc’s. But some Mc’s can be both measures for nouns and verbs. This will be further explained in Section 5.2.

In this section I am going to use Chao’s (1968) examples of body part measures and translate them into my own words due to the fact that Chao translates most of the Mv and Mc’ phrases as NPs but in my opinion they are VPs.

3.4.2 Container measures

Container measures are containers that can be used as units of objects. They are derived from nouns and they bear the grammatical function of providing countability to the objects they contain. Within the extent of body part terms, container measures are limited. Only body parts that can “contain” objects can be used as container measures. See examples below.

68. *yi kou pingguo*
 one MOUTH apple
 ‘a biteful of apple’

69. *yi duzi huoqi*
 one STOMACH anger
 ‘a stomachful of anger’

70. *yi naodai zhuyi*
 one HEAD idea
 ‘a headful of ideas’

Example (68) is a typical container measure phrase. The body part *kou* ‘mouth’ is the measure of *pingguo* ‘apple’ and indicates the amount of it (a biteful). In this phrase the numeral can be changed to any other number. Example (69) and (70) are metaphorical. *Duzi* ‘stomach’ is believed to be the “container” of *huoqi* ‘anger’ while *naodai* ‘head’ is the “container” of *zhuyi* ‘idea’. In these two phrases the numeral cannot be changed. Sometimes in this type of phrase, the numeral is replaced by the

adjective *man* ‘full’, see the following example.

71. *man yan leishui*
 full EYE tear
 ‘eyeful of tear’

3.4.3 Surface measures

Like container measures, temporary measures are associated with nouns and can also be nouns themselves. As measures they identify the amount of things, while as nouns they can be modified and measured by their own measures. There’s a unique restriction on these types of measures in that they can only appear with the numeral *yi* (one)¹². The resulting phrase has the sense of “all over”, as shown below.

72. *yi shenzi xue*
 one BODY snow
 ‘a bodyful of snow/ snow all over one’s body’

73. *yi tou bai fa*
 one HEAD white hair
 ‘a headful of white hair/ white hair all over one’s head’

74. *yi lian han*
 one FACE sweat
 ‘a faceful of sweat/ sweat all over one’s face’

¹² Since sometimes these measures can also be preceded by the adjectives *man* ‘full of’ or *hun* ‘all over’, one question might be asked is that if the word *yi* ‘one’ in these phrases is in fact an adjective or a numeral. In this thesis, I am going to follow Chao’s (1963) classification and treat *yi* ‘one’ as a numeral.

75. *yi* *bizi* *hui*
 one NOSE dust

‘a noseful of dust/ dust all over one’s nose/ got rebuffed’

76. *yi* *shou* *you*
 one HAND oil

‘a handful of oil/ oil all over one’s hand’

77. *yi* *jiao* *ni*
 one FOOT mud

‘a footful of mud/ mud all over one’s foot’

In above examples, all the body part words are the measures of the nouns follows them. With the numeral *yi* (one), they all express the meaning of “full of” or “all over”.

3.4.4 Measures for verbs

There are two types of measure for verbs. According to Chao (1968), classifiers associated with V-O have to occur with verb-object constructions while the other type occur only with verbs (see Section 3.5). I am putting these two types together for better comparison and contrast.

a) Classifier associated with V-O

78. *shuo* *yi* *kou* *hao* *yingwen*
 speak one MOUTH good English

‘speak good English’

79. *xie yi shou hao zi*
 write one HAND good calligraphy
 ‘write good calligraphy’

In (78), *kou* (mouth) is used as the classifier of the V-O construction *shuo-yingwen* ‘speak English’. In (79), *shou* (hand) is used as the classifier of the V-O construction *xie-zi* ‘write calligraphy’. This type of measure is basically separating a VO compound and delimiting the activity by adding a [Num+NCL] construction to the O. We have seen this phenomenon in Section 3.2. One thing that is worth mentioning is verbs in these structures are highly transitive.

b) Measures for verbs¹³:

80. *ti yi jiao*
 kick one FOOT
 ‘kick once’

81. *shan yi bazhang*
 slap one PALM
 ‘slap once’

82. *da yi quan(tou)*
 hit one FIST
 ‘hit once’

¹³ Chao (1968) translates these phrases as noun phrases but I am translating them as verb phrases since tense/aspect can be added to the verbs in these phrases.

83. kan yi yan
 look one EYE
 ‘take a look’

84. yao yi kou
 bite one MOUTH
 ‘take a bite’

In each case, the body part is the measure of the verb. These verbs can be transitive but with a non-overt object, or they can be intransitive. This will be further discussed in Section 5.2.4.

In this section, we have seen a number of examples of body part measures for nouns. They can be used as measures quantify objects that are contained (see example (68)-(71)) or attached (see example (72)-(77)) by body parts, sometimes these body part measure phrases convey a metaphorical meaning (see example (69), (70) and (75)). These measures are normally preceded by the numeral *yi* ‘one’. Some body part measures, for example, *jiao* ‘foot’, *shou* ‘hand’ and *yan* ‘eye’ can be preceded by the numeral *liang* ‘two’. The selection of numeral is simply decided by how many of that body part a person has. The measure *zui/ kou* ‘mouth’, however, can be preceded by almost any numeral. Because it is used as a unit to measure the amount of food (or any object that is contained by the mouth). Body part measures can also be used as measures for verbs as we can see from the above examples. These measures provide extent to events and delimit them. Most verbs associated with body part measures are

usually highly transitive. Because body part measures for verbs appear in the position that is normally filled by objects (given the SVO word order in Mandarin), they are considered as “cognate objects” by some linguists. This issue will be discussed in the Section 5.2.

