

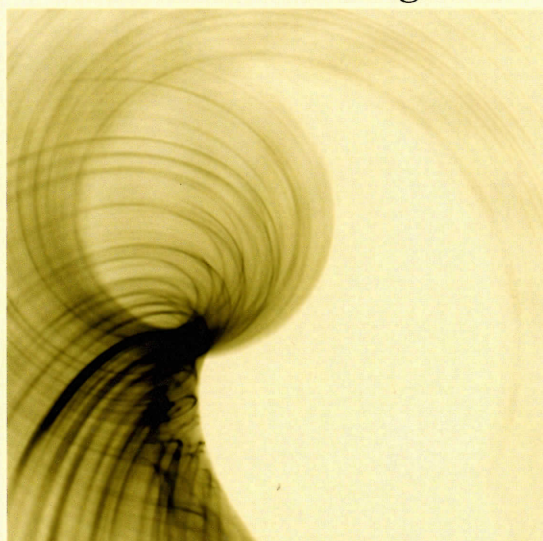
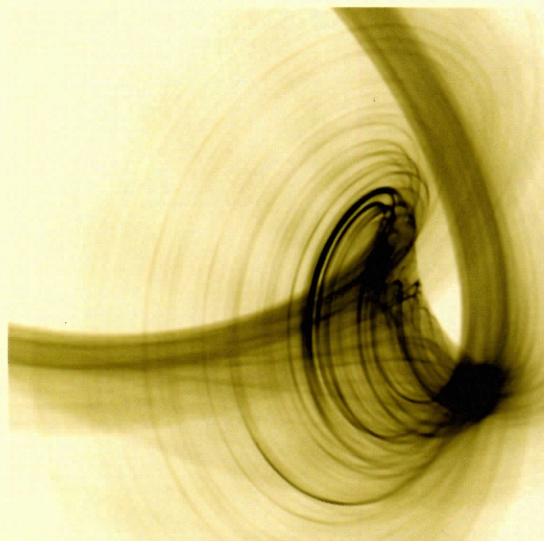
榮獲國科會人文學研究中心補助出版

漢語研究04

Taiwan Journal of Linguistics
Book Series in Chinese Linguistics
doi:10.6533/NCCULING-9789861472751

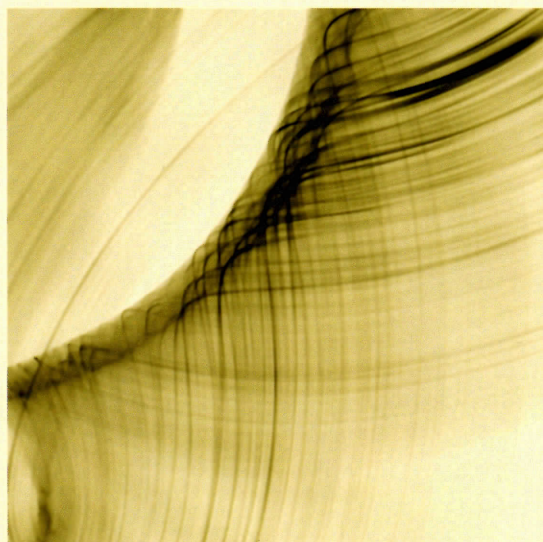
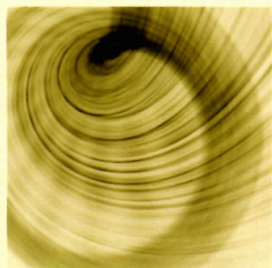
The Internal Structure of Noun Phrases in Chinese

Miao-Ling Hsieh



漢語名詞詞組
的內在結構

謝妙玲



This study investigates the internal structure of noun phrases in Chinese and argues that number, referentiality, and totality/partitivity are all syntactically represented. Viewing number in a new light, it claims that number in a classifier language is syntactically encoded via the use of a #P, i.e., NumP, the head of which is occupied by a classifier/massifier (cf. Borer 2005). Plurality is realized differently in a #P via the use of numerals, the plural classifier *xie*, quantifiers, or the reduplication of classifiers/massifiers. The plural marker *-men* is a derivational suffix marking either collective plurality or semantic plurality, resolving the problem that syntactic plurality may co-occur with semantic plurality when syntactic plurality marks an indeterminate quantity.

Unlike the standard head-complement analysis that assumes a DP-NumP-CIP-DP hierarchy, this study argues that a numeral or a quantifier enters into a relation with a classifier/massifier, forming a #P. A #P (with or without a demonstrative) is then merged into the Spec of NP for the NP to take a pure quantificational interpretation and raises to the Spec of DP for a check of referential interpretation with the D (determiner) head. The highest position, i.e., the Spec of KP, may be occupied by a #P for a totality/partitive interpretation (cf. Lamontagne and Travis (1986) for the use of K to represent Case). The evidence for the KP-DP-NP nominal hierarchy, analogous to the CP-TP-VP hierarchy at a clausal level, comes from different types of modifiers and the co-occurrence restrictions on the use of two #Ps.

Theoretically, the ideas that a classifier/massifier is the locus of number and that a #P is able to occur in three different possible positions simplify the representation of a noun phrase with only three major layers. It is also shown that language may have the same functional categories, but the way they are combined may be different from language to language.

Miao-Ling Hsieh has a Ph.D. in linguistics from the University of Southern California. She has been teaching English and linguistics in the English Department of National Taiwan Normal University since 2001. Her main research interests include syntactic theories, the interface between syntax and Semantics and first language acquisition.



Book Number : 002-0837



Taiwan Journal of Linguistics
Book Series in Chinese Linguistics
Editors: One-Soon Her and Kawai Chui

**The Internal
Structure of Noun Phrases
in Chinese**
漢語名詞詞組的內在結構

Miao-Ling Hsieh
謝妙玲

DEDICATION

To

My dear father, Kuo-Lien Hsieh, for his 80th birthday

獻給我敬愛的父親謝國連八十歲大壽
「如月之恆，如日之升，如南山之壽」

TABLE OF CONTENTS

ACKNOWLEDGEMENTS	ix
ABBREVIATIONS	xi
LIST OF TABLES	xii
CHAPTER 1 INTRODUCTION	1
1.1 The Issues	1
1.1.1 Number	1
1.1.2 Referentiality	5
1.1.3 Number and Referentiality	6
1.1.4 Totality/Partitivity	9
1.2 Theoretical Constructs	10
1.3 An Overview	11
CHAPTER 2 NUMBER PHRASES	13
2.1 Introduction	13
2.2 The Same Structure or Different Structures?	13
2.2.1 Cheng and Sybesma (1998, 1999)	14
2.2.2 Tang (2005)	17
2.2.3 Borer (2005)	20
2.2.4 Watanabe (2006)	25
2.2.5 Summary	31
2.3 Towards a Solution	32
2.3.1 The Challenge	32
2.3.2 The Clausal Analysis	35
2.3.3 A Unified Analysis	37
2.3.4 Measurement Reading	43
2.3.5 Summary	52
2.4 #P as the Locus of Number	52
2.4.1 H. Yang (2005)	52
2.4.2 Plural Marking with Quantifiers	56
2.4.3 A Feature Taxonomy	61
2.4.4 More on the # Head	63
2.4.5 Co-Occurrence Restrictions Revisited	69

2.4.6 Summary	73
2.5 Conclusion	74
CHAPTER 3 THE DP LAYER	75
3.1 Introduction	75
3.2 Three Possible Interpretations	75
3.2.1 Bare Nouns	75
3.2.2 Not-So-Bare Nouns	81
3.2.3 Summary	88
3.3 Modification and Hierarchy	90
3.3.1 Zhang (2006)	90
3.3.2 Hsieh (2005)	94
3.3.3 Tang (2007)	100
3.3.4 J. Lin (2007)	105
3.3.5 Summary	108
3.4 A Revised Version of Hsieh (2005)	108
3.4.1 Interpretations and Projections	108
3.4.2 Quantification and Modification	114
3.4.3 Summary	119
3.5 The Missing Numeral <i>Yi</i> ‘One’	119
3.6 Conclusion	128
CHAPTER 4 THE PLURAL MARKER – <i>MEN</i>	129
4.1 Introduction	129
4.2 The Characteristics of – <i>Men</i> in the Literature	129
4.3 A True Plural Marker or Not	132
4.3.1 A Collective Marker	132
4.3.2 A True Plural Marker	132
4.3.3 A Collective Marker and a Plural Marker	140
4.3.4 Summary	140
4.4 Towards a Solution	140
4.4.1 Tsai and Feng (2006)	141
4.4.2 A Non-Uniform Analysis	142
4.4.3 Summary	151
4.5 Conclusion	151
CHAPTER 5 HIGHER UP	153

5.1 Introduction	153
5.2 A Universal Hierarchy	153
5.3 What Does Chinese Say?	169
5.3.1 Totality/Partitive	169
5.3.2 A Higher Projection is Needed in Chinese	171
5.3.3 Never Too Close?	173
5.4 Conclusion	176
CHAPTER 6 CONCLUDING REMARKS	177
6.1 Summary	177
6.2 Implications of this Study	178
REFERENCES	179

ACKNOWLEDGEMENTS

It took a village to write a book. Compared to the writing of my dissertation, this ‘village’ is relatively smaller and not as internationalized, but it contains a very special group of people to whom I am deeply grateful. For their professional help, I would like to first thank the editors for *The Taiwan Journal of Linguistics* (TJL), One-Soon Her and Kawai Chui, and the copy-editor, Moira Breen, for their help. Special thanks go to One-Soon for establishing *The TJL Monograph Series and Book Series* for the linguistics community in Taiwan to publish their peer-reviewed works in a timely manner. Second, I would like to express my sincere gratitude to the anonymous reviewers of *The TJL* for their valuable comments. Third, a special group of professionals whom I always consult and share ideas with at National Taiwan Normal University (NTNU), the school where I work, have helped to define my life in linguistics and will continue to be my inspirations. For this group of people, I would like to thank Jen Ting, Jen-I Li, Chien-Jer Lin, Doris C. Chen, Joy J.-L. Wu, Miao-Hsia Chang, Hsueh-O Lin, Ho-Ping Feng, Jean Curran, Sue Babcock, Mary Goodwin, Hui-Hua Wang, Yueh-Kuei Hsu, Hui-Mei Chu, Stephanie C. Chen, Howard H. Chen and Lindsey Chen for their discussions of linguistics, friendship and patience for listening to my crazy ideas and far-fetched plans to do things.

For professionals outside my circle at NTNU, I would like to thank W.-T. Dylan Tsai, T.-H. Jonah Lin, Jo-wang Lin, Luther C. Liu, Niina Zhang, Chin-Man Kuo, Ting-Chi Wei, Chinfa Lien and F.-F. Tsao for their always helpful and informative discussions. I would also like to thank Yi-Ching Su, Shu-Ing Shyu, Li-May Sung, Yu-Fang Wang, I-Ping Wan, Hsun-Huei Chang and Lucy Tsai. The time I spend with them, also an important part of my life in linguistics, is always enjoyable. Finally, there are three special teachers of mine to whom I am forever thankful. For Prof. Hsin-I Hsieh, I am in awe of his unbounded spirit and unsurpassable literary grace and thank him for his encouragement of me in my writing of this book. For Prof. Shuanfan Huang, I appreciate the advice he has given me throughout my career and his comments on my recent works despite the fact that my syntax is undoubtedly too narrow for him. Finally, for Prof. Yen-Hui Audrey Li, to whom I always look up for her passion for linguistics and her dedication to the field, my gratitude goes to her for her inspiring works which kindle my interests in the

same areas as well as for her extraordinary support over the years starting from my graduate study at the University of Southern California.

Finally, I would like to thank my family and extended family, especially my parents, sisters and sister-in-laws, for their unconditional support and love for me. The fact that it takes a village to write a book is particularly true when one tries to write a book and raise a child at the same time. Without the help of my family in raising my son, I wouldn't be able to find time to write at all. Among them, my father Kuo-Lien Hsieh has been always proud of me since I attended kindergarten, firmly believing that a daughter is as good as a son. I admire him also for the sacrifices he made in raising his family and for the exemplary integrity and honesty he has bestowed upon his seven children, and more importantly, for his endless love to all his children and grandchildren. We are lucky and proud to have him as our father. This book is dedicated to him for his eightieth birthday.

Miao-Ling Hsieh

Hsin-Tien, Taipei
July 2008

ABBREVIATIONS

acc	accusative
A. S. Corpus	Academia Sinica Balanced Corpus of Modern Chinese
ASP	aspect
BA	the object marker <i>ba</i> in Chinese
BEI	the passive marker <i>bei</i> in Chinese
CKIPG	Chinese Knowledge Information Processing Group
CL	classifier/massifier
CIP/CLP	Classifier Phrase
dat	dative
DE	the modification marker <i>de</i> in Chinese
DemP	Demonstrative Phrase
(D-)N-C-(N)	(Demonstrative-)Numeral-Classifier-Noun
EACL	European Association of Chinese Linguistics
FCI	free choice item
GE	the modification marker <i>ge</i> in Cantonese
Gen	genitive
i-level predicate/modifier	individual-level predicate/modifier
IMN	inner modifier nominal
[±IND]	[±indeterminate]
Loc	Locative
MEN	the suffix <i>-men</i> in Chinese
NC	nominal clause
NOM	nominative
NPI	negative polarity item
NS	nuclear scope
NumP	Number Phrase
OMN	outer modifier nominal
PAR(T)	particle
PL	plural
Q	quantifier
RC	restrictive clause
R	referential
SG	singular
s-level predicate/modifier	stage-level predicate/modifier
TATI	the suffix <i>-tati</i> in Japanese
top	topic
XIE	the plural classifier <i>xie</i> in Chinese

LIST OF TABLES

CHAPTER 3 THE DP LAYER

TABLE 1: Possible Interpretations of Different Types of NP	89
--	----

TABLE 2: Four Types of Analyses of Noun Phrases in Chinese	113
--	-----

TABLE 3: Omission of <i>Yi</i> ‘one’	122
--------------------------------------	-----

CHAPTER 5 HIGHER UP

TABLE 1: Classification of Determiners as Strong or Weak	157
--	-----

CHAPTER 1 INTRODUCTION

1.1 The Issues

This study investigates the internal structure of noun phrases in Chinese, focusing on three issues central to noun phrases, i.e., number, referentiality and totality/partitivity.

1.1.1 Number

Number in grammar refers to the notion of singularity/plurality. Intuitively, demonstratives, quantifiers, numerals and classifiers in Chinese are all related in some way with the notion of number. Among them, classifiers play a central role. A classifier in Chinese provides a unit of quantification and is indispensable when numerals are used, as shown below:

- (1) a. **san tiao** xiangjiao
 three CL banana
 ‘three bananas’
 b. ***san** xiangjiao
 three banana

Numerals or cardinals such as *yi* ‘one’ and *san* ‘three’ indicate the notion of number in the arithmetical sense, i.e., countability. Quantifiers define a quantity. While quantifiers usually do not require the presence of a classifier, the universal quantifier *mei* ‘every’ cannot occur without one. Finally, given the fact that demonstratives in Chinese normally occur with a classifier and that they can carry the plural marker *xie*, they cannot be omitted when number is discussed.

Let us start with classifiers. In general, two types of classifier are distinguished: sortal classifiers and mensural classifiers. According to Lyons (1977, p. 463), a sortal classifier is ‘one which individuates whatever it refers to in terms of the kind of entity that it is,’ while a mensural classifier is ‘one which individuates in terms of quantity.’ Similarly, while a classifier, according to Cheng and Sybesma (1998), ‘names’ the unit of natural semantic partitioning, a mensural classifier (or a massifier, a term used in

Cheng and Sybesma (1998) and adopted in this study) ‘creates a unit of measure’.¹ Examples for the two types of classifiers are given below:

- (2) Sortal classifiers
 - a. san **ge** ren
three CL person
‘three persons’
 - b. san **zhi** yazi
three CL duck
‘three ducks’
- (3) Massifiers
 - a. san **bang** rou
three CL meat
‘three pounds of meat’
 - b. liang **xiang** shu
two CL book
‘two boxes of books’

From the above-mentioned studies, it may seem that while massifiers have something to do with quantity, sortal classifiers may not. This is indeed the view held in Aikhenvald (2000, p. 117), citing studies such as Allan (1977), Becker (1975), Adams (1989, p. 6). In such a view, sortal classifiers categorize nouns in terms of their size, shape and animacy; they provide no information as to ‘quantity.’ In contrast, Paris (1989, p. 3, cited in Cheng and Sybesma 1999) posits that classifiers in Chinese do not really classify--they have more to do with number than ‘genre.’

In this regard, let us consider the following examples taken from the Academia Sinica Balanced Corpus of Modern Chinese (A. S. Corpus for short).

¹ In a similar sense, Tai and Wang (1990) propose that a classifier categorizes an object, whereas a massifier simply measures an object.

- (4) a. ...da-zhe **yi ge ge** zhangpeng. (A. S. Corpus)
pitch-ASP one CL CL tent
...(many) tents were pitched...'
- b. ...yi kuai pinji ji faren hehu de yuandi, neng kai-chu
one CL barren and lack care DE land can grow-out
duo duo jiankang de huarui... (A. S. Corpus)
CL CL health DE flower:bud
'...barren and unattended patch of land is able to produce (many)
healthy kinds of flower.'

The reduplication of the sortal classifiers *ge* and *duo* with the optional presence of the numeral *yi* 'one' gives rise to a plural interpretation in those examples and it is no doubt that sortal classifiers in this case also contribute to number.

A number of studies have been done recently with respect to the syntax of classifiers/massifiers. I will just briefly mention some of them before describing them in more detail in Chapter 2.

According to Cheng and Sybesma (1998, 1999), sortal classifiers and massifiers in Chinese are distinct in two important ways. First, as shown in (5), a massifier, but not a sortal classifier, can optionally occur with the modification marker *de*.

- (5) a. san **bang (de)** rou
three CL DE meat
'three pounds of meat'
- b. liang **xiang (de)** shu
two CL DE book
'two boxes of books'
- (6) a. ba **tou (*de)** niu
eight CL DE cow
'eight cows'
- b. jiu **gen (*de)** weiba
nine CL DE tail
'nine tails'
- c. shi **zhang (*de)** zhuozi
ten CL DE table
'ten tables'

Second, while a massifier can be modified by adjectives such as *da* ‘big’ and *xiao* ‘small,’ a sortal classifier cannot.

- (7) a. yi **da zhang** zhi
 one big CL paper
 ‘one big sheet of paper’
 b. na yi **xiao xiang** shu
 that one small CL book
 ‘that small box of books’
- (8) a. *yi **da zhi** gou
 one big CL dog
 b. *yi **da wei** laoshi
 one big CL teacher

They argue that the two types of classifiers have different grammatical structures, reflecting the difference between count nouns and mass nouns. In their analysis, while a classifier occupies the Cl(assifier) head, a massifier is claimed to be generated under N and to move to Cl. This, according to them, explains why a massifier, but not a sortal classifier, can be modified by an adjective. Borer (2005) and Watanabe (2006), following Cheng and Sybesma’s generalizations, reach the same conclusion about Chinese. That is, sortal classifiers and massifiers occur in certain different structures. This line of analysis, however, faces the empirical difficulty pointed out in Tang (2005) that a sortal classifier just like a massifier can be modified by an adjective as evidenced in the following example from Chao (1968), among many others.

- (9) yi **xiao li** mi (Chao 1968)
 one small CL rice
 (lit.) ‘one small grain of rice’

Moreover, the following examples found in the A. S. Corpus also show that a classifier can occur with *de*.

- (10) a. wu-bai-wan **zhi de** yazi (A. S. Corpus)
 five-hundred-ten:thousands CL DE duck
 ‘five million ducks’
 b. hao ji bai **tiao de** hai she (A. S. Corpus)
 quite several hundred CL DE sea snake
 ‘many hundreds of sea snakes’

Contrary to Cheng and Sybesma’s claim, the classifiers *zhi* and *tiao* in (10) can co-occur with *de*. The fact that a sortal classifier can be modified by an adjective and that a sortal classifier can occur with *de* then raise doubts over Cheng and Sybesma’s analysis, an analysis that maintains different structures for classifiers and massifiers. This is indeed what is pursued in Tang (2005), where she proposes a DP-NumP-CIP-NP analysis (NumP: Number Phrase, CIP: Classifier Phrase) for both classifiers and massifiers. The question is then whether there is indeed evidence that such a hierarchical structure is maintained in Chinese. As an alternative, Huang (1982), J. Lin (1997), and Hsieh (2005) propose that a numeral combines with the classifier/massifier and the combination enters into a relation with the head noun. It then remains to be seen which analysis better characterizes Chinese.

A fundamental question is why there are classifiers/massifiers in Chinese. How is the notion of number in the sense of singularity/plurality related to classifiers/massifiers? Is number in Chinese syntactically represented? Based on the use of the modification marker *de* and others, it will be argued that classifiers/massifiers occupy the same position in syntax, both of them occupying the same position representing number (cf. Borer 2005). In other words, singularity/plurality is syntactically represented in #P, i.e., NumP, headed by a classifier/massifier.

1.1.2 Referentiality

The second issue addressed in this study is referentiality. Referentiality concerns the interpretation of a noun phrase, i.e., referential (definite/indefinite) or non-referential (including pure quantity). As discussed above, a classifier/massifier contributes to number. In addition to number, a classifier is also related to referentiality. For example, a noun phrase with the reduplication of a classifier can be used anaphorically. As shown in the

following example, *ge ge* means ‘each one,’ referring to every child within the context:

- (11) Ta-men jia you san ge xiaohai, **ge ge** dou hen jiechu.
 he-MEN family have three CL child CL CL all very outstanding
 ‘There are three children in the family; each of them is outstanding.’

Now what about an N(umeral)-C(lassifier) sequence? As shown in (12a), a noun modified by an N-C sequence can take a pure quantificational interpretation. But note that an N-C sequence can also single out the referents from the context. In other words, an N-C sequence can contribute to the referentiality of the noun phrase. For example, the same string can also be interpreted as an indefinite, as in (12b).

- (12) a. **San ge ren shui yi zhang chuang.**
 three CL person sleep one CL bed
 ‘Three people sleep in one bed.’
 b. Ta qu zhao **liang ge pengyou.**
 he go find two CL friend
 ‘He went to see two friends.’

How are the two interpretations of an N-C sequence derived in syntax? Is the proposal by Y.-H. Li (1999) which suggests different projections (presence/absence of DP) satisfactory? More fundamentally, is referentiality syntactically represented in Chinese? In this study it will be shown that a DP layer is indeed needed to represent referentiality in Chinese, which has to be distinguished from the NP layer which is specified for pure quantity. The crucial data mainly come from the use of different kinds of modifiers, following Hsieh (2005).

1.1.3 Number and Referentiality

The suffix *-men* provides an excellent opportunity for the further exploration of the two issues—number and referentiality. Referred to as a plural suffix in Li and Thompson (1981, p. 40), *-men* is found to be adjoined to a pronoun as

in (13a), to a proper name as in (13b), and even to a common noun as in (13c).

- (13) a. **ta-men**
 he-MEN
 ‘they’
 b. **Xiaoqiang-men**
 Xiaoqiang-MEN
 ‘Xiaoqiang and his associates’
 c. **xuesheng-men**
 student-MEN
 ‘students’

The controversy surrounding *-men* is whether it is a collective marker (e.g., Iljic 1994, 2001) or a plural marker (e.g., Y.-H. Li 1999).

In terms of number, it is generally assumed that *-men* cannot readily occur with classifiers (T’sou 1976, Iljic 1994, among others), as illustrated below:²

- (14) ***san ge xuesheng-men**
 three CL student-PL
 ‘three students’

Despite this, a massifier such as *qun* ‘group’ can occur with *-men*:

- (15) yi **qun** reali jueshiyue de Taida
 one CL love Jazz DE National-Taiwan-University
 xuesheng-**men** zai zhe xueqi chengli-le...(A. S. Corpus)
 student-MEN in this semester found-ASP

² Nichols (1992) studies 174 languages among which 21 languages have classifiers. Among these 21 languages, only six languages show number opposition (singular/plural) in nouns. But interestingly, in five out of these six languages the number distinction is neutralized in nouns when they combine with numerals and classifiers.

‘this semester a group of National Taiwan University students who love jazz founded...’

More surprisingly, the following example from the A. S. Corpus challenges the view that *-men* cannot occur with classifiers:

- (16) Yuanben jingmi de shucong zhong que chuxian yi qun ren,
originally quiet DE bush inside unexpectedly appear one CL person
qizhong you **ji ge** dianshitai, zazhishe
among:them have several CL TV:station magazine:office
de jizhe-**men**... (A. S. Corpus)
DE reporter-MEN
‘A group of people came out from one originally quiet bushes. There were several reporters from TV stations and magazines among them...’

In (16), the suffix *-men* occurs with the sortal classifier *ge*. While this kind of combination is generally judged to be ungrammatical, it is found in the A. S. Corpus and also on the internet. How can this fact be accounted for?

The study of *-men* is also related to referentiality in the sense that a [common noun-*men*] is interpreted as a definite noun phrase. Consider the following examples taken from Iljic (1994, p. 94):

- (17) a. Wo qu zhao **haizi**.
I go find child
‘I will go find the/some child/children.’
b. Wo qu zhao **haizi-men**.
I go find child-PL
‘I will go find the children.’

Haizi-men in (17b) can only be interpreted as the speaker’s children, but not ‘some children’ or ‘children in general.’ In contrast, the interpretation of *haizi* in (17a) is vague. While it can refer to the speaker’s children, it does not require that it does so. Now the question is as to how the two kinds of interpretations of *-men* can be explained.

In this study, it will be argued that the examples such as (16) are grammatical because there is no conflict between the #P *ji ge* ‘several’ and

the [common noun-*men*] since the former marks syntactic plurality, while the latter semantic plurality. In addition to semantic plurality, *-men* can also be used as a collective marker, marking the speaker as an inalienable part of the group of people in question, when it is attached to a bare common noun.

1.1.4 Totality/Partitivity

Finally, in addition to number and referentiality, a noun phrase can be more complicated and involves either a totality interpretation or a partitive interpretation, as illustrated below by the use of *na xie* ‘those’ and *san ben* ‘three,’ respectively.

- (18) a. Ta ba [**na xie**] [wo zuotian cai mai de] [san ben] shu
 he BA that XIE I yesterday only buy DE three CL book
 na-zou le.
 take-away PART
 ‘He has taken away all of the three books I just bought yesterday.’
 b. Ta na-zou-le [**san ben**] [wo zuotian cai mai de] [na
 he take-away-ASP three CL I yesterday only buy DE that
 xie] shu.
 XIE book
 ‘He has taken away three of the books I just bought yesterday.’

Totality/partitivity is related to quantity and referentiality. In (18a), the noun phrase introduced by *na xie* is used to denote the totality of a contextually given set of books, while in (18b) the noun phrase starting with *san ben* refers to a particular measured amount of a contextually given set of books.

The question thus arises as to how such data affect our overall analysis of a noun phrase in Chinese. A further question is the significance this may have universally. This study will argue that a higher layer than the DP is needed to provide an interpretation of totality/partitivity. If such is determined to be the case, then Chinese is the same as other languages in having a projection higher than DP.

In the remaining sections, I will first discuss the theoretical constructs applied in this study in Section 1.2 and provide an overview of the study in Section 1.3.

1.2 Theoretical Constructs

A study cannot be done without some theoretical assumptions. In formal syntax, the structure of noun phrases involves functional projections such as DP, NumP, and CIP. There are two very different approaches with respect to the existence of functional categories in different languages. An approach advocated by Cinque (1994) claims that grammars employ a universal set of functional categories and that their number and relative order are the same across languages, regardless of the properties of the lexical head. At the other extreme, represented by Grimshaw (1994), it is claimed that only independently motivated phrase structures are projected. In this study, I will show that Chinese may have a very different way in which to line up the functional categories from English. If this is on the right track, languages may have the same functional projections, but how they are combined is language specific.

Another important theoretical issue is the use of features. A feature-based analysis is adopted for the analyses of lexical and functional categories, in line with the feature theory in the Minimalist Program proposed in Chomsky (1995). Since the introduction of the feature theory, it has been shown that analyses using features yield fruitful results. For example, the Extended Projection Principle (EPP) in Government and Binding (GB) (Chomsky 1981), which requires that all clauses have a subject at SS, can now be reanalyzed as follows: Infl has a strong D- or N-feature which needs to be checked by some element bearing the same feature. Such an element must occupy the Spec of IP before the computation splits into PF and LF.

Moreover, Case assignment, originally done at SS, can now be viewed as Case-feature checking. The Case-feature of a noun can be checked with the matching Case-feature of the appropriate head. After the subject raises to the Spec of IP due to the strong D- or N-feature of Infl, the Case-feature checking can be also be done. Recasting Case assignment in terms of feature checking makes it possible to eliminate the need of SS for the purpose of Case assignment, a welcome result within the Minimalist Program, which assumes that only LF and PF are conceptually necessary parts of any adequate model of grammar.

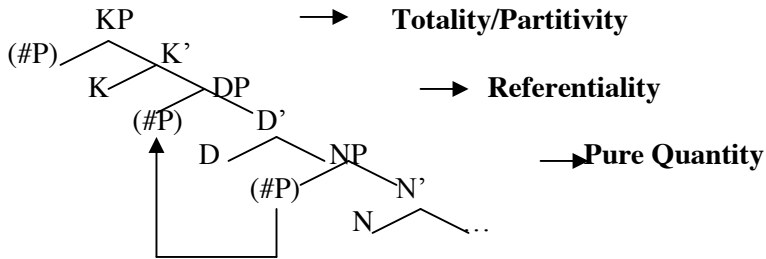
In general, I follow Chomsky (1995) in assuming three types of features: phonological features, semantic features and formal (syntactic) features. For the distinction of a syntactic feature from a semantic feature, I will use [+PL]

to refer to the plural feature which is syntactic, while [+plural] represents a semantic one. The former is decided by grammar/inflectional morphology, while the latter is mainly a matter of a lexeme/derivational morphology. Finally, movement is motivated by feature checking. In this study, it is sufficient to assume that a feature can enter a checking relation with another feature when they are in a spec-head relation.

1.3 An Overview

It will be argued that pure quantity, referentiality and totality/partitivity are syntactically encoded in NP, DP and KP. The hierarchical structure proposed in this study is represented as follows:

(20)



There are three major layers in a noun phrase. The three layers, i.e., NPs, DPs and KPs, are specified for pure quantity, referentiality and totality/partitivity, respectively. On the other hand, number is represented in a #P, which is merged in the Spec of NP and raises to the Spec of DP for a check of referentiality. Finally, a #P can merge in the Spec of KP for either a totality or partitive interpretation, which involves both quantity and referentiality.

This study proceeds as follows. Chapter 2 studies number, focusing on classifiers/massifiers. Several recent studies, i.e., Cheng and Sybesma (1998, 1999), Tang (2005), Borer (2005) and Watanabe (2006), are reviewed. In pointing out the problem(s) of each analysis, I propose to treat both classifiers and massifiers alike, putting them under the # head of a #P and unifying number in a #P. In other words, number is syntactically encoded in a #P (cf. Borer 2005). Plurality is realized in different ways in a #P via the use of numerals, the plural classifier *xie* or a collective massifier such as *qun*,

quantifiers, or the reduplication of classifiers/massifiers. A feature system is employed to distinguish three syntactically marked forms of plurality. The features [+PL] and [±IND] are argued to be indispensable for the use of the modification marker *de* and the use of the adverb *zhengzheng* ‘as a whole.’

Chapter 3 investigates referentiality, arguing that different interpretations are derived from different positions--#P is generated under the Spec of NP for pure quantity and raises to the Spec of DP for a check of the referential interpretation with the D(eterminer) head. This generalization is evidenced in the interaction between the D(emonstrative)-N-C sequence and various modifiers, following Hsieh (2005).

Chapter 4 explores the use of *-men* and the issue of number and referentiality that it raises. It is shown that the derivational suffix *-men* marks collective plurality when it occurs with pronouns, proper names and bare common nouns. The definite interpretation of a bare [common noun-*men*] comes from the use of *-men* as a collective marker, marking the speaker as an inalienable part of the group of people in question. This is captured by the postulation of a binding relation between an external subjective operator related to the speaker of the sentence and a variable in the Spec of DP of such a noun. But when a [common noun-*men*] is modified by a #P such as *jǐ ge* ‘several’ in (16), *-men* is a semantic plural marker, marking the common noun as a plural entity. The [common noun-*men*] then enters into agreement in plurality with the #P. This agreement relation is captured by the use of the [+plural] and [+PL, +IND] features. Given the fact that *-men* marks either collective plurality or semantic plurality, it is not in conflict with the syntactic plurality marked by a classifier/massifier.

In Chapter 5, the existence of a higher functional projection as a level above the DP layer is suggested to accommodate the fact that there are elements which occur higher than the DP. This functional projection, i.e., KP, parallel to CP in a clause, is designated to mark totality and partitivity.

Finally, Chapter 6 concludes the study.

CHAPTER 2

NUMBER PHRASES*

2.1 Introduction

This chapter explores number in grammar. Number in grammar refers to the notion of singularity/plurality. Number in Chinese is inseparable from a sortal classifier/massifier in the sense that a noun in Chinese cannot be counted without a classifier/massifier. A question raised in Chapter 1 is whether sortal classifiers and massifiers in Chinese should occupy the same syntactic position. A more fundamental question is whether number is syntactically represented in Chinese. In Section 2.2, I will discuss four recent analyses of classifiers/massifiers. Three of them give different structure analyses, while one argues for the same structure of classifiers and massifiers. I will propose a unified analysis in Section 2.3, ‘unified’ in the sense of proposing the same structure analysis for both classifiers and massifiers and representing Number under the #P, i.e., NumP. Section 2.4 further explores how singularity/plurality is expressed in a #P. Finally, Section 2.5 concludes the chapter.

2.2 The Same Structure or Different Structures?

In this section, I will review four studies concerning the analyses of sortal classifiers/massifiers. Among them, while Cheng and Sybesma (1998, 1999), Borer (2005) and Watanabe (2006) argue for a different analysis of classifiers and massifiers, Tang (2005) maintains the same structure analysis.

* Part of this chapter was presented at The 5th Conference of the European Association of Chinese Linguistics (referred to as EACL-5 hereafter) held at the Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany, September 4-7, 2007. The author would like to thank the audience there and the reviewers for their valuable comments.

2.2.1 *Cheng and Sybesma (1998, 1999)*

Before the discussion of the studies of Cheng and Sybesma, let us present some background information about plural morphology and classifiers. Universally, there appears to be a co-occurrence restriction between plural morphology and classifiers. In a classifier-less language such as English, common nouns can carry plural morphology. Only mass nouns have to be counted with measure units. In contrast, nouns in a classifier language such as Chinese cannot be counted without the help of a sortal classifier/massifier. Noticeably, such languages usually do not readily allow plural inflection.

The typological differences are discussed in Chierchia (1998a, b). The obligatory use of sortal classifiers/massifiers in Chinese, the apparent lack of plural morphology, and the lack of definite/indefinite determiners have led to the proposal that the three are directly related. Chierchia (1998a, b) characterizes Chinese as a language having [+argument, -predicate] NPs. Common nouns in this type of language, according to Chierchia, are kind-denoting and are allowed to be bare in the argument position without requiring a D. They have to be converted to mass properties for the purposes of quantification and being mass, they cannot be counted without a classifier, which denotes singularity, i.e., the divisions of stuff. In contrast, in a classifier-less language such as English, common nouns are object-denoting and can carry plural morphology.

In contrast to Chierchia (1998a, b), Cheng and Sybesma (1998, 1999) argue that a lexically marked mass/count distinction does exist in Chinese. Their argument crucially relies on the fact that there are two syntactically distinct types of classifiers in Chinese: sortal classifiers and massifiers. The former is found to occur only with count nouns, while the latter with mass nouns. Sortal classifiers and massifiers are distinct in two important ways.

First, only massifiers can occur with *de*:

- (1) a. san **bang** (**de**) rou
three CL DE meat
'three pounds of meat'
- b. liang **xiang** (**de**) shu
two CL DE book
'two boxes of books'

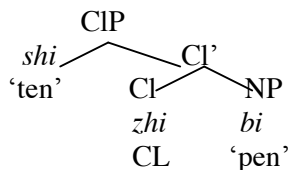
- (2) a. ba **tou** (***de**) niu
 eight CL DE cow
 ‘eight cows’
 b. jiu **gen** (***de**) weiba
 nine CL DE tail
 ‘nine tails’
 c. shi **zhang** (***de**) zhuzi
 ten CL DE table
 ‘ten tables’

Second, only a massifier can be modified by adjectives such as *da* ‘big’ and *xiao* ‘small’: (also, see Tang 1990)

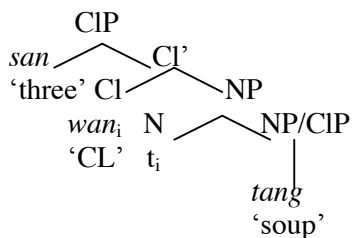
- (3) a. yi **da zhang** zhi
 one big CL paper
 ‘one big sheet of paper’
 b. na yi **xiao xiang** shu
 that one small CL book
 ‘that small box of books’
- (4) a. *yi **da zhi** gou
 one big CL dog
 b. *yi **da wei** laoshi
 one big CL teacher

Based on the idea that massifiers are derived from lexical nouns, an open class, and sortal classifiers from functional category, a closed class, Cheng and Sybesma (1998) propose the structures in (5a) for a classifier and that in (5b) for a massifier.

(5) a.



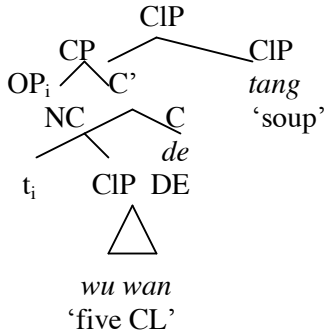
b.



As shown in (5a) and (5b), while a sortal classifier is base-generated under the Cl(assifier) head, a massifier is generated under N and undergoes N-to-Cl movement. This analysis, according to them, explains why an adjective can modify a massifier, but not a sortal classifier.

On the other hand, when a massifier occurs with *de*, it involves the following structure.

(6)



They suggest that the *de*-marked N-C sequence with the head noun is derived from the subject-predicate structure [N-[Num-Cl]], represented as NC (Nominal Clause) as shown in (6). In (6), the subject of the small clause, i.e., *tang* 'soup,' is relativized.

2.2.2 Tang (2005)

The above analysis in Cheng and Sybesma (1998) is criticized in Tang (2005). She maintains that sortal classifiers do not behave differently from massifiers in syntax. First, Tang points out that a sortal classifier, just like a massifier, can co-occur with *de* when a measure interpretation is involved:

- (7) a. Ta mai-le yi he **shi li de** pingguo.
he buy-ASP one CL ten CL DE apple
(lit.) 'He bought one ten-apple box of apples.'
- b. Ta mai-le liang bao **wu bang de** rou.
he buy-ASP one CL five CL DE meat
(lit.) 'He bought two five-pound parcels of meat.'

Second, according to Tang, a contrast cuts across sortal classifiers and massifiers, as shown in the following examples along with her judgments.

- (8) a. Ta jinnian zhong-le **san ke (?de) shu**.
 he this:year plant-ASP three CL DE tree
 'He planted three trees this year.'
- b. Ta jinnian zhong-le **yi bai ke (de) taoshu**.
 he this:year plant-ASP one hundred CL DE peach-tree
 'He planted one hundred peach trees this year.'
- (9) a. Ta jintian he-le **yi wan (?de) tang**.
 he today drink-ASP one CL DE soup
 'He drank a bowl of soup today.'
- b. Ta jintian he-le **shi wan (de) niurou tang**.
 he today drink-ASP ten CL DE beef soup
 'He drank ten bowls of beef soup today.'

Tang surmises that the contrast found in both sortal classifiers and massifiers is related to the information weight of the modifier-modifiee relation. Treating sortal classifiers and massifiers alike, Tang seems to indicate that the use of *de* is preferred when the modifier and/or modifiee is/are heavier in terms of having more information. Tang then concludes that it is not surprising to find the following data collected by the Chinese Knowledge Information Processing Group (CKIPG), where *de* is compatible with a sortal classifier.

- (10) a. Mei chao yue sheng-xia **ershi-si mei de luan** (CKIPG)
 every nest about give:birth-down twenty-four CL DE egg
 (lit.) 'Every nest has about twenty-four eggs.'
- b. Yi nian yue zhongzhi-le **yi-bai-sishi-duo-wan**
 one year about plant-ASP one-hundred-forty-more-ten:thousands
ke de shumu. (CKIPG)
 CL DE tree
 (lit.) '(They) planted more than one million and four
 hundred thousand trees a year.'

With respect to the two observations above, the most natural interpretation of (7) is indeed the measure interpretation as pointed out in Tang. On the other hand, while it is also true that there is a contrast with

respect to (8) and (9), more research needs to be done for clarifying what the information weight means. I will return to the use of *de* below.

As for the use of adjectives for distinguishing sortal classifiers from massifiers, Tang cites the following counter-examples.

- (11) a. Guang kao dian dian yi **xiao ke** zhi jiu neng
only depend remove remove one small CL mole then can
duo-guo shenme zainan (CKIPG)
escape-ASP what disaster.
‘Just by removing a small mole, one can escape from some disaster.’
- b. yi **xiao li** mi (Chao 1968)
one small CL rice
(lit.) ‘one small grain of rice’
- c. yi **da kuai** shitou (Chao 1968)
one big CL stone
one big stone’
- d. Xianzai lianwu hen gui. Yi **xiao li** heizhenzhu
now wax:fruit very expensive one small CL black-pearl
jiu yao san-shi yuan.
then need three-ten dollar
‘Wax apples are very expensive nowadays. One small wax apple of the black pearl variety costs thirty dollars.’

Tang’s series of studies on nominal structures are summarized as follows:²

- (12) a. The *de*-less N-C sequence and the noun are of head-complement relation.
- b. The *de*-marked N-C sequence and the noun are of modifier-modifiee relation.
- c. Both sortal classifiers and massifiers may project as heads or modifiers of (12a) and (12b).

² This is a summary of the studies done by Tang in this area, taken from Tang (2005). Please refer to it for references cited there.

- d. Both sortal classifiers massifiers are listed as CI in the lexicon.
- e. Classifiers are marked with m-features, c-features and s-features. (M-features, c-features and s-features refer to features like $[\pm\text{bound}]$, $[\pm\text{CL}]$ and $[\pm\text{sortal}]$, respectively.)

Specifically, Tang (2005, p. 458) points out that while in Cheng and Sybesma the mass-count distinction is claimed to be grammatically reflected at the level of the classifier, in her analysis the mass/count distinction in Chinese may be distinguished at the levels of the classifier and noun and while mass nouns can only appear with $[-\text{sortal}]$ classifiers, count nouns can occur with $[\pm\text{sortal}]$ classifiers.

More specifically, the *de*-less N-C structure is represented as in (13).

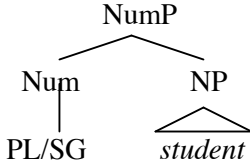
(13) $[_{\text{DP}} \dots [_{\text{NumP}} \dots [_{\text{CIP}} \dots [_{\text{NP}} \dots]]]]$ (NumP: Numeral Phrase)

I will call the analysis in (13) the head-complement analysis because all the functional projections are lined up with one dominating another. This is a prevalent analysis in the literature. As will be seen in Chapter 4, Y.-H. Li (1999) also assumes such an analysis for a noun phrase that does not denote pure quantity. However, it will be shown that the alternative analysis proposed in this study, i.e., that a numeral or a quantifier enters into a relation with a classifier/massifier and that the whole combination forms a spec-head relation with the head noun, deserves consideration.

2.2.3 Borer (2005)

Borer's (2005) study follows Ritter (1991, 1995) in assuming that number in English is syntactically represented by a projection specifically for the marking plurality, i.e., NumP, as illustrated below:

(14)



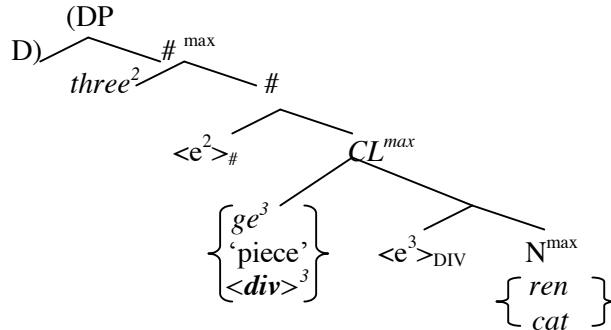
The Num head is marked with either a singular feature or a plural feature. In the literature, there are two approaches to the derivation of words with plural morphology. Under a non-lexical approach, the plural feature under the Num head, which surfaces as a suffix *-s* in English, needs to be realized on a nominal element. It is generally assumed that the N head *student* will raise to Num to realize the plural feature. Alternatively, under a lexical approach, *students* is generated as a word in the lexicon but needs to move to Num in order to agree with *three* which sits in Spec of NumP via spec-head agreement.

Furthermore, aiming at capturing the fact that classifier inflection (in Borer's term) does not co-occur with plural morphology, Borer (2005, p. 96) proposes that plural marking and classifiers occupy the same structural position, i.e., the Classifier Phrase (CIP).

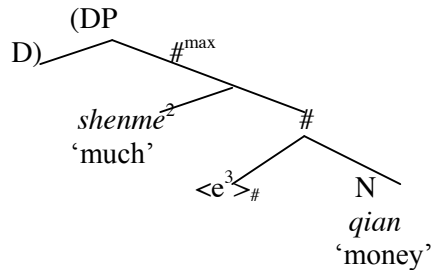
She takes Chierchia's (1998a, b) claim that all noun extensions in Chinese are mass and generalizes it across all languages. The distinction between a mass noun and a count noun is thus only structural in all languages.

Schematically, the structure of Chinese and English count and mass nominals is as in (15a) and (15b) (where co-superscripting indicates range-assignment relations).

(15) a.



b.



She suggests that the Quantity Phrase, represented as $\#P$, is responsible for the assignment of quantity to stuff as in (15b) or to divisions of it as in (15a). A classifier functions as a mass divider, or, more formally assigning a divisional value to the open value $\langle e \rangle_{DIV}$, the head of the CIP. The absence of CL (within a DP structure) gives rise to a mass interpretation, while the absence of $\#P$ yields a non-quantity interpretation.

Chinese massifiers, on the other hand, paralleling English measure phrases, have a different structure. Crucially, massifiers select mass phrases rather than mass listemes (i.e., words listed in the lexicon) as their complements. They may involve the structure in (15b), or possibly the $\#P$ within that structure.

Borer proposes (16b) for (16a).

- (16) a. yi da **zhang de** zhi
 one big CL DE paper
 ‘one big piece of paper’
 b. [_{FP} yi [da [_{NP} **zhang (de)** [_{FP} [_{NP} zhi]]]]]
 one big CL DE paper

In (16b), ‘the measure phrase is headed by a quasi-functional item, *zhang* ‘sheet,’ very much on a par with the quasi-functional items *box (of books)*, *cup (of flower)*, *cake (of soap)*, etc.’ (Borer 2005, p. 100). Note that in (16b), no matter whether *de* is present or not, the structure is basically the same. Borer claims that such an account explains the Chinese fact that a massifier co-occurs with *de* (Cheng and Sybesma 1998, 1999), a marker of a phrasal nominal boundary, and a massifier can be modified by adjectives. It also correlates quite closely with the fact that heads of measure phrases in English may be independently modified, and with the fact that measure phrases in English occur with *of*, which is also a maker of a phrasal nominal boundary like *de*.

Given the fact that Borer’s analysis is based on Cheng and Sybesma (1998, 1999), the problems that the latter have will also be applied to the former. Moreover, it is not clear what this quasi-functional item *zhang* is and how it is represented in syntax. In a footnote (p. 100), Borer acknowledges,

“I have little to contribute here to the ongoing linguistic debate on the structure of measure phrases or partitive phrases, and hence I leave things relatively vague when it comes to the label of the maximal projection dominating *zhang* ‘sheet,’ and *zhi* ‘paper,’ in Chinese, as well as *pound* or *cake* (e.g., as in *cake of soap*) in English, or the label of the maximal projection which dominates its complement.”

In addition to this, Borer’s (2002, 2004, 2005) idea that the notion of quantity or cardinality should be distinguished from that of plurality at the syntactic level analysis does not seem to be applicable to Chinese. Consider the contrast in the following examples.

- (17) a. Kim built **three houses** (in three months).
 b. Kim built **houses** (*in three months).

As shown above, while a cardinal phrase can occur with an *in*-time adverbial to indicate the completion of an event, a bare plural cannot. Based on the contrast, Borer argues that cardinal phrases but not bare plurals have a QP. According to her, positing that cardinal phrases and bare plurals have the same NumP (or QP in Borer's terminology) fails to account for the distinction between these two types of noun phrase with respect to telicity.

Now consider the following Chinese examples.

- (18) *Ta (zai shi fengzhong nei) he-le tang.
 he in ten minute in drink-ASP soup
 'He drank soup in then minutes.'
- (19) a. Ta (zai shi fengzhong nei) he-le **san da wan** tang.
 he in ten minute in drink-ASP three big CL soup
 'He drank three bowls of soup within ten minutes.'
 b. Ta (zai shi fengzhong nei) he-le **san da wan de** tang.
 he in ten minute in drink-ASP three big CL DE soup
 'He drank three bowls of soup within ten minutes.'

As shown in (18), it is well known that a bare noun in Chinese does not occur with the perfective marker *-le*, with or without an *in*-time adverbial. On the other hand, as shown in (19a) and (19b), when *tang* occurs with an N-C sequence, with or without *de*, the sentences are grammatical. It is clear that when *de* is used, the whole N-C sequence modifies the head noun. In other words, while the N-C sequence is a modifier, it serves the purpose of quantifying over the head noun. It then follows that it is not crucial for Chinese to identify a QP on top of a CIP for the distinction of a cardinal phrase and a bare plural in Chinese, in contrast to Borer's analysis.³

3 Borer (2005) assumes various raising possibilities for the derivation of different interpretations. For example, she assumes that cardinals in a classifier language such as Chinese are specifiers of a #P and classifiers assign range to both <e>_{DIV} and <e>_#, giving rise to a quantity interpretation meaning 'some.' Assignment of a

In summary, in this section it is shown that in Borer's analysis, the structure involving a massifier is very different from that of a sortal classifier. Moreover, Borer's idea that a QP is projected as a separate projection taking a CIP as its complement is not required in Chinese.

2.2.4 Watanabe (2006)

A more elaborate proposal for the mass/count distinction in general is made in Watanabe (2006), where a NumP, which is represented as #P, is suggested for both mass and count nouns.

The # head, which is the locus of number specification, is claimed to be subject to parameterization. The mass/count distinction is universally represented by the [$\pm$ number] feature on the # head, as in (20):

(20) Mass/Count Universal (Watanabe 2006, p. 271)

The # head is [+number] in the case of count nouns, whereas it is [-number] in the case of mass nouns.

In a classifier language such as Japanese, the specification of the number feature is sufficient; however, in an English type of language which has plural morphology, the singular/plural distinction is made by a further distinction, i.e., [+number, +singular] and [+number, -singular], reflecting the singular/plural distinction.

Watanabe's generalization comes from the observation that a complex classifier construction in Japanese as in (21a) takes a so-called 'pure measure' interpretation, just like such measure phrases in English as in (21b). The pure measure interpretation means that Roger ate an amount of rice that would fill four big bowls. The bowls did not have to exist. Note that *bun* 'amount' is compatible with this construction and its counterpart in English, a pseudo-partitive construction, as shown in (21a) and (21b).⁴

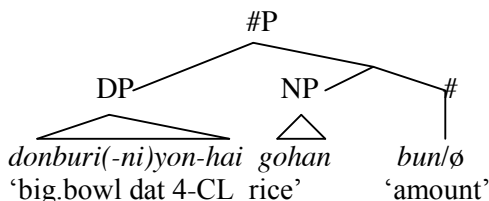
double range by a single morpheme can be accomplished through the successive merger of a classifier with the two distinct occurrences of the complex open value, $\langle e \rangle_{\#(\text{DIV})}$, and $\langle e \rangle_{\text{DIV}(\#)}$, the first projection CL^{max} and the second projection #P. For various raising possibilities and their motivations, please refer to Borer (2005).