4. Cheng and Sybesma's (1997) count vs. mass classifier theory

Chao's classification covers almost every measure word in Mandarin Chinese, it is comprehensive and detailed. But there is a distinction that he does not make very clearly, which has been discussed by Cheng and Sybesma (1997, 1999 and 2012). They point out that classifiers/ measures are not all the same. Following Tai and Wang (1990) and Croft (1994) among others, they make a distinction between classifiers that create a unit of measure and the ones that name the unit in which the entities denoted by the noun come naturally. They call the first type massifiers (short for mass-classifiers) and the second type count-classifiers. Cheng and Sybesma (1997, 2012) suggest that mass-classifiers create a unit of measure while count-classifiers simply name the unit of natural semantic partitioning.

Cheng and Sybesma (2012) employ two tests to distinguish massifiers and count classifiers: first, their co-occurrence with *de* (the modification marker), if the measure can occur with *de*, then it is a massifier, if the measure cannot occur with *de*, it is a count-classifier.; second, their co-occurrence with adjectives such as *da* 'big' and *xiao* 'small', if the measure can occur with adjectives, it is a massifier. Examples below show how these tests work.

Measures + *de*:

85.	<i>yi shuang</i>	(* <i>de</i>)	<i>xie</i>
	one PAIR	*MM	shoe

*'one pair of shoes'

86. yi *qun* (de) yang
 one FLOCK MM sheep
 ‘one flock of sheep’

Adjective + measures:

87. yi *da *shuang* xie
 one big PAIR shoe
 *‘one big pair of shoes’

88. yi da *qun* yang
 one big FLOCK sheep
 ‘one big flock of sheep’

We can conclude that according to the tests, *shuang* ‘pair’ is a count-classifier because it can co-occur with neither the modification marker *de* nor the adjective *da* ‘big’. In the meantime, the fact that *qun* ‘flock’ can co-occur with both *de* and *da* ‘big’ makes it a massifier.

Let us now consider examples with measures that are containers but not body parts.

89. yi *tong* (de) shui
 one BUCKET (MM) water
 ‘a bucket of water’

90. yi da *tong* shui
 one big BUCKET water
 ‘a big bucket of water’

91. yi *wan* (de) fan
 one BOWL (MM) rice
 ‘a bowl of rice’

92. yi da *wan* fan
 one big BOWL rice
 ‘a big bowl of rice’

From the above examples we can see that the results of the tests on measures (*tong* ‘bucket’, *wan* ‘bowl’) that are containers but not body part terms show that they are massifiers.

Cheng and Sybesma’s tests become problematic when we apply them to body part measures. See examples below:

93. yi *lian* (de) han
 one FACE (MM) sweat
 ‘a faceful of sweat’

94. yi *da *lian* han
 one *big FACE sweat
 *‘a big faceful of sweat’

95. *yi jiao* (de) *ni*
 one FOOT (MM) mud

‘a footful of mud’

96. *yi *da jiao ni*
 one *big FOOT mud

*‘a big footful of mud’

As we can see from above examples, body part measures *lian* ‘face’ and *jiao* ‘foot’ can co-occur with the modification marker *de* but they cannot co-occur with adjectives. According to Cheng and Sybesma’s tests, the results we have got from the above examples contradict with each other. So there is no way for us to tell if the body part measures are massifiers or count-classifiers by performing the tests only.

If we stick to the definitions of count-mass classifiers that Cheng and Sybesma (1997, 1999) give, that mass-classifiers create a unit of measure while count-classifiers simply name the unit of natural semantic partitioning, it is obvious that body part measures are mass-classifiers. Body part measures create a unit of measure for objects that do not appear in these units naturally. For example, *ni* ‘mud’ may be selected by *dui* ‘pile’ naturally, but not by *jiao* ‘foot’. Body part terms are not units of natural semantic partitioning, they are used as classifiers to create temporary units. The reason that they cannot be modified by adjectives like *da* ‘big’ or *xiao* ‘small’ is, I would assume, because body parts do not vary in sizes as much as other mass-classifiers. For instance, in example (86), the mass-classifier *qun* ‘flock’ can be

as small as a group of three sheep or as big as a group of thirty sheep. However, body parts do not vary that much.

The distinction between mass and count classifiers that Cheng and Sybesma (1997) make is not an isolated case in nominal classification studies. Matthews and Yip (1999) also make a distinction between “sortal” and “mensural” classifiers. They define sortal classifiers as words that classify a noun in terms of its intrinsic property while mensural classifiers specify a certain quantity of a mass noun, or some aggregation of countable nouns. From the description we can see that “sortal classifier” is equivalent to “count classifier” and “mensural classifier” is the same as “mass classifier”. To clarify the terminological confusion, Matthews and Yip (1999) also provide a short list of equivalent pairs of terms:

- Unit vs. metric classifiers (Noss, 1964)
- Sortal vs. mensural classifiers (Lyons, 1977)
- Classifiers vs. measures (Tai, 1992)
- Count classifiers vs. mass classifiers (Cheng and Sybesma, 1997)

As I have mentioned in previous sections, most western linguists use the term “classifier” to refer to nominal classifiers and often overlook the verbal classifiers. In fact, VCLs can also be categorized into count vs. mass. Verbal classifiers that have no other meaning than “time” are count-classifiers, while verbal classifiers that are primarily nouns, for example, body part VCLs, are mass-classifiers. This is because these VCLs create new activities but also delimit in that they provide sense of “one time”. I am making this distinction based on Cheng and Sybesma’s (1997) definition

of count and mass classifiers.

See following examples for illustration:

Count-classifiers (simply name the unit of natural semantic partitioning):

97. *qu yi ci*
go one CL
'go once'

98. *kan yi xia*
look one CL
'take a look'

In the above two examples, *ci* and *xia* do not have any concrete meaning, they are only function words that name the unit of the times the actions have been taken.