4 A pseudo-partitive is different from a partitive:

- (21) a. Roger-wa gohan **donburi(??-ni) yon-hai(-bun)**-o tabeta.
 Roger-top rice big.bowl-dat 4-cl-amount-acc ate
 ‘Roger ate four big bowls of rice.’
 b. *Two bottles of wine* were/*was thrown into the soup.⁵
 (Corver 1998, cited in Watanabe 2006)

He proposes the same structure for the two noun phrases above, as given in (22a) and (22b).⁶

- (22) a.



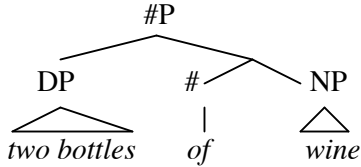
-
- (i) a. a piece of the cake [partitive]
 b. a cup of tea [pseudo-partitive]

For the discussion of the two constructions, please see Section 5.2 in Chapter 5.

⁵ The agreement here is not uncontroversial as some speakers do accept the use of the singular verb form (Bernard Comrie, personal communication). Assuming Selkirk (1977), this may be due to the fact that *two bottles of wine* can be analyzed as a pseudo-partitive construction or as a noun complement construction. In the former *wine* is the head noun and in the latter *bottles* heads the noun phrase. In fact, *wine* in the structure given in (22b) should be taken to be the head of the noun phrase and a singular verb form should be used. More discussion of these two constructions is given in Section 5.2 of Chapter 5.

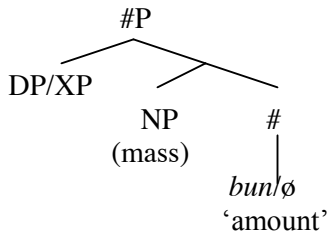
⁶ The NP in (22a) will move to Spec of #P and to Spec of CaseP for different checking relations. These processes will not be discussed further here. I refer readers to Watanabe (2006) for details.

b.

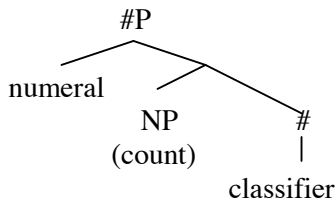


Similarly, a mass noun in Japanese, but not a count noun, can occur with *bun* 'amount' or be replaced by an empty category represented as $\emptyset$. Watanabe proposes that a mass noun has the same structure as proposed for (22a) and (22b), as represented in (23a), and in contrast to (23b), which is for a count noun.

(23) a.



b.

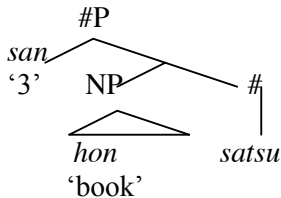


Crucially, the # head for a mass noun is occupied by either a classifier or *bun/∅*, while the # head for a count noun is occupied by a classifier. In

Japanese, a classifier has to appear with a numeral.⁷ On the other hand, a mass noun never directly occurs with a numeral. A numeral, however, can be buried inside DP/XP in the representation of a mass noun (23a). The partial representations of ‘three books’ and ‘600 mg vitamin C’ in (24) are given in (25) and (26).⁸

- (24) a. John-wa **hon san-satsu(*-bun)-o** katta.
 John-top book 3-cl-amount-acc bought
 ‘John bought three books.’
 b. Kendou-no-tame-ni-wa mainichi **vitamin C**
 health-gen-sake-dat-top everyday vitamin C
600mg(?-bun)-o tora-nakerebanaranai.
 600mg-acc-amount take-must
 ‘One must take 600mg of vitamin C everyday for the sake of
 good health.’

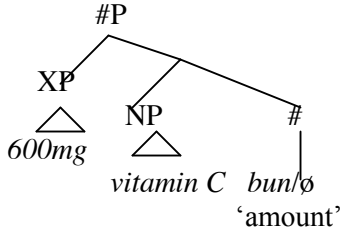
(25)



7 Other quantifiers in Japanese are not accompanied by a classifier.

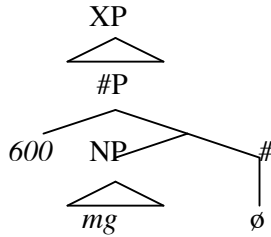
8 The Number-Classifier combination in Japanese can appear in a variety of positions in relation to the head noun. The examples that I quote here exhibit just one of the many possibilities.

(26)



Specifically, the XP in (26) has the structure in (27).

(27)



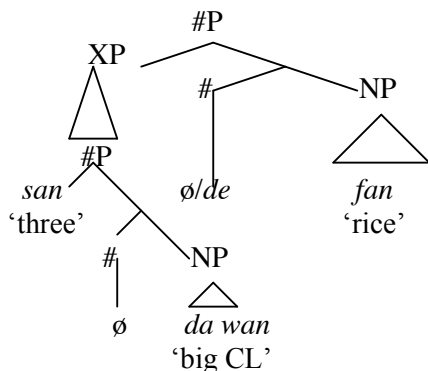
The pure measure interpretation also plays an important role for Watanabe to decide the relevant structure for Chinese. Following Cheng and Sybesma (1999), he assumes that the presence of *de* in (28) makes a semantic difference, i.e., the version of (28) without *de* takes the default interpretation that rice is in the bowls. In contrast, for the version with *de* a bowl does not have to exist.

- (28) **san da wan (de) fan**
 three big bowl DE rice
 ‘three big bowls of rice’

Watanabe then suggests that the # head in Chinese is occupied either by a classifier for count nouns, or by the modification marker *de* or $\emptyset$ for mass nouns. A massifier forms the Chinese pseudo-partitive. The structure that

Watanabe proposes for *san da wan (de) fan* ‘three bowls of rice’ in (28) is given in (29):⁹

(29)



The proposed structure in (29) provides a unified analysis for the version with *de* or without *de* as Watanabe claims. However, it faces some theoretical and empirical problems. Theoretically, this analysis may turn the # head into something else rather than one that indicates number. Recall that it is mentioned above that common nouns in Chinese are unable to be counted without the help of classifiers. What the modification marker *de* does, unlike classifiers, is to mark the relation between adjectives/relative clauses and the head noun:

- (30) a. keai **de** yang
 lovely DE sheep
 ‘lovely sheep’
 b. ta mai **de** shu
 he buy DE book
 ‘the book he bought’

⁹ Note that XP is used instead of DP here because Watanabe posits that D does not exist in Chinese.

For more discussion of both partitive and pseudo-partitive constructions, please see Section 5.2 in Chapter 5.

Watanabe, a #P is a NumP that is specified for number, including plural morphology. However, both authors do share the analysis that sortal classifiers and massifiers are analyzed differently. The different structure analyses, however, face some problems, to which I will turn in the next section.

2.3 Towards a Solution

In this section, I will first point out some problems facing the different structure analyses for sortal classifiers/massifiers and then propose a unified analysis. This will then be followed by more evidence for deciding on the structure of a noun with a *de*-less N-C sequence.

2.3.1 The Challenge

An empirical challenge facing the different structure analysis for classifiers and massifiers as in Borer and Watanabe is that both analyses are based on the syntactic distinction that Cheng and Sybesma (1998, 1999) make with respect to sortal classifiers and massifiers.

Two observations are pertinent. First, unlike what is claimed in Cheng and Sybesma, sortal classifiers can occur with *de*, as discussed in Tang (2005). In addition to the examples given in Tang (2005), which were mentioned above, the following examples are found in the A. S. Corpus:

- (31) a. wu-bai-wan **zhi de** yazi (A. S. Corpus)
 five-hundred-ten:thousands CL DE duck
 ‘five million ducks’
 b. yue er-shi yu **zhi de** xiao qun huimian jiu (A. S. Corpus)
 about twenty more CL DE small CL gray:face egret
 ‘a small group of about twenty-some gray-faced egrets’
- (32) a. jin yi-bai **wei de** qiangjiu ren yuan (A. S. Corpus)
 close:to one-hundred CL DE rescue worker
 ‘close to one hundred rescue workers’
 b. tongshi you peiyang-le 23 *wei de* zhongzi
 at:the:same:time again cultivate-ASP 23 CL DE seed
 jiangshi...(A. S. Corpus)
 lecturer

‘at the same time 23 ‘seed’ lecturers were cultivated...’

More interestingly, consider the use of *tiao* with *de*:

- (33) a. hao ji bai **tiao de** hai she (A. S. Corpus)
quite several-hundred CL DE sea snake
‘many hundreds of sea snakes’
- b. Xuexiao chubu guihua yi-bai **tiao**
school first plan one-hundred CL
de dianhua xianshu...(A. S. Corpus)
DE telephone line:number
‘There was an estimate for one hundred telephone lines in the
original plan for the school.’

In (33a), *tiao* is used with *hai she* ‘snake.’ This is a typical use of a sortal classifier since it categorizes the noun with other nouns such *xian* ‘string,’ *shengzi* ‘rope,’ and *lu* ‘road’ based on their long and slender shape, a feature inherent to these nouns. In contrast, *tiao* in (33b) is used with the abstract noun *dianhua xianshu*, meaning ‘number of telephone lines.’ As an abstract noun, it does not come with any shape. The use of *tiao* actually imposes a shape interpretation on the noun, similar to the use of *tiao* with nouns such as *xinwen* ‘news’ because the content of news is words in lines. The partitioning is in a sense not inherent to the noun. What is more important here is that either use of *tiao* can be followed by *de*, as evidenced from the above examples.

Second, as discussed above, Cheng and Sybesma’s claim that only massifiers can be modified by adjectives is reputed in Tang (2005), which argument will not be repeated here. The following examples in (34) further illustrate that the two claims made by Cheng and Sybesma cannot be maintained.

- (34) a. ..pai-le wu-qian **zhang de** yizi...(A. S. Corpus)
put:in:order-ASP five-thousand CL DE chair
‘...put five thousand chairs in order...’
- b. bu xiang yiban xiangji bixu yasuo-cheng yi **xiao zhang**
not like ordinary camera must press-into one small CL

de dipian... (A. S. Corpus)

DE negative

‘It’s not the same as ordinary cameras where you have to compress the image into a small negative.’

In the above two examples, *zhang* classifies *yizi* ‘chair’ and *dipian* ‘negatives’ based on the flat shape. (34a) shows that *zhang* is compatible with *de* and (34b) indicates that *dipian* can be modified by an adjective.

One may argue that when a sortal classifier occurs with *de* or is modified by an adjective, it is changed into a massifier. Given this, in Borer’s analysis, (31a), for example, would have the following structure:

- (35) [_{#P} wu-bai-wan [_{NP} **zhi** (**de**) [_{FP} [_{NP} yazi]]]]
 five-hundred-ten:thousands CL DE duck

Note that since *de* is optional in (35), (35) would also generate a surface string which is isomorphic to the one that involves a sortal classifier supposedly.

Similarly, Watanabe’s analysis would face the same problem because the # head is also optionally occupied by $\emptyset$. If *zhi* in (31a) is analyzed as a massifier, the structure in (36) would also give rise to a surface string that is indistinguishable from the one that involves a sortal classifier.

- (36) [_{#P} [_{XP} wu-bai-wan zhi] [_# $\emptyset$ /de [_{NP} yazi]]]
 five-hundred-ten:thousands CL DE duck

If a sortal classifier is not that structural different from a massifier, it calls into question the different structural analyses for sortal classifiers and massifiers. It then follows that an analysis assuming the same structure is favored, namely, an analysis assuming that both sortal classifiers and massifiers occupy the same position. The distinction between a classifier and a massifier will then depend crucially on the noun that a classifier/massifier occurs with. If the partitioning involves natural singularities based on the inherent properties of the nouns, what is involved is a sortal classifier. If the divider imposes an arbitrary division, it is a massifier. Take *tiao* as an example again. It can be treated as a sortal classifier when a noun such as *hai she* ‘sea snake’ is used. But when it is used with a noun such as *xinwen*

‘news,’ it is a massifier. Thus the distinction between a classifier and a massifier is a lexical matter depending on the noun used. If this is on the right track, it implies that Chierchia’s analysis (1998a, b) and Borer’s extension of Chierchia’s cannot be right. In other words, even at the bare noun level, the mass/count distinction is still present. I will follow Wilhelm (2008) in assuming that languages like Chinese require classifiers because the numerals are semantically deficient in the sense of not having the *OU* function which gives the number of ‘object units’ (i.e., atoms) in a plurality, and, not, as is assumed by Chierchia and others, the bare nouns.

2.3.2 The Clausal Analysis

A question arises as to what renders *de* possible. Let us go back to the above examples where *de* can be used with a sortal classifier. Noticeably, when a number involved indicates an approximate quantity or amount, as shown in the following examples repeated from above, a sortal classifier can felicitously occur with *de*.

- (37) a. **yue** er-shi yu zhi de xiao qun huimian jiu (A. S. Corpus)
about twenty more CL DE small group gray:face egret
‘a small group of about twenty-some gray-faced egrets’
b. **jin** yi-bai wei de qiangjiu ren yuan (A. S. Corpus)
close:to one-hundred CL DE rescue worker
‘close to one hundred rescue workers’
c. hao **ji** bai tiao de hai she (A. S. Corpus)
quite several-hundred CL DE sea snake
‘many hundreds of sea snakes’
- (38) a. Mei chao **yue** sheng-xia ershi-si mei de luan
every nest about give:birth-down twenty-four CL DE egg
(lit.) ‘Every nest has about twenty-four eggs.’
b. Yi nian yue zhongzhi-le yi-bai-sishi-**duo**-wan
one year about plant-ASP one-hundred-forty-more-ten:thousands
ke de shumu.
CL DE tree
(lit.) ‘(They) planted more than one million and four
hundred thousand trees a year.’

The examples in (38) are Tang's (2005) two examples from the CKIPG, repeated here from above. In all the examples in (37) and (38), the fact that the number is not exact is evidenced by the use of *jin* 'close to,' *yu* 'more,' *yue* 'about,' *ji* 'several,' and *duo* 'more.' A possible analysis of the use of *de* is to claim that all the N-C sequences involve *you* 'have' and thus are clausal in disguise:¹¹

- (39) a. yue (**you**) er-shi yu zhi de xiao quan huimian jiu
about have twenty more CL DE small group gray:face egret
b. (**you**) jin yi-bai wei de qiangjiu renyuan
have close one-hundred CL DE rescue worker
c. (**you**) hao ji bai tiao de hai she
have quite several hundred CL DE sea snake
- (40) a. (**you**) ershi si mei de luan
have twenty four CL DE egg
b. (**you**) yi-bai-sishi-duo-wan ke de shumu
have one-hundred-forty-more-ten:thousands CL DE tree

Let us call this analysis the clausal analysis. A crucial problem that this analysis has is that it cannot be applied to the case when reduplication is involved, as shown in the following example.

- (41) a. Ta ba **yi bao bao de** dongxi ban-jin wu li.
he BA one CL CL DE thing move-in house inside

11 Thanks to C.-T. Huang for pointing out this possibility to me. As pointed out by a reviewer for EACL-5, this analysis is essentially the same as the one that has been suggested for possessives in the literature. According to another reviewer, it is also similar to Cheng and Sybesma's (1998) analysis for the massifiers with *de*—except that they consider similar examples with classifiers ill-formed.

- (i) Zhangsan (you) de shu
Zhangsan have DE book
'Zhangsan's book'

- ‘He moved a lot of things into the house.’
- b. *Ta ba **yue yi bao bao de** dongxi ban-jin wu li.
he BA about one CL CL DE thing move-in house inside
- c. *Ta ba **you yi bao bao de** dongxi ban-jin wu li.
he BA have one CL CL DE thing move-in house inside

The reduplication with the numeral *yi* ‘one’ in (41a) gives rise to a plural reading which involves a non-fixed quantity and renders the use of *de* possible, but the clausal analysis with or without *yue* ‘about’ cannot be applied to it, as shown in (41b) and (41c).

Similarly, it cannot be applied to a massifier. For example, (42a) cannot be interpreted as involving a non-exact quantity, as in (42b):

- (42) a. Ta chi-le **san wan (de)** fan.
he eat-ASP three CL-bowl DE rice
‘He ate three bowls of rice.’
- b. Ta chi-le **yue you san wan de** fan.
he eat-ASP about have three CL DE rice
‘He ate about three bowls of rice.’

In fact, the presence of *you* with the N-C sequence without *yue* ‘about’ in the above example is ungrammatical:

- (43) *Ta chi-le **you san wan de** fan.
he eat-CL have three CL-bowl DE rice

I will propose a unified analysis in the next section.

2.3.3 A Unified Analysis

Now let us go back to the conditions that render *de* possible. So far there are two conditions that make the use of *de* felicitous:

- (44) a. when the quantity is non-fixed
b. when a massifier is used

In addition to the case with a non-fixed quantity, *de* can appear when an exact number is involved. The relevant examples are repeated below.

- (45) a. pai-le **wu-qian zhang de** yizi...(A. S. Corpus)
 put:in:order-ASP five-thousand CL DE chair
 ‘put five thousand chairs in order...’
 b. **wu-bai-wan zhi de** yazi (A. S. Corpus)
 five-hundred-ten:thousands CL DE duck
 ‘five million ducks’
- (46) bu xiang yiban xiangji bixu yasuo-cheng **yi xiao zhang de** dipian... (A. S. Corpus)
 not like ordinary camera must press-into one small CL
 DE negative
 ‘It’s not the same as ordinary cameras where you have to compress the image into a small negative.’

What makes the use of *de* possible in the above examples? Luckily, an emphasis or a contrastive focus is found. The number can be either big as in (45), meaning ‘as many as,’ or very small as in (46), meaning ‘as small as.’ In (45), the use of *de* emphasizes the quantity. In the case of (46), the pre-classifier adjective *xiao* ‘small’ provides the extra information which can be focused on. More discussion of pre-classifier adjectives will be given in the next section.

The following example in (47) below further shows that an exact number which can be used with *de* may not be restricted to big numbers or the number one. What can be emphasized may depend on the speaker’s point of view. The example in (47) is acceptable because since the number is applied to ‘seed’ lecturers it may be regarded as a big one from the speaker’s point of view.

- (47) tongshi you peiyang-le **23 wei de** zhongzi
 at:the:same:time again cultivate-ASP 23 CL DE seed
 jiangshi...(A. S. Corpus)
 lecturer
 ‘at the same time 23 ‘seed’ lecturers were cultivated...’

A question that arises immediately is why the N-C sequence in (48) cannot be emphasized and why it does not felicitously occur with *de*.¹²

- (48) a. ??**san ge de** ren
 three CL DE person
 ‘three people’
 b. ??**san ge de** shala
 three CL DE salad
 ‘three salads’

Indeed, neither (48a) nor (48b) seems to be acceptable. The former involves a count noun, while the latter a mass noun. In either case, *ge* cannot occur with *de* when a small number is involved.

Despite this, the combination of *wei*, another classifier used for human beings, with the *dalishi* ‘man of might,’ does not seem to be as bad:

- (49) Yaoshi neng you san wei/??ge de dalishi, jiu neng tai-qi zhe jia
 if can have three CL/CL DE man:of:might then can lift-up this CL
 gangqin.
 piano
 ‘If there can be three men of might, they can lift this piano.’

A contrast is found in (49). While *san ge de* is not quite acceptable, *san wei de* is felicitous. This is reminiscent of Tang’s observation concerning information weight with respect to (8) and (9). Fundamentally, this may be due to the fact that more information can be emphasized. While Tang finds it helps if the head noun is heavier in the examples (8) and (9), it is found here that when there is more information on the use of a classifier, it greatly improves the grammaticality. In (49), in addition to its function as a partitioner, *wei* is more polite compared to *ge*. This additional meaning can then be emphasized, making the use of *de* felicitous.

Now the use of *de* is summarized as follows:

12 Thanks to the audience and a reviewer for EACL-5 for this question.

- (50) a. When a massifier is used
 b. When the quantity is non-fixed
 c. When there is an emphasis or a contrastive focus

The conditions in (50) are compatible with the use of *de* for adjectives. For example,

- (51) a. ta de **duan** tui
 he DE short leg
 ‘his short legs’
 b. ta de **duan de** tui
 he DE short DE leg
 ‘his short leg’
 c. ta de **duanduan** *(de) tui
 he DE short DE leg
 ‘his short legs’

As shown in the first two examples, the adjective *duan* ‘short’ can modify the head noun with *de* or without *de*. But the meaning is different. When *de* is not present, *duan* indicates the inherent property of the legs. (51a) then refers to both of his legs which are short. But when *de* is present, the adjective will take the contrastive reading. (51b) then refers to the short leg, as opposed to the other one which is not short. Interestingly, when reduplication is used as in (51c), the occurrence of *de* is obligatory. In this use, there is an emphasis on the degree of shortness in the use of the adjective. Just like the use of *de* for an N-C sequence, inherency, emphasis and contrastive focus are also relevant. This should not be surprising because the same marker *de* is involved. However, it should be pointed out that there is a difference between an N-C sequence and an adjective. For the former, the use of *de* is never required. This is unlike the use of *de* for the latter because *de* is not always optional, as discussed above.^{13, 14}

13 In Chapter 3, it will be argued that a *de*-less N-C sequence occurs in the Spec of NP and raises to the Spec of DP to check referentiality. A *de* modifier, however, occurs in adjunct positions.

From the above discussion, what is crucial for our concern here is that the use of *de* does not seem to lie solely on the use of classifiers/massifiers. What seems to be at stake is the N-C sequence as a whole. This then favors an analysis which organizes all the relevant information into one constituent.

14 With respect to the analysis of *de*, there does not seem to be a consensus in the literature. For example, while in Kitagawa and Ross (1982), *de* is inserted as a modification marker between the modifying element and the head noun via an insertion rule, Tang (1993) takes *de* following a modifier as a functional category or a clitic as suggested in C.-R. Huang (1987).

On the other hand, *de* is argued to occupy the position of D in Simpson (2001). Following the complement analysis of Kayne (1994), Simpson analyzes adjective/relative clauses as follows. The derivation of (i) is given in (ii)-(iv):

- (i) **lǚ de** huaping
 green DE vase
 'green vase'
- (ii) [DP **de** [CP [IP huaping **lǚ**]]
 DE vase green
- (iii) [DP **de** [CP huaping_i [IP t_i **lǚ**]]]
- (iv) [DP [IP t_i **lǚ**]_m [D **de** [CP huaping_i t_m]]]

In (ii), *de* sits under D which takes a CP complement, where the adjective *lǚ* functions as a predicate to the head noun *huaping*. The head noun then moves to the Spec of CP as in (iii). Finally, the movement of the remnant IP to the Spec of DP results in (iv). This kind of analysis is supported in Saito, Lin and Murasugi (2008). On the other hand, Paul (2007) takes *de* to be a non-root complementizer, arguing against Dikken and Singhapreecha's (2004) linker analysis of *de* in terms of an underlying predicate, located in a small clause or a relative clause (Sproat and Shih 1988, 1991, Duanmu 1998, Simpson 2001).

Finally, Y.-H. Li (2007) takes *de* to be a head category which requires two phrases, but it differs from a regular head category in two aspects. First, it does not contribute categorical features to the projection dominating *de*. Second, there is never a selection requirement for a phrase containing *de*. A head category as such is just like a conjunction word such as *and* in English. See also Zhang (2008) for a similar analysis. In this paper, I simply take *de* to be a modification marker without further discussion.

I will call it #P, i.e., NumP. This means Number is syntactically represented in a #P.¹⁵ More discussion of a #P will be included in Section 2.4.

The general idea is as follows. I will distinguish the two types of classifier with the [+/-mensural] semantic feature, an analysis similar to Tang's. The [+mensural] feature will make *de* possible, which is the condition under (50a). As for (50b), it may be claimed that when a phrase is marked with the [+PL, +IND] features, *de* can be used. This includes the plural marking with reduplication plus the numeral *yi* 'one.' Pending more discussion of reduplication in Section 2.4.4, here I simply say that the combination [*yi*-CL-CL] is generated in the lexicon and is marked with the [+PL, -IND] features.

In this analysis, the # head in a #P is not occupied by *de*/sortal classifier as suggested by Watanabe for Chinese. Instead, it is occupied by a sortal classifier/massifier. Crucially, unlike Watanabe's suggestion that only the [+/-Num] distinction is required for languages such as Chinese, I suggest that the singular/plural distinction is required and a further distinction between a fixed/non-fixed quantity is also needed. Moreover, unlike Watanabe's placement of a #P on top of NP, I have placed the #P under the Spec of NP.

The compatibility between a classifier/massifier and *de* can now be stated as follows:

- (52) A #P is compatible with *de* when the # head is marked with either [+mensural] or [+PL, +IND] or when the whole #P is emphasized or contrastively focused.

15 The syntactic notion of number is quite different from that of mass/count distinction and that of homogeneity/discreteness. Rothstein (2007) argues that adjectives such as *big/small* in English can only modify nouns which denote "naturally atomic entities," i.e., inherently discrete entities. However, this does not affect the fact that they can modify a mass noun, as shown in the following example.

- (i) In a department store: 'The **big** furniture is on the third floor.'

Rothstein (2007) proposes that homogeneity/discreteness is a "real word property," which should be distinguished from the mass/count distinction, which is a grammatical distinction in English and cannot be learned on the basis of conceptual distinctions between objects and stuff.

2.3.4 Measurement Reading

The use of *de* calls for the organization of all the relevant information in an N-C sequence. Is there more evidence for the structure of an N-C sequence with a head noun? Let us go back to the discussion of a pre-classifier adjective. According to X. P. Li (2008a), Chinese has a restricted set of adjectives that can appear before classifiers/massifiers—only measure adjectives such as *da/xiao* ‘big/small’ are allowed, not attributive adjectives like *lan de* ‘blue,’ *piaoliang de* ‘beautiful,’ etc. Pre-classifier adjectives such as *da/xiao* ‘big/small’ measure a quantity in relation to a contextually dependent standard. For example,

- (53) a. Wo chi-le **yi da ge** pingguo.
 I eat-ASP one big CL apple
 ‘I ate an apple, which is big for me.’
 (External/comparative)
 ‘I ate a big part of that apple.’
 (Internal/partitive)
- b. Wo chi-le **yi da bao** binggan.
 I eat-ASP one big CL biscuit
 ‘I ate a bag of biscuits, which made me full.’
 (External/comparative)
 ‘I ate a big part of that bag of biscuits.’
 (Internal/partitive)

According to X. P. Li, both classifiers and massifiers modified by adjectives such as *da* and *xiao* take two kinds of interpretation of measurement as indicated in the translation. For example, in (53b) it can be that ‘I eat a bag of biscuits till it exceeds the capacity of my stomach’ or that ‘I eat a bag of biscuits bit by bit till I eat more than half of that bag of biscuits.’ X. P. Li calls the two types of interpretation—External Measurement (EM) and Internal Measurement (IM), respectively. EM shows the comparison of the entity in question with respect to an external standard inferred from context, such as in the comparison between a bag of biscuits and the stomach. On the other hand, IM shows some partitive relation of the entity that is atomized by classifiers, like the portioning out of biscuits from a bag.

In either case, X. P. Li maintains that a pre-classifier adjective does not directly modify the classifier/massifier. This, however, may not be true. In other words, it might be still possible to establish a relation between the pre-classifier adjective and the classifier/massifier given the fact that a classifier/massifier is a unit of measurement. The measurement can be compared to an external standard, or to an internal standard.

With the analysis in mind, let us consider the following examples.

- (54) a. yi/san **da** wan tang
 one/three big CL soup
 ‘a big bowl of soup/three bowls of soup’
 b. **hao da de** yi/*san wan tang
 very big DE one/three CL soup
 ‘a very big bowl of soup/three very big bowls of soup’
 c. ***hao da de** tang
 very big DE soup

(55) a. yi/san **zheng** zhi ji¹⁶

16 There are some dialectal variations with respect to the use of *zheng* as a pre-classifier adjective. For some speakers, the use of *zheng* for numerals other than one is not quite acceptable. For others, while the pre-classifier adjective *zheng* can occur with numerals larger than one, they don't accept numerals bigger than ten (X. P. Li, personal communication):

- (i) a. **shi** zheng zhi ji
ten whole CL chicken
'ten whole chickens'
b. ***er-shi** zheng zhi ji
twenty whole CL chicken
'twenty whole chickens'

Interestingly, X. P. Li (2008b) claims that there is a contrast between a numeral smaller than ten and a vague quantity in allowing a pre-classifier adjective such as *da/xiao* 'big/small,' as illustrated below.

- (ii) a. **liang/shi/*ji/*shi-yi da ge** pingguo
two/ten/several/ten-one big CL apple
'two/ten/several/eleven big apples'
b. ***xuduo da ge** pingguo
a:lot big CL apple
'many big apples'

According to X. P. Li, for the reason that the pre-classifier adjective *da/xiao* measures single atoms one by one, small numerals are preferred pragmatically and much easier to be measured with regard to a certain criterion.

While I agree with Li's judgment that a numeral larger than ten does not seem to be acceptable, I do not accept his judgment that *ji* 'several' is allowed to occur with a pre-classifier adjective. What seems to matter is simply whether the quantity is indeterminate or not. Both *xuduo* 'a lot' and *ji* 'several' denote an indeterminate quantity and thus cannot occur with a pre-classifier adjective. If this is indeed the case, it actually supports our analysis that a classifier/massifier is marked with either [+IND] or [-IND], as will be discussed Section 2.4.3.

On the other hand, the reason why a numeral bigger than ten does not occur with a pre-classifier adjective may be due to the the same contrast as in the following examples:

- one/three whole CL chicken
 ‘a whole chicken/three whole chickens’
- b. **zhengzheng** yi/san zhi ji
 as:a:whole one/three CL chicken
 ‘a whole chicken/three chickens as a whole’
- c. ***zhengzheng** ji
 as:a:whole chicken

First, as shown in (54a) and (55a), *da* ‘big’ and *zheng* ‘whole’ can appear immediately before a classifier/massifier. If it is on the right track that pre-classifier adjectives modify the classifier/massifier, now the question is what *hen da de* ‘very big’ in (54b) and *zhengzheng* ‘as a whole’ in (55b) modify. From (54c) and (55c), it is clear that *hao da de* and *zhengzheng* cannot modify *tang* ‘soup’ and *ji* ‘chicken’ directly. It then follows that they can only modify the numeral, the classifier/massifier or the combination of the numeral and classifier/massifier, i.e., the N-C sequence. On the other hand, the fact that *hao da de* as shown in (54b) is only compatible with the numeral *yi* may indicate that what *hao da de* modifies is the measurement itself represented by the massifier or the combination of *yi* and the massifier, rather

- (iii) a. shi da **xiang** shu
 ten big CL book
 ‘ten big boxes of books’
- b. ***shi-yi** da xiang shu
 ten-one big CL book
 ‘eleven big boxes of books’
- c. *shi da **xiangzi** shu
 ten big CL book
 ‘ten big boxes of books’
- d. ***shi-yi** da **xiangzi** shu
 ten-one big CL book
 ‘eleven big boxes of books’

As shown in the above examples, when a pre-classifier adjective is used, the mono-syllabic numerals and the mono-syllabic *xiang* are preferred. Note that a pre-classifier adjective is also mono-syllabic. It seems that the N-(adjective)-C sequence forms a prosodic unit and do not allow any of them to be di-syllabic.

than the quantity alone. In contrast, *zhengzheng* in (55b) can either occur with the numeral *yi* ‘one’ or other numerals. When it occurs with the former, what it modifies is either the measurement, or the combination of *yi* and the massifier as *hao da de* in (54b). But when a numeral larger than *yi* ‘one’ is used, what it modifies is the quantity as indicated by its meaning ‘three chickens in total.’

The use of *manman* in the following examples is more revealing.

- (56) a. **yi/san man ping shui*
 one/CL full CL water
 ‘one full bottle of water/three full bottles of water’
 b. *manman yi/san ping shui*
 full one/three CL water
 ‘a full bottle of water/three full bottles of water’
 c. **manman shui*
 full water
 ‘full water’

While (56a) shows that *manman* ‘full’ does not have a pre-classifier counterpart, it is compatible with any numeral that follows as shown in (56b). The example in (56c) further shows that it does not modify a head noun directly. In fact, the concept of *manman* ‘full’ can only be related to the measurement represented by the massifier *ping* or the combination of *yi* and the massifier. It does not have anything to do with quantity. But it actually sits before the numeral.

In view of the examples (54)-(56), an analysis that will accommodate all the data in (54)-(56) should unify the information of quantity with the measurement. This is exactly what is proposed in this study. In other words, a numeral enters into relation with a classifier/massifier and the information of both quantity and measurement should be encoded in the functional head #. The pre-numeral modifiers in (54)-(56) will then modify the combination of the numeral and the classifier/massifier. The combination then enters spec-head agreement with the head noun. Modifiers such as *hen xiang de* in (57), however, are different from those discussed above.

- (57) a. **hen xiang de yi zhi ji**
 very savory DE one CL chicken
 ‘a savory chicken’
 b. **hen xiang de ji**
 very savory DE chicken
 ‘a savory chicken’

As shown in (57b), given the fact that *hen xiang de* can indeed modify the head noun, it follows that *hen xiang de* in (57a) should be able to modify the whole noun phrase, not just the #P.¹⁷

Now consider the so-called head-complement analysis. In the case of (54), the projection of a NumP (for numerals) along the lines of the DP-NumP-CLP-NP analysis will interfere with the relation between the modifier

17 Consider the following examples:

- (i) a. Ta he-le san **ping** kele.
 he drink-ASP three CL coke
 ‘He drank three bottles of coke.’
 b. Ta shuai-sui-le san **ping** kele.
 he throw:down-broken:into:pieces-ASP three CL coke
 ‘He broke three bottles of coke into pieces.’

The fact that *san ping kele* in the above examples can occur with a verb such as *he* or a verb such as *shuai-sui* seems to indicate that *ping* in (ib) may be taken to be the head of the noun phrase. This analysis, however, does not seem to be on the right track when one considers the following example.

- (ii) *Ta shuai-sui-le san **bei** shui.
 he throw:down-broken:into:pieces-ASP three CL water
 ‘He broke three cups of water into pieces.’

In (ii), *bei* ‘cup’ is used instead of *ping* ‘bottle.’ A plausible analysis to the contrast is that when *ping* is used, *kele* ‘coke’ is considered to refer to the *coke bottles* and can thus be broken into pieces. In other words, it is marked with the [+solid] feature because of the existence of *ping*. The use of *bei* ‘cup,’ however, does not have the same effect because the coke just happens to be in the cup. The two are separate and thus *kele* here will not refer to a solid entity.

and the head noun. Another way to maintain the head-complement analysis is to assume that NumP is projected under the Spec of CIP, resulting in a DP-CIP-NP instead. In other words, the NumP (for numerals) will be hiding under the Spec of CIP. This, however, will not work for (58) because *zhengzheng* ‘as a whole’ will require a quantity that is not indeterminate:

- (58) a. Ta mai-le zhengzheng **er-shi zhi** ji.
 he buy-ASP as:a:whole twenty CL chicken
 ‘He bought twenty chickens as a whole.’
 b. *Ta mai-le zhengzheng **henduo zhi** ji.
 he buy-ASP as:a:whole a:lot CL chicken
 ‘He bought a lot of chickens as a whole.’

The two can be distinguished by the [$\pm$ IND] feature in our analysis. More discussion of the feature hierarchy will be given in Section 2.4.3.

In view of the fact that a CIP is a #P, one may still maintain the head-complement analysis by having DP-#P-NP for this case. This means the quantity information will still need to be marked on the classifiers/massifiers, an approach similar to ours. However, when all the evidence is taken together, i.e., the use of the modification marker *de* and the use of different types of modifiers discussed in this section, it is preferable that an N-C sequence forms a constituent and the constituent as a whole enters a spec-head relation with the head noun. More evidence of this analysis will come from the interaction between a #P and different kinds of modifier and from the use of *ge* with a proper noun, as will be discussed in Chapter 3.

Our analysis is aligned with Greenberg’s (1990[1975]) observation that in classifier languages, classifiers appear to form a constituent with numerals, not with nouns. Thus, Greenberg (1990[1975], p. 227) states:

“There are many indications that in the tripartite construction consisting of quantifier (Q) [=numeral], classifier (Cl), and head noun (N), Q is in direct construction with Cl and this complex construction, which will be called the classifier phrase, is in turn in construction with N.”

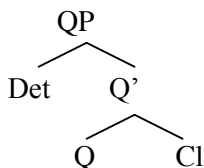
Some of the indications are as follows: (i) that of the possible orders of Q, Cl and N, only those in which Q and Cl are adjacent to each other occur, i.e., Q and Cl may not be separated by N; (ii) that the order of Cl and Q in a given

language is usually fixed, while the order of classifier phrase and N may vary; and (iii) that in many languages Q and Cl form a prosodic unit or even a single word.

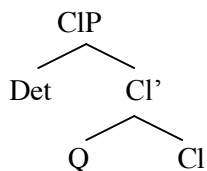
A similar idea is also given in Croft (1994, p. 151, cited in Cheng and Sybesma 1999, p. 536), which states that the classifiers in Chinese entertain a very close relationship with the numerals: the numeral and the classifier form one constituent.¹⁸

Moreover, it is in the same spirit as the analysis proposed in C.-T. Huang (1982), which is followed in J. Lin (1997) and Hsieh (2005).¹⁹

(59) a.



b.

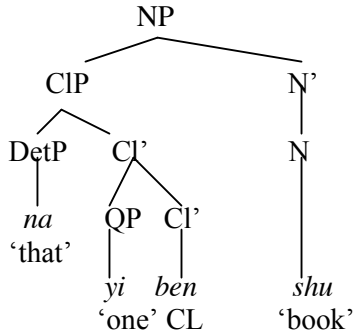


C.-T. Huang posits that an N-C sequence projected as either a QP or a ClP is located in the Spec of NP/N'. On the other hand, J. Lin proposes the structure in (60b) for the noun phrase in (60a).

18 In fact, in Tang (1990, p. 403), the numeral and the classifier are both generated under the Cl head.

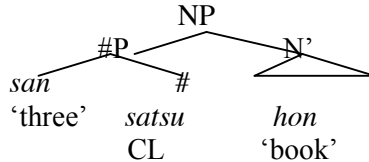
19 For more discussion of Hsieh (2005), please see Chapter 4.

- (60) a. na yi-ben shu
 that one-CL book
 ‘that book’
 b.



Finally, unlike Watanabe's placement of a #P on top of NP, this analysis is similar to Fukui and Takano's (2000) analysis of a noun phrase in Japanese:²⁰

(61)



Note that this analysis is semantically well-formed in the sense that the numeral as a quantifier takes the classifier as its domain of quantification and the head noun as its nuclear scope, forming a tripartite structure as in [Q + DoQ] + NS] (Q= quantifier, DoQ=domain of quantification, NS=nuclear scope).

20 This analysis follows Fukui and Takano (1998) in assuming that a case particle heads its own projection KP on top of NP.

2.3.5 Summary

Based on the discussion of *de*, this section shows that just like a massifier, a sortal classifier can occur with *de* when certain conditions are met. This then favors a same structure analysis for sortal classifiers and massifiers. A unified analysis is proposed, unifying the number information in a #P. Further evidence from modifiers such as *hao da de* ‘very big,’ *zhengzheng* ‘as a whole’ and *manman* ‘full’ conspires to show that a numeral enters into relation with a massifier/classifier, forming a constituent, which then forms spec-head agreement with the head noun.

2.4 #P as the Locus of Number

In this section, I will first discuss H. Yang’s (2005) analysis toward explaining the co-occurrence restrictions on marking plurality and then show how number is organized in a #P in my proposal.

2.4.1 H. Yang (2005)

H. Yang (2005, p. 62) discusses three strategies to express plurality in Chinese and claims that only one strategy can be used in a DP domain. The first one is the use of numerals:

- (62) Method 1: Using numerals
- a. **san ben** shu
three CL book
‘three books’
 - b. **na liang xiang** zhi
that two box paper
‘those two boxes of paper’

The second method which may be used is the reduplication of classifiers:

- (63) Method 2: Via reduplicated classifiers
- a. **yi zhang zhang** zhi
one CL CL sheep
‘pieces of paper’

Not: ‘one piece of paper’

- b. Jintian zaoshang wo kandao ta ba **yi zhang zhang zhi**
 today morning I see he BA one CL CL paper
 fang dao shubao li.
 put to school:bag in
 ‘This morning I saw him put the pieces of paper into his
 school bag.’

In (63), the classifier *zhang* is repeated. The last method involves the use of the morpheme *xie*:

(64) Method 3: Through the morpheme *xie*

- a. **Na** chezhan hen yuan.
 that station very far
 ‘That station is very far.’
 b. **Na xie** chezhan hen yuan.
 that XIE station very far
 ‘Those stations are very far.’

H. Yang claims that the interpretation of the noun phrase in (64a) is singular; it refers to one particular station that is far. But when *xie* appears after the demonstrative, the noun phrase refers to multiple stations.

The three methods, according to H. Yang, exhibit co-occurrence restrictions. No two methods can be used simultaneously.

(65) Restriction A: * [Dem *XIE* Num CL N] (*Method 1+Method 3)

- a. **na san ben** shu
 that three CL book
 ‘those three books’
 b. ***na xie san ben** shu
 that XIE three CL book

(66) Restriction B: *[Numeral (>1) CL CL N] (*Method 1+Method 2)

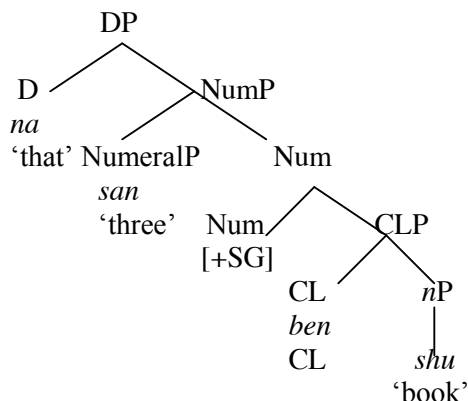
- a. **yi zhang zhang zhi**
 one CL CL paper
 ‘pieces of paper’
 b. ***san zhang zhang zhi**

three CL CL paper

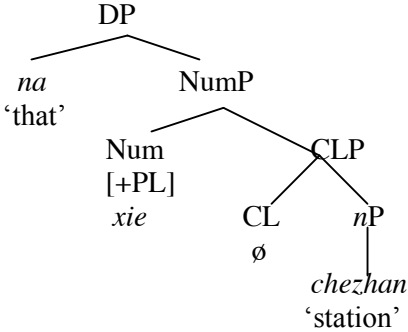
- (67) Restriction C: *[Dem XIE CL CL N] (*Method 2+Method 3)
- Shi shei ba **zhe yi zhang zhang zhi** reng zai di shang de?
be who BA this one CL CL paper toss at ground top DE
'Who is the person who tossed the pieces of papers on the ground?'
 - *Shi shei ba **zhe xie yi zhang zhang zhi** ren zai di shang de?
be who BA this XIE one CL CL paper toss at ground top DE
 - *Shi shei ba **zhe yi xie zhang zhang zhi** reng zai di shang de?
be who BA this one XIE CL CL paper toss at ground top DE

H. Yang resorts to the feature specification to explain the above restrictions. She claims that only one number feature can be specified in the Number head in each DP domain. Realizing two distinct number features at the same Num head leads to ungrammaticality. Assuming the head-complement analysis, H. Yang generates NumeralP under Spec of NumP and the Num head can be marked with either the [+SG] or [+PL] feature as in (68) and (69). The [+SG] Num head, the unmarked category, is indicated by zero morphology while the marked category, the [+PL], needs to be realized on an overt element.

(68)



(69)



In (69), *xie* is treated as a plural marker generated under Num. Restriction A in (65b), for example, is mainly due to the fact that two distinct features, i.e., [+SG] and [+PL], are generated under the Num head. The latter is needed to spell out *xie*, while the former is required for the numeral *san* ‘three.’²¹

Similarly, Restriction B, as exemplified in (66b), is ruled out because of the existence of two distinct features, i.e., [+SG] and [+PL]. A question that can be raised is why (66a) is possible. To allow for (66a), H. Yang claims that *yi* in this case is not a true numeral because it does not mean ‘one piece of paper’ but ‘pieces of paper.’ It is an Indeterminate Number Marker, which has to be licensed by a [+PL] Num feature in a spec-head configuration.

Finally, in order to rule out (67b) and (67c), H. Yang proposes that in the reduplicated CL structure, the plural feature under the Num head is a special kind, having a distinct feature marking plurality. This feature is a strong one which attracts a c-commanded element to move into that position to instantiate the feature. Since the CL head is the closest projection head to the Num head, the element under the CL head moves to the Num head and the feature under the Num head is sent to phonology to be spelled out as a reduplicated form. (67b) and (67c) are ruled out because the [+PL] feature of *xie* will compete for the same position with the special kind of plural feature instantiated by the reduplicated CL structure.

21 As H. Yang points out herself, (65b) can also be ruled out because *xie* generates under Num and the word order *xie san* is never possible.

While H. Yang's observations that there are certain co-occurrence restrictions of the strategies for plural marking seem to be on the right track, the detailed description of the technical parts does not seem to be as appealing. First, the [+SG] feature under the Num head in (68) strikes one as odd because the use of numerals larger than one is one of the three methods used for expressing plurality as she claims. After all, in a language that allows number agreement, a number larger than one will trigger number agreement:

(70) three books/*book

In other words, numerals contribute to number in a sense.

Second, it is not clear why the numeral *yi* 'one' has to be licensed by a [+PL] Num feature.

2.4.2 Plural Marking with Quantifiers

In addition to the above-mentioned problems, H. Yang's (2005) study is not complete because quantifiers are not included. What is the relation between a quantifier and a sortal classifier/massifier? According to Doetjes (1997), a quantifier may denote a quantity of matter, as in *a lot of sand*, a quantity of events, as in *John often visits the National Gallery*, or a quantity of individuals, as in *many linguists* and *all linguistics*. The quantifiers in the above examples are *a lot*, *often*, *many* and *all*.

Now consider the following examples in Chinese. Different quantifiers in Chinese seem to vary with respect to their compatibility with a sortal classifier/massifier:

- (71) a. **mei** *(*yi ben*) shu
every book
'every book'
- b. **ge** (**yi ge*) guo
each one CL country
'each country'
- c. **renhe** (*yi ben*) shu
any one CL book
'any book'

- d. **henduo/xuduo** (ben) shu
a:lot/a:lot CL book
'a lot of books'
- e. **ji** (*ben) shu
several CL book
'several book'

Consider *henduo* and *xuduo* first. There seems to be some controversy. The combination *henduo/xuduo ben shu* in (71d) is taken to be ungrammatical in Doetjes (1997, p. 192), along with the following examples: (Doetjes' judgments).

- (72) a. *henduo* (*wan) tang
a:lot CL soup
'a lot of bowls of soup'
- b. *henduo* (*jin) nailao
a:lot CL cheese
'a lot of catties of cheese'

This claim, however, is too strong. The presence of the classifier/massifiers may make the combinations sound redundant, but they are not ungrammatical. This is testified by the existence of the combination from the A. S. Corpus:

- (73) a. ...guo-jian men wai tingfang you **xuduo liang**
indeed-see door outside park have a:lot CL
jiche (A. S. Corpus)
motorcycle
'...indeed see a lot of motorcycles parked outside'
- b. you **henduo pian** lunwen baokao yong-le... (A. S. Corpus)
have a:lot CL thesis report use-ASP
'there are a lot of theses used...'
- (74) a. ...na **xuduo ge** tianjing kuaihuo de rizi...(A. S. Corpus)
that a:lot CL quiet happy DE day
'those many quiet happy days'
- b. ...yiji **xuduo zhong** hehua... (A. S. Corpus)

and a:lot CL water:lily
 ‘...and a lot of kinds of water lilies...’

I will thus take the combinations to be grammatical. Tang (2007) also accepts such a combination and argues that the *xuduo*-type of quantifiers may take either CIP-NP or NP complements. In my analysis, I will assume that when a quantifier does not take a sortal classifier/massifier, a #P does not need to be projected. I will take this kind of quantification to be number-neutral. In this sense, the equivalent of *henduo/xuduo* is ‘a lot,’ rather than ‘many’ or ‘much.’ More importantly, when a classifier/massifier is not present, the noun phrase is number-neutral.²²

However, unlike Borer’s analysis or Tang’s analysis, I take quantifiers to be modifiers for nouns or noun phrases. In other words, quantifiers do not take nouns or noun phrases as complements. In this way, it is possible to explain why *de* is optional. As mentioned above, the use of *de* with quantifiers is always possible because a quantifier is always predicational (Keenan 1971).

22 Compare the following examples.

- (i) a. *henduo shala*
 a:lot salad
 ‘a lot of salad’
- b. *henduo ge shala*
 a:lot CL salad
 ‘many salads’

The difference between the two lies in the fact that (1a) is about the amount of salad, while (1b) deals with the number of individuated units. In other words, the two do not mean the same thing. Li and Lin (2008) show in an experiment that there is a conceptual difference between a mass noun (e.g., *shala* ‘salad’) and a count noun (e.g., *dingzi* ‘nail’). In a picture identification task, when a subject was asked ‘Which picture has more salad?’, he/she would judge based on the total amount of the salad, not the number of individuated units. On the other hand, when asked ‘Which picture has more nails?’, the subject would respond based on the numbers only, not the combined volume. Despite this, it would be no doubt that when a classifier/massifier is used, only the number of individuated units will count.

- (75) a. **henduo (de)** kuaile
 a:lot DE happiness
 ‘a lot of happiness’
 b. **xuduo (de)** xiyue yu shouhuo
 a:lot DE joy and achievement
 ‘a lot of joy and achievement’

Interestingly, this is in a sharp contrast with (76): When *henduo/xuduo* ‘a lot’ is used to quantify over classifiers/massifiers, it cannot occur with *de*.

- (76) a. Ta chi-le henduo/xuduo (***de**) wan de fan.
 he eat-ASP a:lot/a:lot DE CL DE rice
 ‘He ate a lot of bowls of rice.’
 b. Na ben shu ta kan-le henduo/xuduo (***de**) bian.
 that CL book he read-ASP a:lot/a:lot DE times
 ‘He read that book a lot of times.’

The use of the measure word *bian* in (76b) is different from those we have investigated previously because the combination *henduo/xuduo bian* is used to measure the event, not individuals. But it clearly shows that *henduo/xuduo* cannot occur with *de* when it modifies such a measure word. This difference justifies the claim that a classifier/massifier constitutes a special class different from a noun and the latter but not the former can be predicated. Moreover, it also shows that it is the combination [*henduo/xuduo*+CL] that is predicational when a classifier/massifier is present.

Next, as shown in (77b), *ji* ‘how many, several’ is just like a numeral in that it cannot appear without a classifier. The only difference it has with a numeral is that it denotes a vague number.

- (77) a. Ni mai-le **ji ge pingguo**?
 you buy-ASP how:many CL apple
 ‘How many apples did you buy?’
 b. Wo mai-le **ji *(ge) pingguo**.
 I buy-ASP several-CL apple
 ‘I bought several apples.’

I will take it that *ji* occupies the same position as a numeral.

Finally, consider two other quantifiers *mei* ‘every’ and *renhe* ‘any.’ *Mei* ‘every’ requires the presence of a classifier/massifier, while *renhe* ‘any’ can optionally take a classifier/massifier. Compare (71a) with (71c) and then (71c) with (71d), it seems to be the case that *renhe* in some way behaves like *mei* and in another behaves like *henduo/xuduo*. When a sortal classifier/massifier is present, I will take *renhe* to occur in the same position as *mei*.²³ This use of *renhe* cannot occur with *de*.

- (78) a. Ta meiyou jian-guo renhe (***de**) yi ge ren.
 he not see-ASP any DE one CL person
 ‘He hasn’t seen anyone.’
-

23 Quine (1960) argues that *any* in English be analyzed as a universal quantifier, but this view is challenged by many. For example, Linebarger (1980) argues for an existential quantifier analysis.

Free-choice *renhe* cannot occur in episodic sentences, where free-choiceness cannot be licensed.