Mass-classifiers (create a unit of measure):

99. *kan yi dao*
chop one KNIFE
'chop (with a knife) once'

100. *wa yi shao*
dig one SPOON
'dig (with a spoon) once'

As we can see from (99) and (100), *dao* 'knife' and *shao* 'spoon' are the classifiers of the action chopping and digging. They are primarily nouns in Mandarin and they are

the instruments people use to take the above actions. Actions like chopping or digging do not necessarily appear in the unit of knife or spoon, these two classifiers are creating units of measure. Thus they are mass-classifiers. As for the verbal classifiers that are being discussed in this thesis, body part classifiers, they are all mass-classifiers.

If we apply the idea of count vs. mass or sortal vs. mensural to a bigger scope, that is, NCLs vs. VCLs, we find that NCLPs are count (sortal) when they are used as objects of verbs and VCLPs are mass (mensural). This conclusion is made based on the ways they delimit events. As mentioned in Section 3.2, VCLPs delimit by counting iterations of events while NCLPs delimit by providing extent to events. According to the previous discussion of mass vs. count, we see that count nominal classifiers count objects by individuals and mass classifiers count objects by groups/aggregation. This fact matches the ways that NCLPs and VCLPs delimiting events.

For example:

101.qie yi ge yangcong
 chop one CL onion
 ‘chop an onion’

102.wa yi ge dong
 dig a CL hole
 ‘dig a hole’

Compare the (99) and (100) to (101) and (102), we can see that events can be

bounded by adding one direct object (NCLP). But with mass VCLs, it's creating a new activity and giving an iteration.

To sum up, in this section, we have explored the basic concept of measures. The similarities and differences of NCLs and VCLs have been shown. Most importantly, we see how NCLPs and VCLPs delimit events in two different ways. After introducing Chao's (1968) general yet comprehensive classification of measures, Cheng and Sybesma's (1999) discussion of mass vs. count classifiers adds a new dimension to the view of measures. According to their definition, all body part measures are mass classifiers because they create units of measures. After applying the definition to VCLs, we see that VCLs can be categorized into mass and count too. Moreover, the comparison between the way NCLPs and VCLPs delimit events shows that NCLPs delimit in a more "mass-classifier" way and VCLPs delimit in a more "count-classifier" way. The idea of mass vs. count now is not limited within the extent of nominal classifiers. It has become a way to analyze more grammatical phenomena in Mandarin Chinese.

In the next section, syntax of body part measures (nominal and verbal) will be discussed.

5. Syntax of Body Measures

5.1 Measures for nouns

Measures for nouns (NCLs) have been widely discussed by many linguists. When most western linguists talk about “classifiers” in Mandarin Chinese, they mainly refer to measures for nouns (See for example, Cheng and Sybesma, 1999, Li and Thompson, 1981, Yang, 2001, and Tang, 1990.). The syntactic structure of measure phrases has also been discussed by many linguists (see, for example, Matthews and Leung, 2001, Yang, 2001, Cheng and Sybesma, 1999, and Tang, 1990). Some of them analyze the [NUM+CL] combination as a measure phrase (for example, Matthews and Leung, 2001, Matthews and Yip, 1999). Cheng and Sybesma (1998), however, prefer to analyze [CL+N] as one constituent. In this thesis, I am going to call the [NUM+CL+N] construction an NCLP without taking a position on the internal structure. Since NCLPs are easy to define and the surface structure of them is fairly straight forward, I will not talk about them alone. However, their appearance within VPs is going to be discussed in Section 5.2.4.

5.2 Measures for verbs

As for measures for verbs, the situation is much more complicated. Different linguists have different opinions about these words. For instance, Matthews and Leung (2001) call them “verbal classifiers”; Chao (1968) thinks they belong to the big category of “measures” and further classifies them into two types (Mc’ and Mv). But meanwhile, Li and Thompson (1981) suggest that phrases with measures for verbs are “adverbial phrases”. Moreover, Zhou (1998) and Chao (1957) view them as “cognate

objects”. In previous sections, measures for verbs have been discussed from various perspectives. The general situation of how they are being used in phrases and their semantic function of providing extent to events and counting the iterations have been shown, too. In the following sections, I am going to present my argument that measures for verbs are neither adverbs nor cognate objects. In this thesis, I am considering the [V+NUM+CL] construction as a VCLP. However, it has to be clarified that some NCLPs containing null Ns can appear in this form as well, they are different from true VCLPs, which I will explain in Section 5.2.4.

5.2.1 VCLPs are not exactly adverbial phrases

Li and Thompson (1981) use the term *quantity adverbial phrases* to refer to measures for verbs. They suggest:

“*Quantity adverbial phrases* are made up of more than one word, which is why they are called adverbial phrases rather than adverbs. These phrases specify the extent or duration of an activity and must occur after the verb. They consist of a number, a classifier (if one is required), and a noun.”

(Li and Thompson, 1981, pp. 352)

Following examples are for illustration:

103. Wo ti le yi *jiao*
 I kick PFV one FOOT
 ‘I kicked one foot’

In this sentence, *yi-jiao* ‘one foot’ is the quantity adverbial phrase, according to Li and Thompson. But this analysis is problematic because in Mandarin Chinese, adverbs/ adverbial phrases normally appear before verbs rather than after them. See example below:

104. Wo manman-de zou.
 I slow-MM walk
 ‘I walk slowly.’

If there are examples with adverbs/ adverbial phrases that occur after verbs, they require a necessary *de* between the verb and the adverb/ adverbial phrase, as shown below:

105. Wo zou de man.
 I walk MM slow
 ‘I walk slowly.’

But in example (103), there is no *de* to be found.

Based on the reason above, I argue that VCLPs are not quantity adverbial phrases in terms of their syntactic category. But in terms of their semantic functions they can be considered as adverbial phrases because they do serve an adverbial function.