- (i) a. **Mei yi ge ren dou** jin-lai le.
 every one CL person all enter-come PART
 ‘Everyone came in.’
 b. ***Renhe (yi ge) ren dou** jin-lai le.
 any one CL person all enter-come PART
 ‘Anyone came in.’
 (ii) **Renhe (yi ge) ren dou** keyi lai.
 any one CL person all can come
 ‘Anyone can come.’

Though it is tempting to treat free-choice *any* as a universal quantifier, not every case of free-choice *any* takes a universal interpretation:

- (iii) a. **Anybody** can solve this problem.
 b. Press **any key** to continue.

This can be handled by treating Free-Choice Items as indefinite variables (in the sense of Heim 1982). For the analysis of *renhe* along those lines, please see Giannakidou and Cheng (2006).

- b. Renhe (***de**) yi ge ren dou keyi canjia.
 any DE one CL person all may participate
 ‘Anyone can participate.’

The fact that *mei* requires the presence of a classifier and thus the existence of a numeral is not surprising. Compare the following examples in English.

- (79) a. every book
 b. *every water

(79b) is ruled out because, as Gil (1995) points out, the distributive universal quantification requires singularities.

In contrast, as shown in (71b), *ge* ‘each’ cannot occur with an N-C sequence. T.-H. Lin (2007) takes it to be a determiner.

2.4.3 A Feature Taxonomy

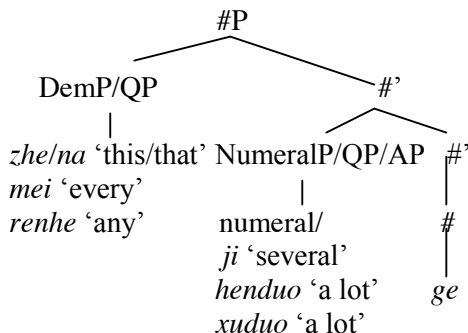
Unifying all the elements that are related to classifiers in expressing number, I propose the following structure of a #P in Chinese.²⁴ The # head is occupied by a classifier/massifier. Numerals such as *yi* ‘one’ and *ji* ‘several’ are merged in NumeralP along with QPs such *henduo/xuduo* ‘a lot’ and APs (pre-classifier adjectives). On the other hand, *mei* ‘every,’ *renhe* ‘any’ and *henduo/xuduo* ‘a lot’ are QPs merged under the Spec of #P.²⁵

24 If the multiple Spec system of the bare phrase structure proposed in Chomsky (1995) is followed, it might be possible to claim that NumeralP occupies the lower Spec of #P.

25 Please note that in this analysis, multiple layers of #’ are allowed. This will accommodate the fact that a numeral as well as a pre-classifier adjective can occur with a classifier/massifier:

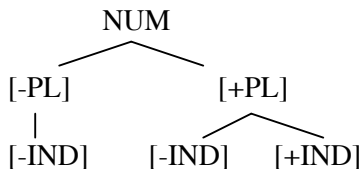
- (i) yi **da** wan fan
 one big CL rice
 ‘one big bowl of rice’

(80)



The features associated with the # head are organized as follows (IND=indeterminate):

(81)



What the taxonomy in (81) means is that in Chinese singularity/plurality is distinguished by the $[\pm\text{PL}]$ feature. Furthermore, while $[-\text{PL}]$ is always marked with $[-\text{IND}]$, two kinds of plural marking are distinguished under $[\text{+PL}]$ with the $[\pm\text{IND}]$ subfeature. As discussed in Section 2.3.4, the $[-\text{IND}]$ feature is crucial for the use of *zhengzheng* ‘as a whole,’ while $[\text{+IND}]$ is indispensable for the use of *de*. The examples discussed are given as follows:

- (82) a. $[-\text{PL}, -\text{IND}]$: *yi ben shu* ‘one book’
 b. $[\text{+PL}, \text{+IND}]$: *er-shi ji ben shu* ‘twenty-some books’;
ji ben shu ‘several books’;
henduo/xuduo ben shu ‘a lot of books’

- c. [+PL, -IND]: *er-shi ben shu* ‘twenty books’

For the marking of the features of the # head, I adopt a view that a morphologically simple classifier/massifier will be specified for [NUM] without a value, in contrast to morphologically complex classifiers/massifiers such as [*yi-xie*], [CL-CL] and [*yi*-CL-CL], as will be discussed in the next section. The [NUM] feature will be given a singular value as [NUM: -PL, -IND] when the classifier/massifier merges with the numeral *yi* ‘one.’ A plural value marked as [NUM: +PL, -IND] will be given to the classifier/massifier when it merges with a numeral large than *yi* ‘one.’ Finally, when a classifier/massifier is merged with *ji* ‘several’ or a quantifier such as *henduo/xuduo* ‘a lot’, the # head will be valued as [NUM: +PL, +IND].

Based on the distinction made above, the fact that *de* is sensitive to [+IND] predicts that the following examples are grammatical.

- (83) a. **henduo/xuduo ben de** xin shu
 a:lot/a:lot CL DE new book
 ‘a lot of new books’
 b. **er-shi ji ben de** shu
 twenty several CL DE book
 ‘twenty-some books’

Quantifiers such as *henduo* and *xuduo* ‘a lot’ in (83a) will identify the [+PL, +IND] feature and make the presence of *de* possible when they occur with a classifier. Similarly, the N-C sequence in (83b), which is specified for [+PL, +IND], will make *de* possible.

In Chapter 4, it will be shown that the features proposed here are also relevant for the use of *-men*. The [+PL, +IND] features of the #P will check with the [+plural] feature of the [common noun-*men*]. In other words, the co-occurrence is captured via an agreement relation.

2.4.4 More on the # Head

In my analysis, the # head is occupied by a classifier/massifier. As was pointed out in Chapter 1 and discussed in H. Yang (2005), plurality can further be derived from the reduplication of a sortal classifier/massifier. The relevant examples are repeated here:

- (84) a. ...da-zhe **yi ge ge** zhangpeng. (A. S. Corpus)
pitch-ASP one CL CL tent
...(many) tents were pitched...'
b. ...yi kuai pinji jie faren hehu de yuandi, neng kai-chu
one CL barren and lack take:care DE land can grow-out
duo duo jiankang de huarui...(A. S. Corpus)
CL CL health DE flower:bud
'...barren and unattended patch of land is able to produce (many)
healthy kinds of flower.'
- (85) Jintian zaoshang wo kandao ta ba **yi zhang zhang** zhi
today morning I see he BA one CL CL paper
fang dao shubao li.
put to school:bag in
'This morning I saw him put the pieces of paper into his school
bag.'

The reduplication of classifiers *ge* and *duo* gives rise to a plural interpretation. From the above examples, it is apparent that the presence of *yi* 'one' is optional. Given the fact that the reduplication indicates an indeterminate amount, the reduplication morphology may seem to be a candidate for valuating the [+PL, +IND] features. But unlike the case with morphologically simple classifier/massifiers discussed above, I will adopt the lexical approach in assuming that [*yi*-CL-CL] is generated in the lexicon and is marked with the relevant features. On the other hand, [CL-CL] as exemplified in (86) below will be marked with the singular value, giving rise to the singular interpretation, meaning 'each CL.'

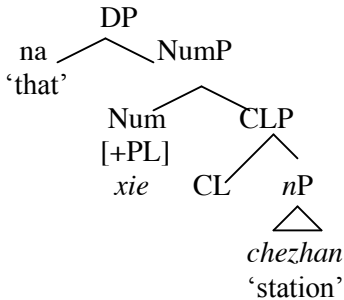
- (86) Ta-men jia you san ge xiaohai, **ge ge** dou hen jiechu.
he-MEN family have three CL child CL CL all very outstanding
'There are three children in the family; each of them is
outstanding.'

The lexical approach has the advantage of explaining why only the numeral one is generated in a [*yi*-CL-CL] and why it is always plural. On the other hand, the fact that *yi* in [*yi*-CL-CL] can be optionally omitted will be

discussed in Section 3.5 of Chapter 3. In summary, while [CL-CL] is marked with [NUM: -PL], [yi-CL-CL] is marked with [NUM: +PL, +IND]. This analysis is crucial for the use of *-men* as will be discussed in Chapter 4.

The discussion of the # head is not complete without including *xie*, which is related to plurality. As pointed out in H. Yang (2005), there are two kinds of analysis of *xie* in the literature. In one analysis, *xie* is treated as a plural CL (e.g., Norman 1988, Cheng and Sybesma 1999); in the other, *xie* is taken to be an element under Num (e.g., Iljic 1994, 2001). Following Iljic, H. Yang (2005) also places the plural element *xie* under the Num head, which takes a CLP as its complement:

(87)



H. Yang claims that the CL head in (87) is semantically vacuous. When *xie* is inserted to instantiate the plural feature, the CL *ge* can optionally appear in the CL head as a phonological place holder.

As a crucial piece of evidence for the analysis, H. Yang cites the following examples claiming that *xie* in both *zhe xie* 'these' and *(yi) xie* 'some' cannot be a plural classifier because it can occur with a classifier:

- (88) a. **zhe xie ge** xuesheng (Li and Shi 2003, p. 23)
 this XIE CL student
 'these students'
- b. **You xie ge** ren bu hui shuo hua. (Iljic 1994, p. 101)
 have XIE CL person not can speak word
 'There are some people who cannot speak (very well).'

However, it is not clear why unlike other numerals, the presence of a classifier/massifier is not required. As a matter of fact, the use of *ge* in the above cases seems to be of a marked nature. Among 1116 instances of *na xie* available from the the A. S. Corpus (5000 concordance lines), there are 8 instances where they occur with the general classifier *ge*. Among the 3228 instances of *yi xie* ‘some,’ none of them occur with any classifier. Y.-H. Li (1999, p. 96) simply takes (89b) to be ungrammatical, in contrast to (89a).

- (89) a. Ta dui **zhe xie ge** ren mei hao yinxiang. (Y.-H. Li 1999, p. 96)
 he to this XIE CL not good impression
 ‘He does not have a good impression of these people.’
 b. *Ta dui **yi xie ge** ren mei hao yinxiang. (Y.-H. Li 1999, p. 96)
 he to one XIE CL person not good impression
 ‘He does not have a good impression of some people.’

In fact, Y.-H. Li (1999) and Li and Shi (2003) posit that *xie* originates as a CL and is later reanalyzed as part of a demonstrative in D due to the frequent use of expressions like *zhe/na yi xie* ‘these/those’ and the possibility of dropping *yi* ‘one.’ This kind of analysis, however, is not new. Ever since Dragunov (1952, p. 202) (cited in Iljic 1994, p. 92), it has been claimed that *xie* is evolving into a ‘plural suffix of demonstratives.’ Specifically, Iljic (1994, p. 112), also notes that *xie ge* is not a recent innovation. The combination, according to him, could already be found before nouns in ancient *baihua* (i.e., written vernacular):

- (90) Zuo **xie ge** jia kanjianr gei yatou-men chuan.
 make XIE CL padded sleeveless:jacket give maidservants wear
 ‘Make some padded sleeveless jackets for the maidservants to wear’
 (Honglou Meng, “Dream of the Red Chamber,” Chapter 40; in Lü (1947, Section 9.56)).

It is thus reasonable to say that the reanalysis took place a while ago.

I follow Y.-H. Li's analysis that *xie* is a kind of classifier (also Norman 1988, Cheng and Sybesma 1999), which provides a unit for counting, though I do not assume with her that demonstratives occupy the D position²⁶. Pending more discussion below, I will take *xie* to be marked with the [+PL, +IND] features. This means that the following combination is in a sense syntactically plural:

- (91) na xie shui
 that XIE water
 'those portions of water'

As for the co-occurrence of *xie* and *ge* as in (90), it can be claimed that *xie* in these examples is treated as a suffix, which is then attached to the demonstratives preceding it, making the presence of a general classifier possible.

As a plural classifier indicating an indeterminate 'amount,' *xie*, should be able to occur with the modification marker *de*. This prediction is borne out. According to the A. S. Corpus, 7 out of 3228 lines that have *yi xie* occur with *de*:

- (92) a. ...jiushi ni buyao gen ta yiqi da diandong,
 that:is you not:want with he together play video:game
 buyao kan **yi xie de** shiqing, zhe jiaozuo huai
 not:want see one XIE DE matter the call bad
 pengyou. (A. S. Corpus)
 friend
 'That is, you shouldn't play video games with him. Don't look
 at some things. This is called a bad friend.'
- b. Ruguo you **yi xie de** wenti, ni dui haizi de
 if have one XIE DE problem you to child DE
 jiaoyou bu manyi de shihou...(A. S. Corpus)
 making:friends not satisfied DE time
 'If there are some problems, when you are not satisfied with
 the way your child is making friends with others...'

26 See the discussion of this in Chapter 4.

While the combination of *na xie de* is not common, one instance of *na xie de* is found among 1116 lines out of the 5000 concordance lines available:²⁷

- (93) ...jiushi zhuanmen yixin zhi xiang kan shu de
 that:is specially whole:hearted only want read book DE
na xie de ren na! Shu-chong. (A. S. Corpus)
 that XIE DE person PART book-worm
 ‘That is, those people who want to study wholeheartedly. Bookworms!’

In my analysis, I assume the D-N-C sequence forms a constituent with the Dem(onstrative)P generated under the Spec of #P just like *mei* ‘every’ and *renhe* ‘any,’ following Hsieh (2005).

Finally, let us point out that *xie* is not always required to make plurality, in contrast to H. Yang’s claim. As already pointed out in Chen (2004), there are cases where a singular form is used when semantics might dictate a plural form. Here is an example from the A. S. Corpus:

- (94) ...bu zhidao **na boli de suipian** zhong ke-bu-keyi zhaodao
 not know that glass DE piece in can-not-can find
 xie yinxiang de canhai?
-

27 Lee (2007), citing many previous studies, discusses an ongoing change in the nominal structure of Hong Kong Cantonese—the *ge*-insertion. *Ge* is the equivalent of the Mandarin *de*. Unlike in Mandarin, it can occur after a D(-N)-C sequence even when no plurality is involved.

- (i) a. ni go **ge** wuihaau
 this CL GE public-exam
 ‘this public examination’
 b. ni go **ge** kinghoeng
 this CL GE tendency
 ‘this tendency’

In my view, it seems that this use of *ge* in Cantonese is expanded to all kinds of #P, not just some kinds of #P, assuming that Cantonese has the same syntactic structure as Mandarin.

XIE image DE residue

‘I don’t know whether amongst these pieces of glass some residues of images can be found.’

I will take this kind of demonstrative to be generated under the Spec of DP directly and assume no #P for them.

2.4.5 Co-Occurrence Restrictions Revisited

Finally, with the feature analysis in mind, let us re-examine H. Yang’s ungrammatical examples which exhibit three types of restrictions:

- (95) Restriction A: * [Dem XIE Num CL N] (*Method 1+Method 3)
- a. ***na xie san ben** shu
that XIE three CL book
- Restriction B: *[Numeral (>1) CL CL N] (*Method 1+Method 2)
- b. ***san zhang zhang** zhi
three CL CL paper
- Restriction C: *[Dem XIE CL CL N] (*Method 2+Method 3)
- c. *Shi shei ba **zhe xie yi zhang zhang** zhi ren zai di shang de?
be who BA this XIE one CL CL paper toss at ground top DE
- d. *Shi shei ba **zhe yi xie zhang zhang** zhi reng zai di shang de?
be who BA this one XIE CL CL paper toss at ground top DE

All of the above examples can be ruled out by claiming that the [+PL] feature cannot be identified twice in a #P. Similarly, with the constraint that the [+PL] feature can only be identified once, the following combinations can be successfully ruled out:

- (96) a. ***na xie henduo ben** shu
that XIE a:lot CL book
‘those many books’
- b. ***na xie xuduo ge** guojia
that XIE a:lot CL country

What is then the status of the numeral *yi* ‘one’? Instead of assuming that it is marked for [+SG], I will adopt a lexical approach and assume that the

numeral *yi* ‘one’ and *xie* are generated together in the lexicon and that the combination is marked with the [+PL, +IND] features. Again like the case with [*yi*-CL-CL], this approach has the advantage of explaining why only *yi* is used but not other numerals.

Now consider *mei* ‘every’ and *renhe* ‘any’:

- (97) a. ***mei yi ben ben** shu
every one CL CL book
b. ***renhe yi ben ben** shu
any one CL CL book
- (98) a. ***mei yi xie** shu
every one XIE book
b. ***renhe yi xie** shu
any one XIE book
- (99) a. ***mei henduo ge** xuesheng
every a:lot CL student
b. ***renhe henduo ge** xuesheng
any a:lot CL student

The contrast in grammaticality found in (97)-(99) does not seem to be related to double plural marking because it is unlikely that *mei* ‘every’ or *renhe* ‘any’ itself takes the plural specification. What seems to be at stake is the indeterminate plurality. This echoes what we previously said about the singular requirement of *mei* ‘every.’

At this point, one might wish to consider the following examples:

- (100) a. **mei liang ge** xuesheng
every two CL student
‘every two students’
b. **renhe liang ge** xuesheng
any two CL student
‘any two students’

Similarly, in English when a numeral larger than one occurs with *every*, it will check agreement with the head noun:

- (101) Two decades ago one of *every two men* diagnosed with prostate cancer could expect to die within 10 years.

It seems that *every* in this case has no direct relationship with the head noun. Indeed, F.-W. Lin (2004) treats the two usages of *mei* in Chinese as two different *mei*'s, in contrast to Liu's (1997) analysis, where two different structures are distinguished, as represented in (102). In one case, *mei* is combined with the classifier and generated under DET and in the other *mei* is treated as an adverb modifying a numerical NP.

- (102) a. [[**Mei ge**]_{DET} **laoshi**] dou dao le. (Liu 1997, p. 94)
 every CL teacher all arrive PART
 'Every teacher has arrived.'
 b. [[**Mei**]_{ADV} **san ge ren**] fen yi kuai dangao.
 every three CL person divide one CL cake
 'Every three persons can share a piece of cake.'

Lin disputes Liu's approach by claiming that 'the consequence of this analysis will be hundreds of determiners since there are hundreds of classifiers in Mandarin Chinese and all the determiners have the same kind of quantificational force.' The analysis that *mei* functions as an adverb when the numeral is larger than one, however, seems to be on the right track, as evidenced in the following example:

- (103) *Wo xihuan **mei liang ge xuesheng**.
 I like every two CL student
 'I like every two students.'

The above example shows that the combination *mei liang ge xuesheng* cannot be a constituent. Now consider *renhe*:

- (104) Ni keyi na-zou **renhe liang ge wanju**.
 you may take-away any two CL toy
 'You may take any two toys.'

The fact that (104) is possible shows that *renhe liang ge wanju* is a constituent. Given the fact that there is a contrast between this sentence and those in (97)-(99), I will then assume that *renhe* disallows its # head being [+PL, +IND] but it can take a numeral larger than one within a #P, unlike *mei* ‘every.’²⁸

One last point on marking plurals with a classifier is that number can also be expressed by conjoining two #Ps, as in (105). *De*, in this case, is optional.

- (105) a. Ta bu renxin kandao [**yi ben you yi ben (de)**] shu
 he not bear see one CL and one CL DE book
 bei diu-diao.
 BEI throw-away
 ‘He couldn’t bear to see the books being thrown away one after another.’
- b. Ta bu renxin kandao [**na xie**] [**yi ben you yi ben *(de)**] shu
 he not bear see that XIE one CL and one CL DE book
 bei diu-diao.
 BEI throw-away
 ‘He couldn’t bear to see those books being thrown away one after another.’

(105a) is reminiscent of the above analysis of *de*. The amount involved is indeterminate. Therefore, *de* can be used. What is more interesting is (105b), where *de* is obligatory when *na xie* is used. Given our analysis that the [+PL, +IND] features can be identified only once in the #P, making the #P a modifier seems to be a solution to the problem.

If the proposal that the constraint that [+PL] can only be triggered once is on the right track, we could predict that no two #Ps can occupy the same position of a noun phrase. This prediction is borne out:²⁹

- (106) a. *Ta zhua-zou-le [**na xie**] [**mei yi zhi**] yang.
 he take-away-ASP that XIE every one CL sheep

28 This does not rule out the possibility that *renhe* modifies the whole N-C-N sequence.

29 More discussion of these ungrammatical sentences will be included in Chapter 5.

- b. *Ta zhua-zou-le [**na xie**] [**henduo zhi**] yang.
he take-away-ASP that XIE a:lot CL sheep
 - c. *Ta zhua-zou-le [**na xie**] [**yi xie**] yang.
he take-away-ASP that XIE one XIE sheep
 - d. *Ta zhua-zou-le [**na xie**] [**san zhi**] yang.
he take-away-ASP that XIE three CL sheep
 - e. *Ta meiyou zhua-zou [**na xie**] [**renhe yi zhi**] yang.
he not take-away-ASP that XIE any one CL sheep
- (107) a. *Ta zhua-zou-le [**mei yi zhi**] [**na xie**] yang.
he take-away-ASP every one CL that XIE sheep
- b. *Ta zhua-zou-le [**henduo zhi**] [**na xie**] yang.
he take-away-ASP a:lot CL that XIE sheep
 - c. *Ta zhua-zou-le [**yi xie**] [**na xie**] yang
he take-away-ASP some XIE that XIE sheep
 - d. *Ta zhua-zou-le [**san zhi**] [**na xie**] yang.
he take-away-ASP three CL that XIE sheep
 - e. *Ta meiyou zhua-zou [**renhe yi zhi**] [**na xie**] sheep.
he not take-away any one CL that XIE sheep

Note under the present study, the following combination should be grammatical as predicted because a #P and a #P with *de* occupy different syntactic positions:

- (108) a. [**na xie**] [**xuxuduoduo zhi de**] yang
that XIE many CL DE sheep
'those many sheep'
- b. [**na xie**] [**chengqianshangwan zhi de**] yang
that XIE thousands CL DE sheep
'those thousands of sheep'

2.4.6 Summary

In this section, it is shown that number is unified in a #P, headed by a classifier/massifier or *xie* which is a plural classifier marking an indeterminate quantity.

2.5 Conclusion

In this chapter, it is shown that Number in Chinese is syntactically encoded via the use of a #P. A noun which is modified by quantifiers without sortal classifiers/massifiers is number-neutral. The projection of a #P, i.e., NumP, the head which is occupied by a sortal classifier/massifier, unifies different strategies of plural marking related to classifiers in Chinese. The [+PL] feature in a #P can only be identified once and the [$\pm$ IND] feature is found to be relevant for other aspects of grammar such as the use of the modification marker *de* and modifiers such as *zhengzheng* ‘as a whole.’

CHAPTER 3 THE DP LAYER

3.1 Introduction

This chapter concerns the issue of (non-)referentiality. The fact that Chinese does not have definite/indefinite articles such as *the* and *a* in English, which are claimed to occupy the D(eterminer) position of the DP layer, calls into question how a noun phrase is interpreted and whether the DP layer is projected in Chinese. Without the help of definite/indefinite articles, the interpretations of a noun phrase in Chinese depend on internal and external factors. The internal factors include the use of demonstratives, numerals, classifiers, quantifiers and different types of modifiers in different positions inside a nominal. On the other hand, the external factors include the location of a noun phrase in a sentence, the predicate that it is associated with, and the context in which the noun phrase is used. Speaking overall, this chapter argues that Chinese makes a distinction between the referentiality and non-referentiality of a nominal by the use of two distinct positions inside a noun phrase. All noun phrases that are referential have their #Ps in the Spec of DP, whereas those that are non-referential allow their #Ps to be located in the Spec of NP. This chapter proceeds as follows. Section 3.2 discusses the three possible interpretations of various noun phrases, bare or not so bare. Section 3.3 discusses four studies of modifiers, including those by Zhang (2006), Hsieh (2005), Tang (2007) and J. Lin (2007), and their proposals for the hierarchical structure of a nominal. A revised version of Hsieh (2005) is proposed in Section 3.4. Section 3.5 examines how the omission of *yi* ‘one’ bears on the issue of referentiality. Finally, Section 3.6 concludes the chapter.

3.2 Three Possible Interpretations

In this section, I will discuss the interpretations of two types of noun phrase, including bare nouns and quantified phrases.

3.2.1 Bare Nouns

First, let us start with bare nouns. As is well known, bare nouns in English, whether bare plurals or mass nouns, take a surprisingly large range of

interpretations. Similarly, as pointed out in R. Yang (2001, pp. 22-25), a bare noun in Chinese patterns in the same way as bare plurals and mass nouns in English, displaying a very similar pattern of quantificational variability. The following examples are taken from R. Yang's study.

- | | | | |
|-----|----|---|---------------------------------|
| (1) | a. | Dogs are extinct/are/widespread. | = 'the dog species' |
| | b. | Dogs are mammals. | = 'all dogs' |
| | c. | Dogs are intelligent. | = 'most dogs' |
| | d. | I saw dogs (yesterday). | = 'some dogs' |
| (2) | a. | Snow is common/rare in this area. | = 'the snow kind' |
| | b. | Snow is colorless. | = 'snow in general' |
| | c. | I saw snow yesterday. | = 'some snow' |
| (3) | a. | Gou juezhong le.
dog extinct PART
'Dogs are extinct.' | = 'the dog kind' |
| | b. | Gou shi burudongwu.
dog be mammal
'Dogs are mammals.' | = 'all dogs' |
| | c. | Gou hen jiling.
dog very smart
'Dogs are intelligent.'
'The dog(s) is/are intelligent.' | = 'most dogs'
= 'the dog(s)' |
| | d. | Wo kanjian gou le.
I see dog PART
i. 'I saw some dog(s).' | = 'some dogs' |
| | | ii. 'I saw the dog(s).' | = 'the dog(s)' |

Like English bare plurals and mass nouns, Chinese bare nouns also take kind-level predicates (cf. (3a)) and object-level predicates (cf. (3b)-(3c)) and also occur in episodic contexts (cf. (3d)). The only difference between the bare nouns in the two languages is that a bare noun in Chinese can be definite in a generic context or episodic context as shown in (3c) and (3d), which is not possible in English. R. Yang relates this to the lack of a lexical definite determiner in Chinese. Following the idea in Chierchia (1998a) that languages which lack a lexical definite determiner generally have the option

of using ι to repair type-mismatch (between a kind term and an individual-taking predicate), R. Yang attributes the definite interpretation to the existence of ι .¹

Another difference between Chinese and English lies in the interpretations of bare nominals in the preverbal position of episodic contexts. Compare the English and Chinese examples in (4) and (5).