5.2.2 VCLPs are not cognate objects

The reason that linguists consider measures for verbs as cognate objects is that they share the similar function of delimiting/ bounding events. They both add telicity

to actions/ events. Moreover, a lot of measures for verbs do relate to the verbs they delimit, especially body part measures. They usually are the instruments people use to perform the action. Before we get deeper into the discussion, let us first consider what cognate object constructions (COCs) are. Jones (1988) says:

“We define cognate object constructions as constructions in which a normally intransitive verb occurs with what appears to be a direct-object NP whose head noun is the event or state nominalization of the verb.”

(Jones, 1988, pp.89)

Similarly, Ogata (2008) says:

“COCs take cognate objects that are morphologically related to the verbs and usually the verbs are intransitive verbs.”

(Ogata, 2008, pp.1)

Following phrases are examples of cognate objects constructions in English.

106.sleep a sleep

107.dream a dream

Based on this definition, I am going to provide several pieces of evidence to show that measures for verbs are not cognate objects.

- i. In Mandarin Chinese, body part measures usually are the instruments that people use to take the action, but they are not morphologically related to the verbs. Take (108) and (109) for example:

108.ti yi *jiao*
kick one FOOT
'kick once'

109.shan yi *bazhang*
slap one PALM
'slap once'

In both examples, the measures are not morphologically related to the verbs.

- ii. The verbs that take these body part measures are not intransitive verbs in most circumstances. Usually they are highly transitive. We can easily see this fact if we add a direct object to the examples in (108) and (109):

110.ti ni yi *jiao*
kick you one FOOT
'kick you one time'

111.shan ni yi *bazhang*
slap you one PALM
'slap you once'

In each case, the direct object of the verb is *ni* 'you' rather than the body part term.

- iii. In Mandarin Chinese, measures for nouns are obligatory except in rare situations that in some northern dialects when the numeral is under three. Following this rule, if *jiao* 'foot' and *bazhang* 'palm' are cognate objects, they would have to take measures themselves. Like the following examples:

112.*ti ta yi zhi jiao
 *kick him/her/it one CL foot

113.*shan ni yi ge bazhang
 *slap you one CL palm

These phrases are not grammatical.

In addition to these three reasons, if we look at cognate object constructions in English, we see that adjectives can be inserted to precede cognate objects:

114.slept a *sound* sleep

115.dreamed a *sweet* dream

But this does not apply in Mandarin Chinese.

116.*ti yi you jiao
 kick one right foot

117.*shan yi zuo bazhang
 slap one left palm

To sum up, measures for verbs belong to a single category in Mandarin Chinese, just as measures for nouns. They do have some similarities with adverbs and cognate objects. For example, cognate objects are derived or morphologically related to verb

while measures for verbs are somehow related to the verbs because normally they are the instruments that involve in the action. Also, measures for verbs appear with numerals and provide telicity or countability to events, just as cognate objects do. However, over the discussion above, we have reached the conclusion of measures for verbs are neither adverbs nor cognate objects

5.2.3 Matthews and Leung's (2001) theory and the derivational hypothesis

Matthews and Leung (2001) suggest that within the VCLPs, there is a certain selectional relation between the measures and the verbs they delimit. The relation is similar to the one between the measures and the nouns they measure within NCLPs.

118. [VP *yao* [CLP *yi* *kou*]]
 bite one MOUTH
 ‘bite once’

In example (118), the verb *yao* ‘bite’ appears to select the word *kou* ‘mouth’ as its measure.

119. [VP *ti* [CLP *yi* *jiao*]]
 kick one FOOT
 ‘kick once’

In example (119), the verb *ti* ‘kick’ selects *jiao* ‘foot’ as a measure.

At this point, a fact has to be introduced first before we go deeper into Matthews

and Leung's assumption about the structure of VCLPs. As we see from Section 3, some measures are only allowed to measure nouns, for example:

120.yi ge beizi
 one CL cup
 'a cup'

Ge is the general measure in Mandarin Chinese that can basically measure any nouns but no verbs. For example:

121.*da yi ge
 hit one CL

Also, generally speaking, all standard measures can only measure nouns (See Section 3). For example:

122.liang *dun* shui
 two TON water
 'two tons of water'

Some other measures are only allowed to delimit verbs, see examples below:

123.xia yi *tiao*
 scare one JUMP
 'scare (someone) once'

124.da yi *xia*
 hit one CL
 ‘hit (someone/something) once’

More importantly, there are many measures that have both functions, measuring nouns and delimiting verbs. This fact makes it possible to assimilate a lot of NCLPs to VCLPs just by deleting the noun. For example:

125.yao yi *kou* pingguo
 bite one MOUTH apple
 ‘have a bite of the apple’

126.yao yi *kou*
 bite one MOUTH
 ‘have a bite’

In example (125), *kou* ‘mouth’ is the measure for *pingguo* ‘apple’ while in example (126) *kou* ‘mouth’ becomes the measure for the verb *yao* ‘bite’. This fact is also considered by Matthews and Yip (1999) who propose a mechanism for such a derivation of VCL constructions from NCL, which they call the “derivation hypothesis”:

- (i) Verb taking an NP object containing CLP (NCL construction):
- [VP yao [NP [CLP yi *kou*] pingguo]]
 bite one MOUTH apple
 ‘have a bite of the apple’

(ii) Deletion of head N (NCL construction with null N):

[VP yao [NP [CLP yi kou] [N ∅]]
 bite one MOUTH

(iii) Verb followed by CLP alone (VCL construction):

[VP yao [CLP yi kou]]
 bite one MOUTH

Matthews and Yip's (1999) proposal that VCL can be derived from NCL derivation hypothesis seems to work well in this example. However it is challenged by the cases of the verbal usage of measures without any possible N to be deleted. For example:

127.shan yi bazhang
 slap one PALM
 'slap (him/her) once'

In this example, *bazhang* 'palm' is the measure of the verb *shan* 'slap'. But in Mandarin Chinese, there is no nominal measure usage of *bazhang* 'palm' to be found.

Another example would be:

128.ti yi jiao
 kick one FOOT
 'kick once'

In this example, *jiao* 'foot' is the measure of the verb *ti* 'kick'. Although *jiao* 'foot' can be used as a measure for nouns in Mandarin, the nouns it takes cannot fit in a

VCL phrase. See example below:

129. *yī jiǎo ní*
 one FOOT mud
 ‘one footful of mud’

Ní ‘mud’ is being measured by *jiǎo* ‘foot’ in the example. But it is not clear what noun *jiǎo* ‘foot’ is measuring in (128). Because of these existing counterexamples, Matthews and Yip’s (1999) hypothesis does not fit perfectly for all VCLPs. However, the derivational hypothesis might reflect a historical process. This would need diachronic study to clarify. I am going to leave it for future research.

5.2.4 Interactions between VPs that contain CLs and transitivity

At this point, I would like to turn to the types of VPs that contain CLs and their interaction with transitivity. There are three types of VPs containing CLs, and there are some VPs that are ambiguous. Note that in this section, too, all the VCLs being discussed here are body part terms. So they are “massifiers” or “mensural classifiers”. This section does not include VCLs that are “count-classifiers”, such as *biān*, *cí*, *cháng* ‘time’¹⁴.

i. [V_{tr}+ [NUM+ VCL]+[N]]

In this type of VCLP, the Num+ VCL constructions perform an adverbial function and the N serves as the direct object. As with all the VCLPs, these VCLs delimit the

¹⁴ See more information about the count vs. mass distinction within VCLs in Section 3.4.

verbs and make the events bounded. Because the VCLs in these structures are derived from nouns, we have to rule out that they are objects of the verb. One thing that needs to be mentioned here is that objects of the verb do refer to entities in the world hence they are referential while VCLs do not refer. This important difference between objects and VCLs will be further discussed in Section 5.2.6. In order to examine the syntactic function of VCLs, I will perform two tests on some phrases. The first test is to passivize the phrases to see if the body part terms can occur in the subject position. The second test is to transform the phrase into BA construction¹⁵ and see if the body part terms can be preceded by BA. If they can, then they are nouns/objects. If they cannot, then they are VCLs.

Passivization:

130.a. qin yi kou
 kiss one MOUTH
 ‘kiss once’

b. *yi kou bei qin
 one MOUTH PASS kiss

c. qin yi kou xiaohai
 kiss one MOUTH child
 ‘kiss the child once’

¹⁵ See details of BA construction in Section 2.3.

d. xiaohai bei qin le yi kou
 child PASS kiss PFV one MOUTH

‘the child was kissed once’

Example (130a) is a VCLP without a direct object, the agent and the patient are not overt in this phrase (they may be understood based on context). (130b) is a failed attempt to promote the VCL *kou* ‘mouth’ to the subject position. (130c) is the default active order of the phrase ‘kiss the child once’ while (130d) is the passive form.

Example (131) shows the same trip:

131. a. ti yi jiao
 kick one FOOT

‘kick once’

b. *yi jiao bei ti
 one FOOT PASS kick

c. ti le yi jiao zhuozi
 kick PFV one FOOT desk

‘kick the desk once’

d. zhuozi bei ti le yi jiao
 desk PASS kick PFV one FOOT

‘the desk was kicked once’

As we can see, the body parts *kou* ‘mouth’ and *jiao* ‘foot’ cannot be promoted to

the subject position. This means they are not the objects of the verb *qin* ‘kiss’ or *ti* ‘kick’. When nouns like *xiaohai* ‘child’ and *zhuozi* ‘desk’ are inserted in the phrases ((130c) and (131c)), they can be passivized to become the subject of the phrases.

BA construction (the test will be performed directly on (130a) and (131a)):

132. a. **ba yi kou qin le*
 BA one MOUTH kiss PFV

b. *ba xiaohai qin le yi kou*
 BA child kiss PFV one MOUTH
 ‘kissed the child once’

133. a. **ba yi jiao ti le*
 BA one FOOT kick PFV

b. *ba zhuozi ti le yi jiao*
 BA desk kick PFV one FOOT
 ‘kicked the desk once’

As the above examples show, the body part terms cannot be placed after the function word *ba* while the argument nouns, or to say the referential nouns *xiaohai* ‘child’ and *zhuozi* ‘desk’ can. This is another piece of evidence showing that in these phrases, the body part terms *kou* ‘mouth’ and *jiao* ‘foot’ are not direct objects. Having confirmed their property of being VCLs, the properties of this kind of VP that contains VCLs will be discussed below.

First of all, within these phrases, the order between Num+ VCL construction and the direct object is interchangeable. As shown below:

134.a. qin yi kou ta
kiss one MOUTH 3SG

b. qin ta yi kou
kiss 3SG one MOUTH

‘kiss him/her/it once’

135.a. ti yi jiao zhuozi
kick one FOOT desk

b. ti zhuozi yi jiao
kick desk one FOOT

‘kick the desk once’

Second, the classifiers in these phrases are for the verbs rather than for the nouns. If the nouns need to be delimited or the nouns are mass nouns that need countability, NCLs have to be placed before the nouns. See following examples.

136.a. qin yi kou haizi
kiss one MOUTH child

‘kiss the child once’

b. qin yi kou na liang ge haizi
 kiss one MOUTH that two NCL child

‘kiss those two children once’

137.a. ti yi jiao shui
 kick one FOOT water

‘kick the water once’

b. ti yi jiao na pen shui
 kick one FOOT that CL water

‘kick that tub of water once’

In (136b) and (137b), numerals and NCLs are inserted to indicate the number or amount of the Ns. This is an important evidence showing that *kou* ‘mouth’ and *jiao* ‘foot’ in (136a) and (137a) are not classifiers for nouns but they are serving the verbs.