- (4) a. **Dogs** are barking. = ‘some dogs’
 b. **Snow** is falling. = ‘some snow’
- (5) **Gou** zai jiao.
 dog in bark
 ‘The dog(s) is/are barking.’ = ‘the dog(s)’
 ?? ‘Dogs are barking.’ = ‘some dogs’

As shown in the contrast between (4) and (5), while an English bare plural takes an indefinite reading in an episodic context, this reading is not readily available for a Chinese bare noun. The preferred reading is a definite one, with the bare noun referring to some salient dog or dogs in the discourse. Despite this, R. Yang argues that an indefinite reading becomes immediately available when there is material occupying left-peripheral position. For example,

- (6) a. **Waimian/Yuanchu gou** zai jiao.
 outside far:away dog in bark

¹ As is pointed out in R. Yang (2001), two main approaches have been proposed for the semantics of English bare nominal arguments: the Neocarlsonian approach (Carlson 1977, 1989, Chierchia 1998a, etc.) and the Ambiguity approach (Wilkinson 1991, Diesing 1992, Kratzer 1995, etc.). The former argues that bare nominals are kind-denoting and attributes their quantificational variability to the properties of the predicational context (and some type-adjusting operations). The second approach treats bare nominals as being ambiguous between kind terms in kind-level contexts and properties in object-level contexts. Krifka (1995) and Chierchia (1998a, b) have further argued that bare nominal arguments in a determinerless language like Chinese should be treated as basic kind-denoting terms.

- i. 'Outside/Far away, dogs are barking.'
- ii. 'Outside/Far away, the dog(s) is/are barking.'
- b. **Jintian jingcha** zhua ren le.
today policeman arrest person PART
i. 'Today policemen arrested some people.'
- ii. 'Today the policeman/policemen arrested some people.'

Each of the subject bare nouns in (6) has two possible readings, definite and indefinite. R. Yang also shows that an indefinite reading may be forced in the context of a universal quantifier such as 'in everyone's backyard.'

- (7) **Gou zai mei ge ren de houyuan li** jiao.
dog in every CL person DE backyard inside bark
'Dogs are barking in everyone's backyard.'

R. Yang proposes that as a *pro*-drop language, the Chinese examples in (5) have two possible structures as follows:

- (8) Structure-1: [_{TopP} [_{IP} Gou zai jiao]] -definite and indefinite readings
Structure-2: [_{TopP} Gou_i [_{IP} *pro*_i zai jiao]] - definite readings only

The two structures in (8) give rise to different possibilities for interpretation, as also indicated in (8). In one possibility, if the left-peripheral material takes the topic position, the bare noun will then take the subject position, giving rise to a definite or indefinite reading. In the other possibility, the bare noun is forced to take the topic position and takes a definite reading. The definite reading, however, is preferred whenever possible because Chinese is a topic-prominent language (Li and Thompson 1976).

Finally, as a sentence may inherit a discourse topic from previous sentences (cf. C.-T. Huang 1982), the indefinite reading will also be made available because of the existence of such a topic, as illustrated below.

- (9) a. Waimian chao-de hen. **Gou** zai jiao.
Outside noisy-DE very dog in bark
i. 'Outside, it is very noisy. Dogs are barking.'
- ii. 'Outside, it is very noisy. The dog is barking.'

- b. [_{TopP} Waimian_i [_{IP} chao-de hen]]. [_{TopP} *pro*_i [_{IP} Gou zai jiao]].
 outside noisy-DE very dog in bark

In summary, in addition to a kind reading, ‘the dog kind’ (3a), a bare noun can take a definite ‘the dog(s)’ (3c, 3d and 5), indefinite ‘some dogs’ (5) and other readings such as ‘most dogs’ (3c), ‘some dogs’ (3d) and ‘all dogs’ (3b). I will use ‘pure quantity denoting’ or ‘pure quantificational’ to refer to the noun phrases which purely denote quantity and since they are not referring, they are neither definite nor indefinite.

Two important facts, however, must be added for the interpretations of bare nouns in Chinese. First, the use of *you* ‘have’ will only give rise to an indefinite in episodic/non-episodic contexts, as shown in (10).

- (10) a. **You haizi** hen tianzhen.
 have child very innocent
 i. ‘There is/are a child/children who is/are innocent.’
 = ‘some child/some children’
 ii. *‘The child/children is/are innocent.’
 ≠ ‘the child/the children’
 b. **You haizi** zai waimian.
 have child in outside
 i. ‘There is/are a child/children outside.’
 = ‘some child/some children’
 ii. *‘The child/children is/are outside.’
 ≠ ‘the child/the children’

Second, the use of the adverb *dou* ‘all’ will give rise to the universal reading, meaning ‘all,’ either generic as in (11a) or definite as in (11b).²

2 There are other factors that will affect the interpretations of a noun phrase. For example, when used as an object of *ba* or modified by a certain modifier, a bare noun can take a definite reading:

- (i) a. Ta **ba** dongxi na-zou le.
 he BA thing take-away PART
 ‘He has taken the thing away.’

- (11) a. Haizi **dou** hen tianzhen.
 child all very innocent
 ‘All children are innocent.’ = ‘all children’
 b. Haizi **dou** lai le.
 child all come PART
 ‘All the children have come.’ = ‘all the children’

In the following section, it will be shown that the above factors also play a crucial role in determining the interpretations of not-so-bare nouns.³

- b. [Wo zuotian mai de] shu bujian le.
 I yesterday buy DE book disappear PART
 ‘The book that I bought yesterday has disappeared.’

In this section, I will focus on the presence of *dou* ‘all’ and *you* ‘have’ in the subject. The effects that modifiers have on the interpretations of a noun phrase are discussed in Section 3.3.

3 One may wonder whether *you* ‘have’ can co-occur with *dou* ‘all.’ In a footnote in T.-H. Lin (2007, p. 26), he notes that C.-T. Huang pointed out to him that *dou* can occur with *you* as in (i).

- (i) **You** san ben shu wo **dou** hen xihuan.
 have three CL book I all very like
 ‘There are three books all of which I like.’

This is in contrast to the following example:

- (ii) ***You** san ge keren **dou** dao le.
 have three CL guest all arrive PART
 ‘*There are all of the three guests who arrived.’

C.-T. Huang suggests that there may be a topic/subject distinction: in (i) a subject is simultaneously quantified by *you* and *dou*, but in (ii) what is quantified by the two quantifiers is a topic. Now the question is what makes a subject different from a topic in the use of *dou*.

A possible answer to this question is that while in (ii), the indefinite noun phrase is quantified by the two quantifiers at the same time, in (i) only the empty

3.2.2 Not-So-Bare Nouns

With the discussion of bare nouns in mind, now let us consider the interpretations of quantified phrases, including numeral phrases and quantifiers. First, unlike a bare noun as shown in (3c), repeated in (12), a numeral phrase cannot occur as the subject of an object-level predicate such as *shanchang* ‘good at’ if it is not introduced by *you* ‘have,’ as shown in (13).⁴

- (12) **Gou** hen jiling.
 dog very smart
 ‘Dogs are intelligent.’ = ‘most dogs’
 ‘The dog(s) is/are intelligent.’ = ‘the dog(s)’
- (13) a. ***Yi ge ren** hen shanchang dalie. (Chen 2004, p. 1169)
 one CL person very good:at hunt
 b. **You yi ge ren** hen shanchang dalie. (Chen 2004, p. 1169)
 have one CL person very good:at hunt
 ‘Someone is a good hunter.’

In contrast, an indefinite can occur in the preverbal position of a sentence denoting an episodic context without *you* ‘have’:

- (14) **Yi zhi xiao qi’e** yaoyaobaibai zou-le shang-lai. (Chen 2004, p. 1170)
 one CL little penguin swaying walk-ASP go-come
 ‘A little penguin was waddling up.’

subject is quantified by *dou* ‘all.’ The former violates the ban on dual quantification, while the latter obeys it.

4 Please note that there is no such a restriction in a conditional context:

- (i) Yaoshi **yi ge ren** gou congming dehua,...
 if one CL person enough smart the:case
 ‘If a person is smart enough,...’

This contrast can be found in Cheng (1997) and Tsai (1994), where they, following the lines of Heim (1982) and Diesing (1992), claim that indefinites in Chinese lack inherent quantificational force, and are thus variables that need to be bound, rather than quantifiers. The binding requirement is satisfied by *you* in (13b), but not in (13a).

As for the contrast between (13a) and (14), consider Diesing's (1992) Mapping Hypothesis. According to her, the 'tripartite' structure for a quantifier in (15) is mapped off from the syntactic representation following the algorithm in (16).

(15) [quantifier][restrictive clause][nuclear scope]

(16) Mapping Hypothesis: VP-external NPs map onto the restrictive clause of a tripartite structure; VP-internal NPs map onto the nuclear scope.

For example, the LF representation of (17a) as shown in (17b) will map onto the tripartite structure in (17c), giving the interpretation in (17d).

- (17) a. Every dog barks.
 b. $[_{IP} [_{\text{every dog}}]_i [_{VP} t_i \text{ barks}]]$
 c. $[\text{every}(x)]_Q [x \text{ a dog}]_{RC} [x \text{ barks}]_{NS}$
 d. for all x , if x is a dog, x barks

The contrast between (13a) and (14) can be captured by the Mapping Hypothesis and the difference between a stage-level predicate (an s-level predicate) and an individual-level predicate (i-level predicate). An s-level predicate describes temporal properties or a temporary event, while an i-level predicate describes more permanent properties. According to Diesing, the indefinite subject of an s-level predicate is inside a VP. Being inside a VP, the indefinite subject in (14) should be able to be existentially bound by existential closure, satisfying the binding requirement. In contrast, the indefinite subject in (13a) cannot be bound by existential closure because, being the subject of an i-level predicate, it is generated outside a VP. A quantifier such as *you* in (13b) has to be used to quantify the indefinite subject.

Now consider NPs quantified by *henduo/xuduo* ‘a lot’ and *yi xie* ‘some.’⁵

- (18) a. **Henduo/Xuduo/?Yi xie xuesheng** hen shanchang diannao.
 a:lot/a:lot/one XIE student very good:at computer
 ‘A lot of/Some students are good at computers.’
 b. **You henduo/xuduo/yi xie xuesheng** hen shanchang diannao.
 have a:lot/a:lot/one XIE student very good:at computer
 ‘A lot of/Some students are good at computers.’
- (19) **Henduo/Xuduo/Yi xie xiao qi’e** yaoyaobaibai zou-le shang-lai.
 a:lot/a:lot/one XIE little penguin swaying walk-ASP go-come
 ‘A lot of/Some little penguins were waddling up.’

The examples in (18) and (19) are well-formed with only a minor contrast between the two types of predicates for the subject NPs quantified by *yi xie*. Now the question is as to the nature of the reading that would make it possible for the first type of NP to occur in the subject position of such an object-level predicate.

Milsark (1977) points out that indefinite NPs are potentially ambiguous. They can receive either a proportional or cardinal reading.

- (20) I saw some ghosts in the attic.

On the proportional reading, there is a presupposed set of ghosts and I saw some (of them) in the attic. The cardinal reading just claims that I saw a small number of ghosts in the attic. In terms of Diesing, the proportional reading is derived by the mapping the LF representation in (21a) onto (21b), while the derivation of the cardinal reading is given in (22a) and (22b).

- (21) a. ...[some x]_Q [ghosts(x)]_{RC} [...saw x in the attic]_{NS} (proportion)
 b. ...[_{VP} some ghosts_i [_{VP}...saw t_i in the attic]] (LF)

⁵ For a discussion of *yi xie*, please see Section 2.4.4 in Chapter 2. Here I will simply translate it as ‘some.’

- (22) a. ...[saw [some ghosts] in the attic]_{NS} (cardinal)
 b. ...[_{VP}...saw some ghosts in the attic] (LF)

In addition to the indefinite reading, a numeral phrase or a noun phrase quantified by *henduo* and *yi xie* can take a pure quantity reading (Li and Shi 2003), as shown below:

- (23) a. (*You) **san ge ren** bu gou.
 have three CL person not enough
 'Three people are not enough.'
 b. (*You) **yi xie ren** bu gou; (*you) **henduo/xuduo ren** cai xing.
 have one XIE person not enough have a:lot/a:lot person then work
 'It is not enough to have a few people; a lot of people will be required.'

As shown in the above examples, this non-referential reading, however, is not compatible with *you* 'have.'

Now a question arises is as to whether a numeral phrase or a quantified phrase can take a definite reading when it does not occur with *you* 'have,' just like a bare noun? Consider a numeral phrase first. The answer seems to be positive. The following examples are taken from Chen (2004):

- (24) a. Zai nar, **si ge jijie dou** you gezi de tezheng. (Chen 2004, p. 1165)
 in there four CL season all have each DE characteristics
 'Each of the four seasons there has its own characteristics.'
 b. Ta mai-le yi liang jiu che, (**si zhi**) **luntai dou** mo-ping le.
 he buy-ASP one CL old car four CL tire all wear-flat PART
 'He bought a used car. (The four tires) the tires are worn out.'

According to Chen (2004), the numeral phrases in (24) denote identifiable referents due to a shared general knowledge and frame-based association. For Chen, identificability 'is taken to be a pragmatic notion relating to the assumptions made by the speaker on the cognitive status of a referent in the mind of the addressee in the context of utterance'. A referent is considered to be identifiable if the speaker assumes that the addressee is able to identify the particular entity in question, by means of the linguistic encoding of the noun

phrase and in the particular universe of discourse. On the other hand, if the speaker cannot assume this, the referent will not be identifiable. For example,

- (25) a. George finally bought a house. (non-identifiable)
 b. George finally bought the house. (identifiable)

By using the cardinality expression in (25a), the speaker assumes that the addressee is not in a position to identify which particular house George bought. In contrast, the speaker assumes that the addressee knows which house he is talking about in (25b) by using the definite article *the*. The latter is identifiable, while the former is not. For my purpose here, it is sufficient to say that a non-identifiable referent is marked as an indefinite, while an identifiable referent comes from a definite interpretation.⁶

The examples in (24) are parallel to what is seen above about bare nouns. As in the case of a bare noun, the presence of *dou* will change a numeral phrase to be definite. What is more interesting is another example given by Chen:

- (26) Zhangfu zhao-lai-le **ji wei niwagong**. **Ji wei niwagong** yong-le
 husband find-come-ASP several CL tiler several CL tiler use-ASP
-

⁶ Chen (2004, p. 1165) also gives the following examples:

- (i) a. Xiaoxin, bie ba **liang ge haizi** chao-xing le.
 careful don't BA two CL boy wake-awake PART
 'Be careful. Don't wake up the two babies.'
 b. Ba **wu shan chuangzi** guan-shang.
 BA five CL window all shut-up
 'Shut all the five windows.'
- (ii) Ni renshi [**zuotian lai de**] (san ge) ren ma?
 you know yesterday come DE three CL person PART
 'Do you know the (three) people who came yesterday?'

According to Chen, while those in (i) have identifiable referents because of a shared specific knowledge and a situational context, the modifier plays a role in (ii). The effects of modifiers as shown in (ii) will be discussed in detail in the next section.

yi tian shijian ba fangding xiu-hao le. (Chen 2004, pp. 1171-1172)

one day time BA roof fix-fine PART

‘The husband hired several tilers. The tilers took a day to fix the roof.’

In this example, a numeral phrase is used anaphorically without the existence of *dou* ‘all.’ The first occurrence of *ji wei niwagong* in (26) introduces a new referent as the object of a transitive verb, and, on the second occurrence, it is interpreted as a fully identifiable referent coreferential with the previously introduced referent. I will take this to be definite.

Now consider a noun phrase quantified by *yi xie* ‘some’ and *henduo/xuduo* ‘a lot.’ As shown below, such a noun phrase can also take a definite interpretation with or without *dou* ‘all’:

- (27) a. Ta dao de shihou, **yi xie xuesheng dou** hai zai.
 he arrive DE time one XIE student all still in
 ‘Some of the students were still there when he arrived.’
 b. Ta dao de shihou, **henduo (ge) xuesheng dou** hai zai.
 he arrive DE time a:lot CL student all still in
 ‘A lot of the students were still there when he arrived.’
- (28) a. Ta zao nian cun-le **yi xie qian**. Danshi zhe ji nian lai,
 he early year save-ASP one XIE money but this several year come
 mei you gongzuo. **Yi xie qian** jiu zheme hua-guang le.
 not have work one XIE money then this:way spend-bare PART
 ‘He saved some money in his early years. But he hasn’t had any
 work in recent years. The little money he had has thus all been
 spent.’
 b. Ta zao nian mai-le **henduo/xuduo (jian) fangzi**. Danshi zhe ji nian
 he early year buy-ASP a:lot/a:lot CL house but this several year
 lai, mei you gongzuo. **Henduo/xuduo (jian) fangzi** jiu zheme
 come not have work a:lot/a:lot CL house then this:way
 yi jian yi jian de mai le.
 one CL one CL DE sell PART
 ‘He bought a lot of houses in his early years. But he hasn’t had any
 work in recent years. And (so) in this way, a lot of the houses have
 been sold off, one by one.’

In (28) the NP quantified by *yi xie* or by *henduo/xuduo* with or without a classifier in the above examples can refer anaphorically to the same NP in the previous context. Thus they should be definite.

Finally, consider *mei* ‘every’ and *renhe* ‘any.’ Unlike all the NP types seen so far, an NP quantified by *mei* and FCI *renhe* cannot take a definite interpretation in a subject position when *dou* is not present.⁷

- (29) Zuotian lai-le yi qun xuesheng. **Mei yi ge *(dou)** juan-le yi
 yesterday come-ASP one CL student every one CL all donate-ASP one
 ben shu.
 CL book
 ‘Yesterday a group of students came. Every one of them donated a
 book.’
- (30) Na ben shu hai mei dinggao. **Renhe yi ye *(dou)** hai keyi gai.
 that CL book still not finalized any one CL all still can change
 ‘That book has not yet been finalized. Any page of the book can be
 changed.’

A final word has to be said about the pure quantity interpretation and the indefinite interpretation. Consider the following examples.

⁷ Cheng (1995) notes that a *mei* phrase in the object position is odd if it is not focused. For the *mei* phrases in the following examples, however, no focus is required.

- (i) a. Ta xihuan **mei yi ge ren**.
 he like every one CL person
 ‘He likes everyone.’
- b. Ta renzhen de du-wan-le **mei yi ben shu**.
 he conscientious DE read-finish-ASP read one CL book
 ‘He finished reading every book in a conscientious way.’

The *mei* phrase in (ia) does not refer to any specific group of people. I will take this to be pure quantity-denoting. On the other hand, the *mei* phrase in (ib) refers to a specific set of books within the context.

- (31) a. **Mei yi ge ren** yi ci xian jie liang ben shu.
 every one CL person one time limit borrow two CL book
 ‘Each one can only borrow two books at a time.’
 b. ***You mei yi ge ren** chi-guo le.
 have every one CL person eat-ASP PART
 ‘Everyone has eaten.’

The ungrammatical example in (31b) shows that an indefinite interpretation is never possible for a strong quantifier such as *mei* ‘every.’ On the other hand, the *mei* NP in (31a) does not seem to be referential. I thus take it to be the pure quantity reading. Note that no *dou* is required to be present for this reading.

In contrast, *dou* is obligatory even for a pure quantity reading for the FCI *renhe* ‘any,’ as shown below.

- (32) **Renhe ren** ***(dou)** keyi shi shi kan
 any person all can try try see
 ‘Anyone can give it a try.’

On the other hand, the NPI *renhe* ‘any’ always receives an indefinite reading and has to occur with *you* ‘have’ when it occurs in the subject position.

- (33) a. **Meiyou renhe ren** lai.
 not any person come
 ‘Nobody came.’
 b. **You renhe ren** lai qing gaosu wo.
 have any person come please tell I
 ‘If anyone comes, please tell me.’

3.2.3 Summary

In summary, a noun phrase in Chinese, bare or not so bare, can take three kinds of interpretations: definite, indefinite, and a pure quantity reading. For the pure quantity reading, *you* is not possible. In the case with *mei* ‘every,’ *dou* is required for a definite interpretation. For a *renhe* ‘any’ noun phrase,

either *dou* or *you* is required for the reading. The findings in this section are summarized in the following table:

(34) Table 1: Possible Interpretations of Different Types of NP

	Definite	Indefinite	Pure Quantity
A. Bare nouns	✓	✓	✓ (* <i>you</i>)
B. Numeral phrases	✓	✓ *(<i>you</i> ^{^^})	✓ (* <i>you</i>)
C. Noun phrases quantified by <i>yi xie</i> ‘some’	✓	✓ *(<i>you</i> ^{^^})	✓ (* <i>you</i>)
D. Noun phrases quantified by <i>henduo/xuduo</i> ‘a lot’ or <i>henduo/xuduo</i> ‘a lot’+CL	✓	✓ *(<i>you</i> ^{^^})	✓ (* <i>you</i>)
E. Noun phrases quantified by <i>mei</i> ‘every’	✓ *(<i>dou</i> [^])	*	✓ (* <i>you</i>)
F. Noun phrases quantified by <i>renhe</i> ‘any’ (FCI <i>renhe</i>)	✓ *(<i>dou</i> [^])	*	✓ *(<i>dou</i> [^])
G. Noun phrases quantified by <i>renhe</i> ‘any’ (NPI <i>renhe</i>)	*	✓ *(<i>you</i> [^])	*

(‘^’ placed after *dou* or *you* indicates they are required when the noun phrase in question appears in a subject position. ‘^^’ placed after *you* indicates that whether *you* is required depends on the verb type.)

1. A bare noun in the subject position is usually taken to be a topic and interpreted as definite. Only when it is preceded by a topic will it take an indefinite reading. The indefinite reading does not need to be licensed, unlike that of quantified phrases.
2. The indefinite reading of quantified phrases, including Types B, C, D and F of noun phrases, has to be licensed when they occur with an i-level predicate.
3. The definite reading of Types B, C, and D of noun phrases can be licensed anaphorically.

4. The definite reading of noun phrases quantified by strong quantifiers including Types E and G need to be licensed by *dou*.
5. A pure quantity reading does not involve either *you* or *dou*.

In the next section the use of modifiers and the word order within a nominal will be discussed.

3.3 Modification and Hierarchy

In this section, four studies of modifiers and the hierarchical structure of a noun phrase are discussed: Zhang (2006), Hsieh (2005), Tang (2007) and J. Lin (2007).

3.3.1 Zhang (2006)

First, Zhang (2006) observes that the interpretations of Chinese indefinite nominals are correlated with the order of their modifiers and numerals. Consider her examples in (35).

- (35) a. **[dai yanjing de] [san ge]** xuesheng (OMN)
 wear glasses DE three CL student
 ‘three students who wear glasses’
 b. **[san ge] [dai yanjing de]** xuesheng (IMN)
 three CL wear glasses DE student
 ‘three students who wear glasses’

In (35a), the modifier *dai yanjing de* precedes the numeral, while in (35b) the numeral occurs before the modifier. The two types of indefinites (OMN, i.e., outer modifier nominal and IMN, i.e., inner modifier nominal) behave differently in their interpretations. According to Zhang, the former type is always specific, while the latter can be specific, non-specific, or quantity-denoting (not individual-denoting, Y.-H. Li (1998)). Zhang argues against the claim that the OMNs are definite. She presents two arguments to show that they are indefinite. In the first argument, she claims that there are contexts where definite nominals can occur, whereas OMNs cannot. Consider the following examples with her judgments.

- (36) a. Ni neng gei wo jieshao [[**san ge**] [**hui Fayu de**] **tongxue**] ma?
 you can to I introduce three CL know French DE student PART
 ‘Could you introduce to me three students who know French?’
- b. Ni neng gei wo jieshao (yixia) [[**hui Fayu de**] [***(na) san ge**]]
 you can to I introduce a:bit know French DE that three CL
 tongxue] ma?
 student PART
 ‘Can you talk to me a bit about those three students who know French?’

According to Zhang, while the IMN which occurs as the object of the verb *jieshao* ‘introduce’ in (36a) refers to a non-specific referent, the OMN in (36b) is not possible without the presence of the demonstrative *na* ‘that.’ Therefore, Zhang concludes that an OMN is neither definite nor non-specific.

The second argument is based on the alleged contrast in equational sentences:

- (37) a. Lanlan, Taotao, he Jiajia jiu shi [[**na san ge**] [**tebie congming de**] **haizi**].
 Lanlan Taotao and Jiajia exactly be that three CL very smart DE child
 ‘Lanlan, Taotao, and Jiajia are the three very smart children.’
- b. Lanlan, Taotao, he Jiajia jiu shi [[**tebie congming de**] [***(na) san ge**] **haizi**].
 Lanlan Taotao and Jiajia exactly be very smart DE that three CL child

Once again, Zhang argues that OMNs cannot be used as equatives, unlike definite ones. Based on the above judgments and arguments, Zhang takes the position that OMNs are indefinite, not definite. In contrast, an IMN is either individual-denoting (specific or non-specific) or quantity-denoting. Zhang gives the following grammatical contrast for a quantity-denoting reading:

- (38) [[**San ge**] [**xue tiyu de**] **xuesheng**] jiu neng ban-dong
 three CL study physical:education DE student then can move-move
 zhe jia gangqin.
 this CL piano

‘Three students who study physical education can move this piano.’

- (39) a. *[[**Liang ge**] [**zai yinhang gongzuo de**] ren] yinggai zhidao
 two CL at bank work DE person should know
 zhe jian shi.
 This CL matter
- b. *Mingtian [[liang ge] [zai yinhang gongzuo de] ren] lai zuo baogao.
 tomorrow two CL at bank work DE person come make report

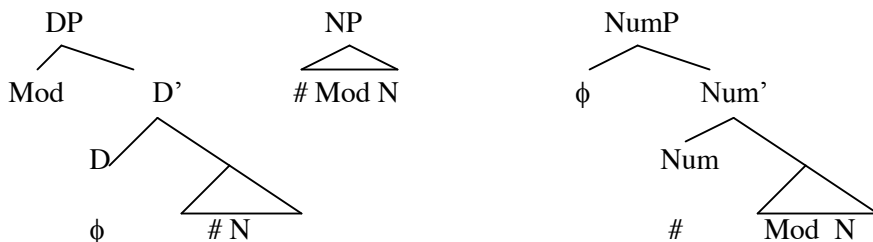
According to Zhang, the quantity-denoting reading is available in (38) because the accomplishment of the movement of the piano is related to the number of the persons who participated in the event, while it cannot be ensured in (39) because the realization of the event of knowing something or that of the event of someone coming to make a report is not related to the number of the persons in the event.