It’s also worth mentioning that the numeral preceding the VCLs can be other numbers beside *yi* ‘one’. For example:

138. qin liang kou haizi
 kiss two MOUTH child

‘kiss the child twice’

The objects in these phrases can be omitted and the direct object need not appear but can be understood from the context.

ii. [V_{tr}+ [NUM+ NCL+N]]

This kind of phrase is in fact a V+ NCLP construction. The [Num+ NCL+ N]

construction (NCLP) is one constituent and cannot be separated. It is the direct object of the transitive verb. See examples below.

139. sheng yi duzi qi
 unleash one STOMACH anger
 '(someone) unleash a stomachful of anger'

140. peng yi bizi hui
 bump one NOSE dust
 '(someone) get a noseful of dust/ got rebuffed'

In the above phrases, the NCLPs are the direct objects of the Vs. The numeral has to be *yi* 'one' and cannot be other numbers. Unlike the $[V_{tr+} [NUM+ VCL]]+[N]$ constructions, this type of phrase is usually idiomatic and the order is fixed, so the passivization and BA construction tests fail. For example, if we passivize (139) or change it into the BA construction, the phrase becomes ungrammatical:

141.* qi bei sheng le yi duzi
 anger PASS unleash PFV one STOMACH

142.* ba qi sheng le yi duzi
 BA anger unleash PFV one STOMACH

143.* ba yi duzi qi sheng le
 BA one STOMACH anger unleash PFV

This result is not surprising at all since both phrases are idiomatic. There has been a lot of discussion about how many idioms cannot be passivized, see Katz and Postal (1964), Fraser (1970), Katz (1973), Fiengo (1974), Newmeyer (1974), for example. Although the two tests that have been mentioned above are not applicable here, it does not necessarily mean there is absolutely no evidence showing that (139) and (140) are [V+NCLP] constructions. For example, in (137), the verb *sheng* ‘unleash’ and the object *qi* ‘anger’ form a V-O construction compound in Mandarin. The following example shows how the compound works in a simple sentence.

144. Wo sheng-qi le.
 I unleash-anger PFV
 I am mad.

iii. [V_{intr}+ [NUM+VCL]]

This type of phrase is different from previous ones because the verb is intransitive and it never takes an object. This construction is commonly used in Mandarin, however, most of the phrases that belong to this category use sortal/ count classifiers like *ci*, *hui*, *xia* ‘time’. The situation of having a body part term as the VCL is fairly rare. See the example below.

145. ke yi *sangzi*
 cough one THROAT
 ‘cough once’

In the above phrase, *sangzi* ‘throat’ is the classifier of the verb *ke* ‘cough’ because people believe throat is the body part that performs the action of coughing.

Beside the three types of VPs that contain VCLs that have been shown above, there are some VPs that can be categorized into different types at the same time because of their ambiguity. Usually these phrases can be interpreted in two ways. The following examples are for better illustration.

146.cai yi *jiao* ni
 stomp one FOOT mud

‘stomp on mud once’/ ‘stomp (on the ground) and get a footful of mud’

The first interpretation ‘on mud once’ is based on the comprehension of *jiao* ‘foot’ is used as a VCL and the verb *cai* ‘stomp’ is a transitive verb. The second interpretation ‘on the ground and get a footful of mud’ indicates that *jiao* ‘foot’ is being understood as an NCL and *cai* ‘stomp’ is an intransitive verb. So if we categorize this phrase, it can belong to both type i and type iii.

147.chi yi *kou* pingguo
 eat one MOUTH apple

‘bite the apple once’/ ‘have a biteful of apple’

In this phrase, *chi* ‘eat’ is a transitive verb in both interpretations. When (147) is interpreted as ‘have one bite of the apple’, the classifier *kou* ‘mouth’ is understood as

a VCL which is delimiting the action of bite. When the phrase is comprehended as ‘have a biteful of apple’, *kou* ‘mouth’ is an NCL that indicates the amount of the apple. So this phrase can be categorized into both type i and type ii.

Another fact that should be noticed about these ambiguous phrases is that the N_{objS} can be omitted but they can be understood based on the context. See examples below.

148.cai le yi *jiao*
stomp PFV one FOOT

‘stomped (on something) once’/ ‘stomped (on something) and get a footful (of something)’

149.chi le yi *kou*
eat PFV one MOUTH

‘bit (something) once’/ ‘had a biteful (of something)’

(148) and (149) are ambiguous due to the fact that *jiao* ‘foot’ and *kou* ‘mouth’ can be both VCL and NCL. The meaning of the phrases is mainly based on the context. However, sometimes speakers can avoid the ambiguity by phonetically emphasizing certain words. In (144) for instance, if the speaker emphasizes the verb *cai* ‘stomp’, the meaning of the phrase would be ‘stomped on something once’; if the speaker emphasizes the classifier *jiao* ‘foot’, he/ she means someone stomped and got a footful of something. Moreover, as the $[V_{tr+} [NUM+ VCL]]+[N]$ constructions, the numerals in these phrases can be other numbers. They do not have to be *yi* ‘one’.

Three types of VPs containing VCL constructions are listed above. The first type is the $[V_{tr+} [NUM+ VCL]]+[N]$ construction. The order between $[NUM+ VCL]$ construction and the direct object is interchangeable. The CLs in these phrases are true VCLs, that means they are measures for the verb and not for the nouns. N_{objs} in these phrases can be omitted but they can be understood based on the context. The second type VP is the $[V_{tr+}[NUM+ NCL+N]]$ construction. In these phrases, CLs are NCLs rather than VCLs. They serve the nouns following them. They may look like the first type, but they are essentially different. The third type is the $[V_{intr+} [NUM+VCL]]$ construction. Since the verb in this structure is intransitive, it is clearly that the CLs in these phrases can only be VCLs. There are some VPs in which the CLs can be interpreted as NCLs or VCLs. Within these three types of VPs, only the first and the third types are true VCLPs because they really contain VCLs.

5.2.5 Evidence against the derivational hypothesis

As mentioned earlier, Matthews and Leung (2001) make the assumption that VCLs are derived from NCLs, but there is some evidence against the derivational hypothesis. First, not all the VCLPs take Ns or null Ns. If a VCLP does not take an N or a null N, then there is no evidence showing that the VCL is derived from an NCL. Second, body part measures within NCLs cannot be preceded by numerals greater than one while VCLs can. These two problems are going to be further discussed below.

a. As we have seen earlier, the derivational hypothesis is challenged by the cases of

VCLPs without any possible N to be deleted. The issue of how to decide if there is a null N or no N at all has to be discussed at this point. Generally speaking, empty nouns, also called elided nouns or nouns that have undergone ellipsis, are linguistic entities that are phonologically omitted from a sentence but are semantically present. The example below illustrates the concept.

150. Wo chi le yi ge pingguo, ta ye chi le yi ge.
 I eat PFV one CL apple, 3SG also eat PFV one CL.
 ‘I ate an apple, s/he had one too.’

From the above sentence, we can see that even though no noun actually appears in the second part of the sentence, Mandarin speakers can still comprehend the meaning of “s/he also ate an apple”. This is the reason why empty nouns are also referred to as “pragmatically controlled zero anaphora”, “understood arguments”, and “linguistically unrealized arguments” (See Junker, Stainton and Wearing, 2006). However, in the phrase “*ti-yi-jiao*” (‘kick once’), there is no existing, even non-overt, referent to be measured by *jiao* ‘foot’. *Jiao* ‘foot’ is only providing iteration to the verb *ti* ‘kick’. So there is no understood argument in this phrase. Derivational hypothesis works for VCLPs that take (null) N_{objS} , but it fails to work for VCLPs without N_{objS} .

- b. Within the extent of body part measures, generally speaking, NCLs can only be preceded by the numeral *yi* ‘one’ or *liang* ‘two’. But VCLs can follow any numbers. This fact has been mentioned in Section 4. Most body part NCLs follow

the numeral one. For instance, *bizi* ‘nose’, *duzi* ‘stomach’ and *naodai* ‘head’. Some body part NCLs, for example, *jiao* ‘foot’, *shou* ‘hand’ and *yan* ‘eye’ can be preceded by the numeral *liang* ‘two’. The selection of numeral is simply decided by how many of that body part a person has. But for body part VCLs, they can be preceded by any number. The reason is that actions can be iterative. See examples below.

151. ti san *jiao*
 kick three FOOT
 ‘kick three times’

152.* san *jiao* ni
 three FOOT mud

Phrases like *yao-yi-kou* ‘bite once/ have a biteful (of something)’ can use numerals other than one is because this type of phrase is ambiguous, as we have seen in Section 5.2.3.

To sum up, the derivational hypothesis, which is proposed by Matthews and Leung (2001), assumes that VCLs are derived from NCLs, has its flaws. I have shown that VCLs may not be derived from NCLs and that sometimes they truly lack a noun object.

5.2.6 Referential index

From previous discussion, we now reach the conclusion that VCLs delimit verbs by providing iteration. VCLPs sometime do not contain any N_{obj} , even non-overt

ones.

According to Baker (2003), the syntactic corollary of a noun's criterion of identity is a referential index because nouns can refer and they are the natural bearers of this syntactic annotation. In the phrase “*ti-yi-jiao*” (‘kick once’), there is no N_{obj} . Thus *jiao* ‘foot’ may look like a noun but it is in fact a verbal classifier which only bears the function of delimiting the verb. Hence the phrase is not referring to any entity in the world and it does not have a referential index. I am going to mark this kind of phrase [+R] which means plus referent. It is an abbreviation for the property that nouns have of being able to denote an entity in the world.

The difference between all the VCLPs and NCLPs is similar to the distinction made by Li (1998) between quantity-denoting expressions and individual-denoting expressions because VCL constructions, concern the quantity rather than individuals. Li (1998) suggests that there are two kinds of NumPs (equivalent to CLP in this thesis) in Mandarin Chinese. NumPs that have D projections are individual-denoting expressions and NumPs do not have D projections are quantity-denoting expressions. Despite the fact that all the NumPs Li discusses are [NUM+CL+N] constructions and as we can see from the above analysis, some VCL constructions do not have Ns within the structure, the distinction of individual-denoting and quantity denoting is still worth mentioning. VCL constructions may not have Ns, hence they lack [+R], which is equivalent to the lack of D. Quantity-denoting expressions sometimes appear with adverbs such as *jiu* ‘then’, *zhi* ‘only’ to express the small size of the quantity. See the example below:

153. zhi yao yi kou
 only bite one MOUTH
 ‘only bite once’

Sometimes quantity expressions also appear with *dou* ‘already’ to indicate the large size of the quantity. See example (154) below:

154. dou zou le shi gongli le
 already walk CRS/PFV ten KILOMETER CRS/PFV
 ‘have walked for ten kilometers’

These adverbs can be seen as the linguistic clues to the quantity-denoting interpretation. Li is proposing the difference is presence/absence of D projection while for me in this thesis it is presence /absence of N.

The absence of N in VCLPs determines that they cannot be [+R]. VCLPs are not noun phrases at all.

5.3 The nominalization function of VCLs

As we can see in the previous examples, there are measures for verbs in Mandarin Chinese which follow verbs and take no N_{obj} . Other than delimiting the event, measures for verbs also sometimes bear an anaphoric function, that is, to refer back to the verb which has appeared earlier in the context so that the event can be nominalized and be the subject of a sentence.

In Mandarin, disyllabic verbs can be used as nouns without any derivation but monosyllabic verbs cannot be used as nouns unless they appear with nouns. For example:

Disyllabic verb:

155.wo zai *gongzuo*
 I DUR work
 ‘I am working.’