Syntactically, as shown below, Zhang proposes a DP analysis for an OMN, while an NP analysis for an IMN which is individual-denoting. Furthermore, she follows Y.-H. Li (1998) in treating a quantity-denoting IMN as a NumP:⁸

⁸ In her paper, Zhang uses D' on top of Num to represent quantity-denoting IMNs. I believe that it may be a typo and that the D' should be Num' instead.

(40)

a. OMN b. Individual-Denoting IMN c. Quantity-Denoting IMN



Two questions can be posed for Zhang's analysis. The first question has to do with the representation of a numeral. An underlying assumption in Zhang's analysis is that the relative ordering of the modifiers and the numerals determines the interpretations of the nominals. However, a numeral is represented in different positions. In both an OMN and an individual-denoting IMN, the numeral is projected under an NP, while in a quantity-denoting IMN it is crucial that it is projected as a NumP.

Another problem that Zhang's analysis faces is the interpretation of an OMN. Recall that Zhang argues that it can only be indefinite. Let us examine Zhang's examples in (36) and (37) more carefully. Note while a definite interpretation is harder to obtain in these examples, it is readily available in others. For example,

- (41) a. Ni renshi [[**zuotian lai de**] [(**san ge**)]
 you know yesterday come DE three CL
ren] ma? (Chen 2004, p. 1165)
 person PART
 'Do you know the (three) people who came yesterday?'
 b. Ta-men jiu shi [[**wo-men xi jinnian xin pin de**]
 he-MEN then be I-MEN department this:year new hire DE
[san wei] jiaoshou].
 three CL professor
 'They are the three newly-hired professors of our department.'

(41a), according to Chen, is the self-containing association provided by the modifier *zuotian lai de* that makes the referent identifiable, giving rise to the definite interpretation in our sense. The example in (41b) is an equative sentence in which the OMN is individual-denoting. Therefore, an OMN should allow a definite reading. Note that a crucial difference between the modifier used in (41) and those in Zhang's examples in (36) and (37) is that the former involves an episode. This would lead our discussion to the distinction of two types of modifiers in Hsieh (2005).

3.3.2 Hsieh (2005)

In Hsieh (2005) two types of relative clauses/adjectives are distinguished: stage-level (s-level) modifiers and individual-level (i-level) modifiers. Roughly speaking, the former denote temporary properties, while the latter are associated with permanent properties. Syntactically, the former are claimed to modify DP/D's, while the latter NP/N's. Compare the following contrast between (42) and (43).

- (42) a. **[[Ta qu-guo de] [na (yi) ge] difang]** hen youming.
 he go-ASP DE that one CL place very famous
 'The place that he has been to is famous.'
- b. **[[Na (yi) ge] [ta qu-guo de] difang]** hen youming.
 that one CL he go-ASP DE place very famous
- (43) a. **[[Na (yi) ge] [haowan de] difang]** zai nali?
 that one CL fun DE place in where
 'Where is that fun place?'
- b. ***[[Haowan de] [na (yi) ge] difang]** zai nali?
 fun DE that one CL place in where
- c. **[[Hen/man haowan de] [na ge] difang]** zai nali?
 very/very fun DE that CL place in where
 'Where is that very fun place?'

Based on their ability to precede the D-N-C sequence, three types of adjective-like modifiers are distinguished in Hsieh:

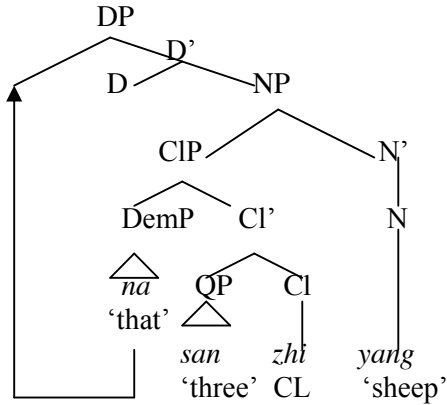
- (44) a. Type A: *fei de* ‘fat,’ *lan de* ‘blue,’ *gao de* ‘tall’
 b. Type B: *houhou de* ‘thick,’ *pangpang de* ‘fat’ and *maorongrong de* ‘fluffy’
 c. Type C: *keai de* ‘lovely,’ *haochi de* ‘delicious,’ *congming de* ‘intelligent’

Each one of the three types is an i-level modifier, but they can turn into s-level modifiers denoting temporary properties. According to Hsieh (2005), this is because a comparison makes the modifier become an s-level modifier. The first type of modifier are used only when two (sets of) referents are compared and one of them is picked up. For the second and third type of modifier, no such contrastive meaning exists because it might be the case that only one (set of) referent is involved. But the replication morphology and the modification by degree adverbs make them become s-level modifiers because two states are compared (one with a higher degree and the other a lower degree), making the state that the referent is in a temporary one. Here I will call these adjective-like modifiers “non-episodic” modifiers in contrast to such episodic modifiers as are temporally anchored.

Hsieh’s (2005) study also features a movement analysis, which proposes that either the CIP, which is base-generated in Spec of NP, or the DemP under the CIP raises to Spec of DP, as shown in (45) for *na san zhi yang* ‘those three sheep.’

- (45) a. *na san zhi yang*
 that three CL sheep
 ‘those three sheep’

b.



When only demonstratives move along, the results will be as in (46):

- (46) a. [**na** [fei de] [san zhi] yang] (Type A)
 that fat DE three CL sheep
 ‘those three sheep that are fat’
 b. [**na** [houhou de] [san ben] shu] (Type B)
 that thick DE three CL book
 ‘those three books that are thick’
 c. [**na** [keai de] [san zhi] yang] (Type C)
 that lovely DE three CL sheep
 ‘those three sheep that are lovely’

The same analysis can be applied to the interaction between an N-C sequence and the two types of modifiers. The examples given in Hsieh (2005) are as follows:⁹

⁹ The two examples in (47) are due to Lu (1998).

- (47) a. ?[[**San ben**] [**hong de**] **shu**] *hen youqu*. (Type A)
 Three CL red DE book very interesting
 ‘Three red books are very interesting.’
 b. [[**Hong de**] [**san ben**] **shu**] *hen youqu*.
 red DE three CL book very interesting
 ‘The three books that are red are very interesting.’
- (48) a. Ta ba [[**san ben**] [**houhou de**] **shu**] *song ren le*. (Type B)
 he BA three CL thick DE book send person PART
 ‘He has given away three thick books.’
 b. Ta ba [[**houhou de**] [**san ben**] **shu**] *song ren le*.
 he BA thick DE three CL book send person PART
 ‘He has given away three books that were thick.’
- (49) a. Ta ba [[**san zhi**] [**keai de**] **yang**] *song ren le*. (Type C)
 he BA three CL lovely DE sheep send person PART
 ‘He has given away three lovely sheep.’
 b. *Ta ba [[**keai de**] [**san zhi**] **yang**] *song ren le*.
 he BA lovely DE three CL sheep send person PART
 ‘He has given away three sheep that were lovely.’
 c. Ta ba [[**hen/man keai de**] [**san zhi**] **yang**] *song ren le*.
 he BA very/very lovely DE three CL sheep send person PART
 ‘He has given away three sheep that were very lovely.’

Just like in the cases with a D-N-C sequence, the above examples show that while both Type A and Type B can occur before or after an N-C sequence, Type C has to be modified by degree adverbs such as *hen* and *man* to be able to occur before an N-C sequence.

Now let us go back to Zhang’s examples in (36) and (37), and the examples in (41), repeated here.

- (50) a. Ni neng gei wo jieshao [[**san ge**] [**hui Fayu de**] **tongxue**] *ma*?
 you can to I introduce three CL know French DE student PART
 ‘Could you introduce to me three students who know French?’
 b. Ni neng gei wo jieshao (yixia) [[**hui Fayu de**] [***(na) san ge**]]
 you can to I introduce a:bit know French DE that three CL
tongxue] *ma*?

student PART

‘Can you talk to me a bit about those three students who know French?’

- (51) a. Lanlan, Taotao, he Jiajia jiu shi [[**na san ge**] [**tebie congming de**] **haizi**].
Lanlan Taotao and Jiajia exactly be that three CL very smart DE child
‘Lanlan, Taotao, and Jiajia are the three very smart children.’
- b. Lanlan, Taotao, he Jiajia jiu shi [[**tebie congming de**] [***(na) san ge**] **haizi**].
Lanlan Taotao and Jiajia exactly be very smart DE that three CL child
- (52) a. Ni renshi [[**zuotian lai de**] [**(san ge) ren**] ma? (Chen 2004, p. 1165)
you know yesterday come DE three CL person PART
‘Do you know the (three) people who came yesterday?’
- b. Ta-men jiu shi [[**wo-men xi jinnian xin pin de**] [**san wei**] **jiaoshou**].
he-MEN then be I-MEN department this:year new hire DE three CL professor
‘They are the three newly-hired professors of our department.’

In above examples, non-episodic modifiers such as *hui shuo Fayu de* and *tebie congming de* can be considered to be i-level modifiers, in contrast to s-level modifiers such as *zuotian lai de* and *wo-men xi jinian xin pin de*. This is evident in the following contrast.

- (53) a. Wo xiang zhao [san wei] [**hui shuo Fayu de**] xuesheng.
I want find three CL can speak French DE student
‘I want to find three students who can speak French.’
- b. Wo xiang zhao [san wei] [**zuotian lai de**] xuesheng.
I want find three CL yesterday come DE student
‘I want to find the three students who came yesterday.’

Note that only the former but not the latter would give rise to a non-specific reading. This is precisely because only *hui shuo Fayu de* can be taken to be

an i-level modifier. But such a non-episodic modifier can also occur before a numeral when they denote temporary properties.

Now go back to the contrast claimed to be in (50) and (51) by Zhang. As per our discussion, it may be claimed that i-level modifiers may turn into s-level modifiers, pertaining to temporary properties, not permanent properties. Then the question is why (50b) and (51b) do not sound perfect without the demonstratives. I suggest that (50b) is slightly unacceptable due to a tendency for there to be preferred interpretations of noun phrases located in different positions.

As pointed out in Chen (2004), it has been established in the literature that the following sentential positions display an inclination for definiteness/indefiniteness in Chinese.¹⁰

- (54) a. Definiteness-inclined positions in Chinese:
 subject
 ba object
 preverbal object
 first object of ditransitive sentence
 b. Indefiniteness-inclined positions in Chinese:
 object of the presentative verb *you*
 postverbal NP in presentative sentences
 postverbal NP in existential sentences
 second object of ditransitive sentences

Presumably an object position is an indefinite-inclined position and this contradicts with the preferred interpretation of an i-level turned s-level predicate, that is, a definite interpretation. This is in contrast to definite-inclined positions such as a subject position or a position occupied by a *ba* object. As shown in (47) above, while both a noun phrase with a pre-numeral modifier and that with a post-numeral modifier can occur in the subject position, the former is preferred.¹¹

10 Please see Chen (2004, pp. 1169-1170) and the references cited there.

11 Compare (47a) with (13a) discussed above, repeated here:

As for the ungrammaticality of (51b), it is not related to the modifier because it is still ungrammatical when the modifier is not there, as the following example shows.

- (55) Lanlan, Taotao, he Jiajia jiu shi **[*(na) san ge] haizi**.
 Lanlan Taotao and Jiajia exactly be that three CL child

Finally, Hsieh's analysis will also successfully rule in a quantity-denoting IMN as in (38), repeated here.

- (56) **[[San ge] [xue tiyu de] xuesheng]** jiu neng ban-dong
 three CL study physical:education DE student then can move-move
 zhe jia gangqin.
 this CL piano
 'Three students who study physical education can move this piano.'

Xue tiyu de in (56) may be considered to pertain to a permanent property and thus occur in the NP domain, giving rise to a pure quantity reading.

So far it may seem promising to distinguish two types of modifiers, yet a question that remains to be answered is whether the two types of modifiers interact with quantifiers in the same way.

3.3.3 Tang (2007)

In Tang (2007) it is posited that the function [α definite] may be split so that D may mark the meaning of non-specific indefiniteness, and F the interpretation of definiteness and specificity. Thus in addition to the three functional projections, i.e., NumP, CIP, and NP, either FP or DP may occur

- (i) ***Yi ge ren** hen shanchang dalie.
 one CL person very good:at hunt

Both of them involve an i-level predicate, but note that while (i) is claimed to be ungrammatical by Chen, (47a) is marked as only slightly unacceptable in Lu (1998). This shows that the existence of the modifier contributes to referentiality.

on top of NumP. The five functional heads are thus associated with [-definite], [+referential], [α plural], [α sortal] and [α count], respectively.

First, the [α plural] and [α sortal] features license numerals and classifiers. Demonstratives are licensed by the [+referential] feature of the F head and are assumed to be generated as the Spec of FP. On the other hand, *na* ‘which’ and *mei* ‘every’ are licensed by the feature [-indefinite] in D:

- (57) a. ***Na** zui hao?
which most good
b. ***na** [Zhangsan xie de] **san ben** shu
which Zhangsan write DE three CL book
c. [Zhangsan xie de] **na san ben** shu
Zhangsan write DE which three CL book
d. **na san ben** [Zhangsan xie de] shu
which three CL Zhangsan write DE book
- (58) a. *Wo kan-le **mei**.
I see-ASP every
b. ***mei** [wo xihuan de] **yi bu** dianying
every I like DE one CL movie
c. [Wo xihuan de] **mei yi bu** dianying
I like DE every one CL movie
d. **mei yi bu** [wo xihuan de] dianying
every one CL I like DE movie

Na ‘which’ and *mei* ‘every’ are posited to be generated under the head of DP for the reason that they cannot be used alone and a modifier may intervene between them and the numeral.

Crucially, this analysis is tied up with the analysis of the following contrast, according to Tang.

- (59) a. *Ta mai-le [wo qunian chuban de] **ben** shu.
he buy-ASP I last:year publish DE book
b. Ta mai-le ben [wo qunian chuban de] shu.
he buy-ASP CL I last:year publish DE book
‘He bought a book that I published last year.’

Based on the observation that the pre-nominal modifier must follow the classifier and that the object noun phrase must be interpreted as indefinite non-specific, Tang concludes that the ungrammaticality results from the fact that the feature [α sortal] in CI does not license non-classifier-type modifiers. On the other hand, the feature [α count] may license modifiers, relative clauses or non-relative clauses. An underlying assumption with this analysis is that there is no numeral position at all. Despite this, as this is a viable possibility, it should not be ruled out until it is proven.

But when a numeral occurs, it is a different story. No modifier may intervene between the numeral and the classifier:

- (60) (**xin de**) zhe (**xin de**) san (***xin de**) ben (**xin de**) shu
 new DE this new DE three new DE CL new DE book
 ‘(lit) (new) these (new) three (new) books’

Based on their licensors, five types of modifiers in Chinese are distinguished as follows:

- (61) a. Modifiers that may be licensed by [-definite] in D, or
 b. Modifiers that may be licensed by [+referential] in F, or
 c. Modifiers that may be licensed by [α count] in N, or
 d. Modifiers that may be licensed by [-definite] in D or [α count] in N, or
 e. Modifiers that may be licensed by [+referential] in F or [α count] in N.

There still seem to be some redundancy and peculiarities in (61), nevertheless. Given the fact that modifiers such as *Zhangsan xie de* in (55) and *xin de* in (58) can occur with either *mei/na* or *zhe*, they should belong to both the type in (61d) and that in (61e). If this is the case, one may ask what is the difference between the two types of modifier in (61d) and (61e) and why a modifier can be related to two different heads.

A question posted by Tang herself is why only [-definite] in D, [+referential] in F, and [α count] in N, but not the other two features in Num and CI may license modifiers of other kinds. Tang surmises that this is because only the lexical category N, which denotes the entity, and functional heads like D and F, which may be associated strictly with the reference

interpretation of the entity denoted by N, may license modifiers of other kinds.

According to Tang, while there are Chinese modifiers that are licensed by D or N as well as F or N, there exist no Chinese modifiers licensed by D or F, due to the fact that a noun cannot be both indefinite non-specific and definite/specific in reference.

Now the question is the status of an empty D and F. At some point Tang claims that a non-bare noun with a pre-numeral modifier needs to be interpreted as specific, while that with a post-numeral modifier may be non-specific or specific in reference. But when the examples that involve a pre-numeral modifier like (62b) are analyzed, it is claimed that the ordering with the post-numeral order takes only the [-specific] reading.

- (62) a. Wo chi-le [**ni chang tuijian de**] san dao cai.
 I eat-ASP you often recommend DE three CL dish
 'I ate the three dishes that you often recommend.'
 b. Wo chi-le san dao [**ni chang tuijian de**] cai.
 I eat-ASP three CL you often recommend DE dish
 'I ate three dishes that you often recommend.'

In Tang's analysis, the numeral *san* in (62a) and (62b) are marked with [+plural, +specific] and [+plural, -specific], respectively. The former may check the relevant [+specific] feature in F, while the latter that in D. This means that either an empty F or an empty D is projected. But, given the fact that the relevant NP in (62a) has to be [+specific], the modifier is thus licensed by the empty F. This then leads to the question as to why it cannot be licensed by an empty D head, giving rise to a non-specific interpretation. Tang relates this to Longobardi's (1994) lexical government condition for an empty nominal head, claiming that lexical government is satisfied via a Spec-head agreement between an empty definite/specific F, not an empty indefinite non-specific D and a modifier in adjunct position. In other words, this means an empty D head cannot license a modifier. But a priori there is no reason why an empty D cannot license a modifier, given the fact that when the D position is overtly occupied by *mei* or *na*, it can be modified by a modifier.

Another question is why *mei* 'every' and *na* 'which' are associated with the [-definite] feature in D. In Tang, this means they are [-specific]. In fact, as our discussion in Section 3.2 indicates, a *mei* phrase can be definite. As far as

na is concerned, let us consider its counterpart in English, i.e., *which*-phrase. It is generally assumed that a *which*-phrase is a discourse-linked (D-linked), whereas *who* and *what* are normally not D-linked. (Katz and Postal 1964, p. 94, Kuroda 1969, Pesetsky 1987, pp. 107-108). For a question such as *Which book did you read?*, the range of felicitous answers is limited by a set of books that both speaker and hearer have in mind. On the other hand, for *wh*-phrases such as *who*, *what*, and *how many books*, there is no requirement as such.

Now consider the *na* phrase in Chinese.

- (63) Ni xiang da dianhua gei [**na ge tongxue**]?
 you want place call to which CL classmate
 ‘Which classmate do you want to call?’

In effect, the speaker of (63) is asking about which one of the classmates that the hearer would like to call. The sentence presupposes the existence of a set of classmates. In other words, the relevant NP has to be specific. If this is the case, it would not be associated with the empty D head in Tang’s analysis because the latter is taken to be only non-specific.¹²

Moreover, consider the following contrast discussed in Cheng and Giannakidou (2005).

- (64) a. Ruguo (you) [**na ge ren**] da dianhua lai, jiu shuo wo bu zai.
 if have which CL person place call come then say I not in

12 As shown in the following examples adapted from Heycock (1993), an *how-many* phrase is ambiguous between a referential reading and a non-referential reading.

- (i) [How many ghosts]_i do you think that Britt saw t_i in the attic?
 (ambiguous)
 (ii) a. What is the number *n* such that there are *n* ghosts that you think Britt saw in the attic? (Referential reading)
 b. What is the number *n* such that you think Britt saw *n* ghosts in the attic? (Non-referential reading)

The same ambiguity can be found in the Chinese counterparts.

- ‘If anyone calls, say that I’m not here.’
- b. (Wulun) [**na ge ren**] da dianhua lai, wo *dou* bu zai.
no:matter which CL person place call come I all not in
‘(No matter) Who calls, I’m not here.’

According to Cheng and Giannakidou, the sentence in (64a), where *dou* ‘all’ is not present, can be used when the phone is not ringing and can be compatible with a situation in which no call eventually comes through. In fact, it cannot be used in situations in which the phone is ringing. In contrast, the sentence in (64b), the *dou*-conditional, is compatible with the existence of phone calls.

This contrast is parallel to one between *anyone* and *whoever* discussed in Giannakidou and Cheng (2006):

- (65) a. If **any student** calls, I am not here.
b. **Whichever student** calls, I am not here.

Giannakidou and Cheng propose that *any student* in (65a) is an indefinite FCI, while *whichever student* is a definite FCI. Thus the use of a *na* phrase in (64b) should be a definite FCI.

Given the above analyses, it is clear that a *na* phrase is subject to different interpretations depending on the context just like the other NPs discussed in Section 3.3. This shows that a *na* phrase should not be assumed to be marked with [-indefinite] as in Tang’s analysis.

3.3.4 J. Lin (2007)

J. Lin (2007) criticizes the two-layer approach to pronominal relatives, claiming that it cannot explain why (66b) is grammatical.

- (66) a. na wei [**xihuan qu ting yinyuehui de**] yuyanxuejia
that CL like go listen concert DE linguist
‘the linguist who likes to go to concerts’
- b. [**xihuan qu ting yinyuehui de**] na wei yuyanxuejia
like go listen concert DE that CL linguist
‘the linguist who likes to go to concerts’

J. Lin takes *xihuan qu ting yinyuehui de* to be an i-level modifier. Based on such an example, he claims that i-level relatives and s-level relatives are free to occur within DP or NP domains and take a restrictive interpretation.

- (67) a. [DP Det [NP i-level-relative [N' ...N]]]
 b. [DP Det [NP s-level-relative [N' ...N]]]
 c. [DP i-level-relative Det [NP ...N]]
 d. [DP s-level-relative Det [NP ...N]]

But when they both appear, an s-level modifier must precede an i-level modifier.

- (68) a. [DP Det [NP s-level-relative i-level-relative [N' ...N]]]
 b. *[DP Det [NP i-level-relative s-level-relative [N' ...N]]]
 c. [DP s-level-relative [D' Det [NP i-level-relative [N' ...N]]]
 d. *[DP i-level-relative [D' Det [NP s-level-relative [N' ...N]]]
 e. [DP s-level-relative i-level-relative [D' Det [NP ...N]]]
 f. *[DP i-level-relative s-level-relative [D' Det [NP ...N]]]

J. Lin explains the ordering by claiming that i-level relatives must occur closer to the head nouns than s-level relatives because the former are arguments of 'augmented nouns,' i.e., nouns with feature bundles, whereas s-level relatives are true adjuncts. The features of the head noun will decide the order among the i-level relatives. In effect, this will yield the desired result. For example, classificatory adjectives occur closer to the head than others.

- (69) a. an awful pulmonary disease
 b. *a pulmonary awful disease

Following Partee's (1976) idea that a restrictive relative forms a syntactic constituent with the nominal it modifies and the restrictive interpretation of both s-level and i-level relatives, J. Lin maintains that the two relatives in (67c) and (67d) are surprising given their restrictive interpretation (citing Chao (1968), J. Lin (2003) and Del Gobbo 2003). According to J. Lin, though they are outside DP, they are semantically interpreted inside NP. It is thus proposed that the pre-demonstrative relatives are actually derived by raising from a position within NP to the Spec of DP. He suggests that such a

movement is motivated by a feature *F* which attracts an NP-internal relative to the NP-external position. Moreover, the movement will preserve the order between an s-level relative and an i-level relative, producing the same effect of superiority.

This analysis, however, faces some problems. First, J. Lin's movement analysis is motivated by the restrictive interpretation of the relative clause. However, it is not clear why J. Lin claims that both s-level relatives and i-level relatives are restrictive. A demonstrative can always be used deictically and in that case, the additional modifier will never be restrictive. If the restrictive interpretation is not always required, then the motivation for movement will disappear. But even if the movement is motivated, the movement itself would be quite unusual under the general assumption that adjuncts do not move.

Second, in the end J. Lin will still be forced to admit that a modifier can be either an i-level or an s-level one. Consider the following examples:¹³

- (70) a. [Wo zuotian mai de] na ben [**baobao de**] shu dao nali qu le?
I yesterday buy DE that CL thin DE book arrive where go PART
'Where has the slim book I bought yesterday got to?'
b. [**baobao de**] na ben [wo zuotian mai de] shu dao nali qu le?
thin DE that CL I yesterday buy DE book arrive where go PART
'Where has the slim book I bought yesterday got to?'

Given the fact that the two modifiers in (70) can be freely ordered, J. Lin must take *baobao de* to be an s-level modifier just like *wo zuotian mai de*. But consider the following contrast:

- (71) a. Ta xiang mai [yi ben] [**baobao de**] shu lai kan jiu
he want buy one CL thin DE book come read then
hao le.
good PART

13 For J. Lin, the example in (70b) is unacceptable. But the native speakers that I consulted pointed out that (70b) is not entirely impossible if an appropriate context is given.

- ‘He just wants to buy a slim book to read.’
- b. Ta xiang mai [yi ben] [**wo zuotian mai de**] shu lai kan jiu
 he want buy one CL I yesterday buy DE book come read then
 hao le.
 good PART
 ‘He just wants to buy the book that I bought yesterday to read.’

The fact that only (71a) takes a non-specific reading challenges the idea that *houhou de* can only be an s-level modifier.

3.3.5 Summary

In this section, four studies of modifiers inside a nominal are reviewed. In Zhang (2006), it is assumed that modifiers in different positions give rise to different interpretations. In Hsieh (2005), it is argued that modifiers are distinguished into two types: s-level modifiers and i-level modifiers. The former occur in the DP/D' domain and the latter in the NP/N' domain. Tang (2007), in contrast, distinguishes five types of modifiers licensed by different heads. Finally, J. Lin (2007) claims that both s-level relatives and i-level relatives can occur in the DP or NP domain. I-level relatives have to stay closer to the head noun because they are the arguments of the augmented nouns. In the next section, I will propose a revised version of Hsieh (2005).