156.*gongzuo* rang wo hen kaixin
 work make me very happy
 ‘Working makes me very happy.’

Monosyllabic verb:

157.ta zai *zou* lu
 s/he DUR walk road
 S/He is walking.

158.*Zou* lu shi hen hao de duanlian
 walk road be very good MM exercise
 ‘Walking is very good exercise.’

However, the process gets complicated when it comes to nominalizing verbs followed by a VCL with body parts measures. If there is an N after the verb, the process is just as above:

159.ti ta yi *jiao*
kick 3SG one FOOT

‘kick s/he once’

160.ti ta rang wo hen jie qi
kick 3SG make me very release anger

‘Kick her/him releases my anger very much.’

But note here that *ti-ta* ‘kick him’ only suggests an activity, not a specific event. If we want to nominalize the specific action of one certain kick, measures for verbs can be used as anaphors of the verbs to make the action nominalized. See examples below:

161.ta ti-le yi *jiao*
he kick-PFV one FOOT

‘He kicked once.’

162.na yi *jiao* (shi) hen zhong
that one FOOT (be) very hard

‘That kick was very hard.’

Note that here in example (162), *na-yi-jiao* “that one foot” is referring back to the action of one certain kick. The nominalizing process is still the same even if the direct object is a noun instead of a pronoun. See examples below:

163. Ta ti-le zhuozi yi jiao.
 he kick-PFV desk one FOOT
 ‘He kicked the desk once.’

164. Na yi jiao hen zhong.
 that one FOOT very hard.
 ‘That kick was very hard.’

In (163), the N_{obj} is *zhuozi* ‘desk’, after nominalizing the verb *ti* ‘kick’, as we can see in (164), the sentence is still the same as in (162).

The subject in sentence (162) and (164) is *jiao* “foot” rather than *ti* “kick”. But it is very important to notice that *yi-jiao* “one foot” in this sentence is preceded by the demonstrative *na* “that”. It can be replaced by the other demonstrative *zhe* “this” as well. But this structure can never appear without a demonstrative. The reason for this phenomena is that *na-yi-jiao* ‘that one foot’ has an anaphoric function. Having an anaphoric function means it has to refer back to a previous element. *Na-yi-jiao* ‘that one foot’ refers to the specific action kicking. But the phrase is not [+R] because it does not contain an N, the natural bearer of referential index. *Na-yi-jiao* ‘that one foot’ is not referring to any entity in the world. Since *ti* ‘kick’ can only be used as a verb in Mandarin, it is not possible to repeat it in the second sentence as the subject. In order to solve this problem, *na-yi-jiao* ‘that one foot’ is used to refer back to the antecedent in the first sentence, *ti* ‘kick’. This is the reason that in this phrase, a demonstrative is necessary. The demonstrative enables the phrase to act anaphorically and refer back. As Diessel (1999) points out, sometimes demonstratives themselves act like

anaphors.¹⁶ The technical details of the nominalizing function of VCLs remain to be worked out.

This usage of measures for verbs is very common and worth discussion. However, given the fact that it could be too complicated to analyze and may take over the point of this thesis, I am not going to go any deeper on this topic.

¹⁶ See Diessel (1999), pp. 95-100.

6. Conclusion

After examining the classification, semantics and syntax of measures, we can conclude that:

- i. Body part measures, according to Chao's (1968) classification, belong to container measures, temporary measures, classifiers associated with V-O and measures for verbs. They are originally body part terms yet can be used both before nouns and after verbs. They bear the function of measuring objects or delimiting events.
- ii. Body part measures are mass-classifiers according to Cheng and Sybesma's definition. Although the tests of inserting *de* (modification marker) and adjectives may not apply to body part measures due to their metaphorical properties, based on the definition that mass-classifiers create units of objects while count classifiers simply name the units, we can reach the conclusion of all body part measures are mass-classifiers.
- iii. There are two ways to make an event telic in Mandarin Chinese. The first way is to provide extent. That is, adding a [NUM+NCL] construction to make the N_{obj} bounded so that the whole VP is delimited. The other way is by counting iteration of the activity, that is adding a [NUM+VCL] construction to the verb and the event is delimited. From this perspective, I suggest NCLPs are mass/mensural while VCLPs are count/sortal. NCLPs bound by indicating the aggregation of actions, VCLPs bound by counting individual actions.
- iv. Body part measures for verbs are not adverbs or adverbial phrases because

they can only occur after verbs while adverbs/ adverbial phrases normally occur before verbs in Mandarin Chinese.

v. Body part measures for verbs are not cognate objects. This conclusion is based on three facts:

- a. They are not morphologically related to the verbs
- b. They only appear with highly transitive verbs while typically cognate objects are taken by intransitive verbs.
- c. They do not take any measures themselves while measures for nouns are obligatory.

vi. After exploring the interaction between VPs contain CLs and transitivity, I propose that there are three types of VPs contain CLs:

- a. $[V_{tr}+[NUM+VCL]+N]$

Within this structure, the order between $[NUM+VCL]$ and the N_{obj} is interchangeable. N_{obj} can be omitted. The structure is a true VCLP, that is, the CLs in this kind of phrase serve verbs rather than N_{obj} s.

- b. $[V_{tr}+[NUM+NCL+N]]$

This structure is in fact a $[V+NCLP]$ construction. CLs in these phrases are NCLs, they are serving the Ns but not the verbs.

- c. $[V_{intr}+[NUM+VCL]]$

Since the verb in this structure is intransitive, the CLs are clearly VCLs. So this is a true VCLP, too.

Moreover, there are some ambiguous VPs. The CLs in them can be interpreted

in both ways, NCLs or VCLs.

- vii. Body part measures for verbs can also nominalize the verb/event. They can be anaphorically used to refer to the verb and become the subject of a sentence.

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