3.4 A Revised Version of Hsieh (2005)

In this section, I will elaborate Hsieh's (2005) two-layer analysis by spelling out the meaning of each layer. The interaction between quantifiers and modifiers will also be included.

3.4.1 Interpretations and Projections

Before we begin a discussion of the meaning of the DP and NP layers, let us focus on the interpretation of a numeral phrase.

It is shown above that the preferred reading of a nominal with a pre-numeral modifier is a definite interpretation. Three questions may be asked. The first question is whether it is indeed possible for such an NP to be indefinite. The second question is, if it is indefinite, then in what sense is it indefinite? The third question is whether an NP can take a definite

interpretation with a reversed order between the N-C sequence and the modifier, which is usually claimed to be indefinite. Consider the following pair of examples:

- (72) a. Ta na-zou-le [**wo zuotian mai de**] [**san ben**] shu.
 he take-away-ASP I yesterday buy DE three CL book
 ‘He took away (the) three books that I bought yesterday.’
 b. Ta na-zou-le [**san ben**] [**wo zuotian mai de**] shu.
 he take-away-ASP three CL I yesterday buy DE book
 ‘He took away (the) three books that I bought yesterday.’

First, both of them can take a definite interpretation, meaning there were only three books that were being bought and that the speaker is referring to these books. But more interestingly, in neither (72a) nor (72b) is exhaustivity required. This means both examples can be compatible with a situation where more than three books were bought.

Strikingly, a possessor which occurs before a numeral also behaves in the same way. Consider the following contrast between English and Chinese as discussed in Partee (2006).

- (73) a. [**Zhangsan de**] [**san jian**] maoyi
 Zhangsan DE three CL sweater
 ‘Zhangsan’s three sweaters’
 b. John’s three sweaters

Unlike the English example in (73b), the Chinese example in (73a) does not presuppose an exhaustive reading. This phrase can be used in a situation where Zhangsan has more than three sweaters. What is more interesting is the contrast pointed out by J. Lin to Partee.

- (74) a. Wo zai chuang dixia zhaodao-le [**Meimei de**] [**san shuang**] wazi.
 I under bed under find-ASP Sister DE three CL sock
 ‘I found three pairs of socks of my sister’s under the bed.’
 b. Wo zai chuang dixia zhaodao-le [**Meimei de**] [**san shuang**] wazi le.
 I under bed under find-ASP Sister DE three CL sock PART
 ‘I have found the three pairs of socks of my sister’s under the bed.’

J. Lin notes that (74b) has the implication that there were only three pairs of socks in question and he suggests that this might be related to tense/aspect due to the use of the sentence final particle *le*. As a matter of fact, the difference in interpretations between the two examples can be taken to be one between indefinite and definite. The idea is that given the right context it is possible for the noun phrase in question to take a definite or indefinite interpretation.

Now it is clear that an NP with a pre-numeral modifier or a post-numeral modifier can take a definite or indefinite interpretation. The following example further indicates that when a head noun is directly modified by an episodic modifier, it can still take an indefinite interpretation.

- (75) Ni nali hai you [**wo zuotian mai de**] shu ma?
 you there still have I yesterday buy DE book PART
 ‘Do you still have books that I bought yesterday?’

The possible interpretations are consistent with our earlier discussion of bare nouns, not-so-bare nouns and not-so-bare nouns modified by various modifiers. While Chinese does not have definite/indefinite articles such as *the* and *a* in English, the interpretations of a noun phrase are unconstrained. There is no doubt that demonstratives and pronouns mark definiteness. In addition to that, the interpretations are correlated with predicate types, the position in a sentence, the existence of *dou* ‘all’ and *you* ‘have,’ and the internal ordering of modifiers and types of modifiers.

A general picture that seems to emerge from the discussion so far is that two layers of nominal structures are needed: the DP layer and the NP layer.¹⁴ The former can be modified by s-level modifiers, marking temporary properties, while the latter can only be modified by i-level modifiers,

14 Chen (2004) maintains that while demonstratives in Chinese are developing uses of a definite article, and *yi* ‘one’+classifier is developing uses of an indefinite article, definiteness as a grammatical category has not been fully developed yet (cf. S. Huang 1999). This conclusion, however, does not necessarily contradict the position taken in this study. What we show here is that the DP layer is distinguished from the NP layer. While there might not be evidence that a demonstrative or *yi* has become a determiner, it does not mean that DP is not required.

marking permanent properties. The lower level is associated with quantity, or to put it more generally, non-referentiality, including bare nouns that are not referential. Possible candidates for such noun phrases include the object in a VO compound such as *zuoche* ‘ride in a car,’ *chifan* ‘eat meal,’ and *kaiwanxiao* ‘make fun.’ The higher level, on the other hand, is the locus of referentiality, distinguishing definite/indefinite interpretations.

Longobardi (1994) assumes that D is characterized with a $\pm R$ (eferential) feature, as follows:

- (76) All D positions are universally generated with an abstract feature $\pm R$ (suggesting “referential”), which must be checked with respect to at least one of its values.

One may wonder whether a non-specific reading of an indefinite NP may be projected as an NP rather than a DP. This does not seem to be the case as evidenced in the contrast between the following examples.

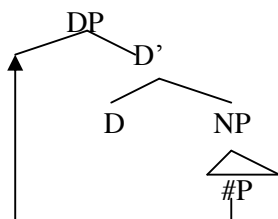
- (77) a. Ta shi (**yi ge**) **Zhongguo ren**.
 he be one CL China person
 ‘He is a Chinese.’
 b. *Ta **yi ge** **Zhongguo ren**.
 he one CL China person
 c. Ta **Zhongguo ren**.
 he China person
 ‘He is Chinese.’

Assuming that only an NP can function as a predicate, the fact that an indefinite NP *yi-ge Zhongguo ren* cannot function as a predicate without the presence of the copula *shi* ‘be’ indicates that it cannot be projected as an NP.

Hsieh’s (2005) study coupled with our study in Chapter 2 and this chapter has so far yielded the following result. A (D-)N-C sequence which is projected as a #P is merged into the Spec of NP and raises to the Spec of DP for a check of the $[\pm R]$ feature, in the same manner that a subject in a clause

raises to the Spec of TP for the checking of the strong D- or N-feature of the T head at the clausal level.¹⁵

(78)



A question that arises immediately is how the $[\pm R]$ is satisfied when a noun is not quantified by a #P.

For a pure quantity reading, I will assume with Li and Shi (2003) that no DP is projected and the claim that NPs can still function as arguments in Chinese. The N-C sequence, projected as a #P, will occur in the Spec of NP.

Since C.-T. Huang's (1982) work, various proposals in formal studies have been made with regard to the nominal structure involving those elements, although no consensus has been reached. They differ in two main aspects as follows:

15 A question raised by one of the reviewers is why a #P cannot continue to raise out of the nominal domain:

- (i) a. Zhangsan mai **wu ge pingguo**.
Zhangsan buy five CL apple
'Zhangsan bought five apples.'
- b. ***Wu ge** Zhangsan mai **pingguo**.
five CL Zhangsan buy apple

A possible answer to this question is that though the numeral as a quantifier has the classifier as its domain of quantification, it is unable to establish a quantificational tripartite structure with its nuclear scope *pingguo* with the presence of the intervening predicate *mai pingguo*.

- (80) a. Whether DP is projected.
 b. Whether the classifier-noun relationship is characterized as a head-to-head or a spec-head relationship.

Based on (80), four types of analyses can be distinguished, as illustrated in Table 2:

Table 2: Four Types of Analyses of Noun Phrases in Chinese

	DP is Projected	DP is Not Projected
Classifier-Noun: Head-to-Head	Y.-H. Li (1998, 1999) Krifka (1995) R. Yang (2001) H. Yang (2005) Tang (1990, 2005, 2007)	Cheng and Sybesma (1999) Sio (2006)
Spec-Head	Hsieh (2005)	Gao (1994) J. Lin (1997)

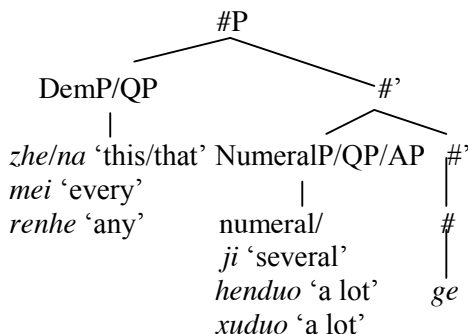
It goes without saying that there are various differences within each type of analysis. For example, among the analyses that assume the DP analysis, different elements are claimed to occupy the D head and Spec of DP.¹⁶ I will not go into details of all the analyses, but will only point out that in Sio (2006), a Specificity Phrase is postulated to the left of the Classifier Phrase (or the Numeral Phrase when present) on the grounds that whenever a modifier (or a demonstrative) appears to the left of the classifier (or numeral) the noun phrase is obligatorily specific. She suggests that both demonstratives and modifiers are in the Spec of SP. Under such an analysis, more than one specifier must be allowed.

16 In Kim (2004), while no classifiers are discussed, it is argued that the distinction between DPs and NPs is needed for Chinese. A null determiner, which projects a D (and hence DP), performs the choice function in Chinese and Korean specific nominals, picking out an individual from a set.

3.4.2 Quantification and Modification

It is shown above that the two-way distinction is applied to the interaction between a modifier and a (D-)N-C sequence. Recall that in Chapter 2 a (D-)N-C sequence is argued to form a constituent and is projected as #P. Moreover, NPs quantified by *mei* ‘every,’ *renhe* ‘any’+CL, *henduo/xuduo* ‘a lot’+CL and *yi xie* ‘some’ are also claimed to be generated in a #P when they occur with a classifier/massifier. Now the question is how they behave with respect to various modifiers.

(81)



First, none of them can occur with the Type C modifiers in the same way that the (D-)N-C sequences as discussed in Hsieh (2005) also cannot.

- (82) a. *[keai de] [**mei yi zhi**] yang
 lovely DE every one CL sheep
 b. *[keai de] [**renhe yi zhi**] yang
 lovely DE any one CL sheep
 c. *[keai de] [**henduo zhi**] yang
 lovely DE a:lot CL sheep
 d. *[keai de] [**yi xie**] yang
 lovely DE one XIE sheep

The above data show that it is not possible for those quantifying expressions in question to remain in the NP layer.

Moreover, just like (D-)N-C sequences, all of the quantifiers can precede or follow a DP/D' modifier such as *ta jieshao de* 'that he introduced,' illustrated below.

- (83) a. Wo hai mei qu-guo [**mei yi jia**] [ta jieshao de] canting
I yet not go-ASP every one CL he introduce DE restaurant
'I haven't yet been to every restaurant that he introduced.'
b. Wo hai mei qu-guo [ta jieshao de] [**mei yi jia**] canting.
I yet not go-ASP he introduced DE every one CL restaurant
- (84) a. Wo qu-guo [**henduo jia**] [ta jieshao de] canting.
I go-ASP a:lot CL he introduce DE restaurant
'I have been to a lot of the restaurants that he introduced.'
b. Wo qu-guo [ta jieshao de] [**henduo jia**] canting.
I go-ASP he introduce DE a:lot CL restaurant
- (85) a. Wo qu-guo [**yi xie**] [ta jieshao de] canting.
I go-ASP one XIE he introduce DE restaurant
'I have been to some of the restaurants that he introduced.'
b. Wo qu-guo [ta jieshao de] [**yi xie**] canting.
I go-ASP he introduce DE one XIE restaurant
- (86) a. Wo hai mei qu-guo [**renhe yi jia**] [ta jieshao de] canting.
I yet not go-ASP any one CL he introduce DE restaurant
'I haven't yet been to any of the restaurants that he introduced.'
b. Wo hai mei qu-guo [ta jieshao de] [**renhe yi jia**] restaurant.
I yet not go-ASP he introduce DE any one CL restaurant

More interestingly, either Type A or Type C modifiers with degree adverbs can also occur before or after the quantifiers.

Type A:

- (87) a. Ta diu-diao [**mei yi jian**] [hong de] chenshan.
he throw-away every one CL red DE shirt
'He threw away every red shirt.'
b. Ta ba [hong de] [**mei yi jian**] chenshan *(dou) diu-diao le.
he BA red DE every one CL shirt all throw-away PART
'He has thrown away every one of the red shirts.' (definite)

- c. ?Wo kanjian ta diu-diao [hong de] **[mei yi jian]** chenshan.
I see he throw-away red DE every one CL shirt
'I saw him throw away every one of the red shirts.' (definite)
- (88) a. Ta meiyong diu-diao **[renhe yi jian]** [hong de] chenshan.
he not throw-away any one CL red DE shirt
'He didn't throw away any red shirt.'
- b. Ni keyi ba [hong de] **[renhe yi jian]** chenshan diu-diao.
you may BA red DE any one CL shirt throw-away
'You can throw away any of the red shirts.' ((in)definite)
- c. ?Ta meiyong diu-diao [hong de]**[renhe yi jian]** chenshan.
he not throw-away red DE any one CL shirt
'He didn't throw away any red shirt.' ((in)definite)
- (89) a. Ta diu-diao **[henduo/xuduo jian]** [hong de] chenshan.
he throw-away a:lot/a:lot CL red DE shirt
'He threw away a lot of red shirts.'
- b. Ta ba [hong de] **[henduo/xuduo jian]** chenshan dou diu-diao le.
he BA red DE a:lot/a:lot CL shirt all throw-away PART
'He has thrown away the many red shirts.' ((in)definite)
- c. ?Wo kanjian ta diu-diao [hong de]**[henduo/xuduo jian]** chenshan.
I see he throw-away red DE a:lot/a:lot CL shirt
CL shirt
'I saw him throw away (the) many red shirts.' ((in)definite)
- (90) a. Ta diu-diao **[yi xie]** [hong de] chenshan.
he throw-away one XIE red DE shirt
'He threw away some red shirts.'
- b. Ta ba [hong de] **[yi xie]** chenshan diu-diao le.
he BA red DE one XIE shirt throw-away PART
'He has thrown away (the) few red shirts.' ((in)definite)
- c. ?Wo kanjian ta diu-diao [hong de]**[yi xie]** chenshan.
I see he throw-away red DE one XIE shirt
'I saw him throw away (the) few red shirts.' ((in)definite)

Type C + a degree verb:

- (91) a. Ta xiang qu **[mei yi ge]** [(hen/man) haowan de] difang.
he want go every one CL very/very fun DE place
'He wants to go to every fun place.'

- b. Ta ba [hen/man haowan de] [**mei yi ge**] difang *(dou)
 he BA very/very fun DE every one CL place all
 ji-xialai le.
 record-down PART
 'He has made a record of each of the fun places.' (definite)
- c. ?Wo tingshuo ta qu-guo [hen/man haowan de] [**mei yi ge**] difang.
 I hear he go-ASP very/very fun DE every one CL place
 'I heard that he had been to each of the fun places.' (definite)
- (92) a. Ta meiyou qu-guo [**renhe yi ge**] [(hen/man) haowan de] difang.
 he not go-ASP any one CL very/very fun DE place
 'He hasn't been to any fun place.'
- b. Ni keyi ba [hen/man haowan de] [**renhe yi ge**] difang ji-xiale.
 you may ba very/very fun DE any one CL place record-down
 'You may make a record of any fun place.' ((in)definite)
- c. ?Ta meiyou qu-guo [hen/man haowan de][**renhe yi ge**] difang.
 he not go-ASP very/very fun DE any one CL place
 'He hasn't been to any very fun place.' ((in)definite)
- (93) a. Ta qu-guo [**henduo/xuduo ge**] [(hen/man) haowan de] difang.
 he go-ASP a:lot/a:lot CL very/very fun DE place
 'He has been to a lot of fun places.'
- b. Ta ba [hen/man haowan de] [**henduo/xuduo ge**]
 he BA very/very fun DE a:lot/a:lot CL
 difang ji-xialai le.
 place record-down PART
 'He has made a record of (the) many fun places.' ((in)definite)
- c. ?Wo tingshuo ta qu-guo [hen/man haowan de] [**henduo/xuduo ge**] difang.
 I hear he go-ASP very/very fun DE a:lot/a:lot
 CL place
 'I heard that he had been to (the) many fun places.' ((in)definite)
- (94) a. Ta qu-guo [**yi xie**] [(hen/man) haowan de] difang.
 he go-ASP one XIE very/very fun DE place
 'He has been to some fun places.'
- b. Ta ba [hen/man haowan de] [**yi xie**] difang ji-xialai le.
 he BA very/very fun DE one XIE place record-down PART
 'He has made a record of the few/a few fun places.' ((in)definite)

- c. ?Wo tingshuo ta qu-guo [hen/man haowan de] [**yi xie**] difang.
 I hear he go-ASP very/very fun DE one XIE place
 'I heard that he had been to the few/a few fun places.' ((in)definite)

Just like in the case of an N-C sequence, as we discussed earlier, a modifier that precedes the sequence will prefer a definite interpretation. Similarly, in all the examples in (87)-(94), all the quantified phrases are interpreted as definite. Indeed, the definite meaning is evident when modifiers such as *ta jieshao de* and *wo gei ta de* are added. For example,

- (95) a. Wo qu-guo [**ta jieshao de**][hen haowan de][mei yi ge] difang.
 I go-ASP he introduce DE very fun DE every one CL place
 'I have been to every fun place that he introduced.'
 b. Ta diu-diao [**wo gei ta de**][hong de][mei yi jian] chenshan.
 he throw-away I give he DE red DE every one CL shirt
 'He threw away every red shirt that I gave to him.'

Now it should become clear that those quantifiers in question behave the same as the (D-)N-C sequences.

Finally, consider the following contrast between *henduo/xuduo* and *renhe* 'any.'

- (96) a. [Zuotian lai de] [**henduo/xuduo**] xuesheng dou hen youxiu.
 yesterday come DE a:lot/a:lot student all very outstanding
 'A lot of the students who came yesterday were outstanding.'
 b. [**Henduo/xuduo**] [zuotian lai de] xuesheng dou hen youxiu.
 a:lot/a:lot yesterday come DE student all very outstanding
 'A lot of the students who came yesterday were outstanding.'
- (97) a. Ni keyi ba [wo zuotian dai-lai de] [**renhe**] wanju gei ta.
 you may BA I yesterday bring-come DE any toy give he
 'You can give him any toy that I brought yesterday.'
 b. Ni keyi ba [**renhe *(yi ge)**] [wo zuotian dai-lai de] wanju gei ta.
 you may BA any one CL I yesterday bring-come DE toy give he
 'You can give him any toy that I brought yesterday.'

(97) shows that *renhe* cannot modify a DP if it is not preceded by an N-C sequence. The contrast may be accounted for if it is assumed that *henduo/xuduo* are either DP/D' modifiers or NP/N' modifiers when they do not occur with a classifier/massifier. On the other hand, *renhe* 'any' can only be a NP/N' modifier.

3.4.3 Summary

Combining the #P analysis presented in Chapter 2 and Hsieh's (2005) analysis, I propose that a #P moves from the Spec of NP to check referentiality. It is shown that DP/D' and NP/N' modifiers interact with NPs quantified by *mei* 'every,' *renhe* 'any,' *henduo/xuduo* 'a lot'+CL, in the same way that they interact with the (D-)N-C sequences.

3.5 The Missing Numeral Yi 'One'

In this section, I will show how the omission of the numeral *yi* 'one' bears on the issue of referentiality.

The numeral *yi* 'one' in an N-C sequence or *yi xie* 'some' can be omitted, though not unconstrained:

- (98) a. Ta congming mai-le **(yi) zhang piao** jiu shang che.
he hurriedly buy-ASP one CL ticket then get:up bus
'He hurried bought a ticket and got on the bus.'
(Referential: non-specific)
- b. ***(Yi) zhi xiao qi'e** yaoyaobaibai zou-le shang-lai.
one CL little penguin swaying walk-ASP go-come
'A little penguin was waddling up.'
(Referential: specific)
- (99) a. Wo xiang mai **(yi) xie shu** lai kan.
I want buy one XIE book come see
'I want to buy some books to read.'
(Referential: non-specific)
- b. Gongyuan li, ***(yi) xie ren** zai lian gong.
park inside one XIE person in practice martial:arts
'Some people were practicing martial arts in the park.'
(Referential: specific)

There seems to be a subject-object asymmetry with respect to whether the numeral *yi* ‘one’ can be omitted. Based on the asymmetry, it has been proposed that *yi* is ‘missing’ due to the fact that the empty numeral position in the noun phrase is lexically governed when the noun phrase in question sits in the object position, along the lines of Longobardi (1994).

An analysis along this line, however, faces some problems. First, a numeral with a pure quantity interpretation cannot allow an empty numeral position:¹⁷

- (100) a. ***(Yi) zhang** chuang keyi shui **liang ge** ren.
 one CL bed may sleep two CL person
 ‘Two people can sleep on one bed.’
 (Pure quantity)
-

17 This is in contrast to the Cantonese fact made famous by Cheng and Sybesma (1999):

- (i) a. **Zek gau** gamjat dakbit tengwaa.
 CL dog today special obedient
 ‘The dog is specially obedient today.’
 b. Wufei jam-jyun **wun tong** la.
 Wufei drink-finish CL soup PART
 ‘Wufei finished drinking the soup.’
 (ii) Ngo soeng maai **bun syu** (lei taai).
 I want buy CL book come read
 ‘I want to buy a book (to read).’

While a C-N sequence can be definite in a subject or object position, as shown in (i), it can be interpreted as indefinite non-specific only in an object position, as in (ii). Cheng and Sybesma propose that a definite noun phrase is projected as a CIP, while an indefinite noun phrase is projected as NumP. The non-specific reading of a C-N sequence, according to them, is related to the empty numeral in it: an empty Numeral leads to a non-specific interpretation.

- b. **Liang ge ren shui *(yi) zhang chuang.**
 two CL person sleep one CL bed
 ‘Two people sleep in one bed.’
 (Pure quantity)

Second, it cannot explain why the following example is ungrammatical:

- (101) **Wo zuotian chu-qu sanbu deshihou, yujian-le [wo zhao-le hen jiu de]**
 I yesterday go-out walk DE time meet-ASP I find-ASP very long DE
***(yi) ge tongxue.**
 one CL classmate
 ‘I met a classmate who I had been looking for for a long time when I
 was taking a walk yesterday.’
 (Referential: specific)

Assuming that a modifier is just an adjunct, it does not in any way interfere with the lexical government relation between the verb and the empty numeral position. Therefore, it is unlikely that the omission of *yi* has anything to do with the issue of government.

Now go back to the grammatical examples with the omission of *yi* in (98a) and (99a). Both examples involve non-specific referentiality. A plausible analysis then is that the omission of *yi* is due to phonological reduction, e.g., via PF deletion, and is only limited to the non-specific use of *yi*.

This analysis is supported by the fact such deletion is not permitted when specificity is required. Consider the following examples taken from C.-T. Huang (1987):

- (102) a. **Wo jiao-guo *(yi) ge xuesheng hen congming.**
 I teach-ASP one CL student very smart
 ‘I once taught a student who was very smart.’
 b. **Ta xie-guo *(yi) ben shu hen you yisi.**
 he write-ASP one CL book very have interest
 ‘He once wrote a book which was very interesting.’

Only specific nominals are allowed in these constructions. C.-T. Huang proposes a null pronoun for the second predicate. This pronoun is bound by

the object of the first predicate. To serve as a binder, the object has to be specific.

In addition to the non-specific use of *yi*, *yi* can also be optional or is even prohibited in a non-referential use. For example,

- (103) a. Wo qu xi (**yi**) ge shou.
 I go wash one CL hand
 ‘I will go wash my hands.’
 b. Wo hui chidao (***yi**) ge shi fengzhong.
 I will late CL one CL ten minute
 ‘I will be late for ten minutes.’

Note that in (103a) the general classifier *ge* is used instead of the typical classifier for the classification of hands, i.e., *zhi*. What is being classified, or to be more precise, counted is actually the event. Moreover, as shown in (102b), when a duration phrase is used, *yi* is not allowed.

The omission of *yi* can now be summarized in the following table:

(104) Table 3: Omission of *Yi* ‘one’

	Omission Possible
referential (specific)	*
referential (non-specific)	(√)
non-referential	(√)
quantificational	*

The above table shows that while it is not possible to omit *yi* when the noun phrase is used referentially or quantificationally, it can be optionally omitted when it is referential (non-specific) or non-referential.

The above findings are in accord with the grammaticalization of the numeral ‘one’ as an indefinite determiner in general. As cited in Chen (2003), Heine (1997) proposes five stages in the process of grammaticalization through which the numeral ‘one’ has developed into a fully grammaticalized marker of indefiniteness. The five stages are illustrated by the English indefinite article *a* in the following sentences respectively:

- (105)a. NUMERAL
I need **an hour** and **a half**.
- b. PRESENTATIVE USE
A man came up the front stairway.
- c. NONIDENTIFIABLE SPECIFIC REFERENCE
He bought **a house** last year.
- d. NONIDENTIFIABLE NON-SPECIFIC REFERENCE
He wants to buy **a house** in this area; any house will do.'
- e. NON-REFERENTIAL USE
He is **a good chef**.

Chen (2003) gives the uses of *yi* 'one' in Chinese which correspond to the five stages.

- (106) a. NUMERAL
Zhe jian shi bu nan ban, wo zhi yao **yi ge zhongtou**
this CL thing not hard do I only need one CL hour
jiu gou le.
then enough PART
'This is not hard. I only need one hour for it.'
- b. PRESENTATIVE USE
Yi jia feiji cong wo-men tou shang fei-le gou-qu.
one CL airplane from we head top fly-ASP pass-go
'An airplane flew over us.'
- c. NONIDENTIFIABLE SPECIFIC REFERENCE
Ta qunian mai-le (**yi**) **zhuang fangzi**.
he last:year buy-ASP one CL house
'He bought a house last year.'
- d. NONIDENTIFIABLE NON-SPECIFIC REFERENCE
Ta xiang mai (**yi**) **zhuang fangzi**, shenme fangzi dou xing.
he want buy one CL house what house all do
'He wants to buy a house; any house will do.'
- e. NON-REFERENTIAL USE
Ta shi (**yi**) **ge maimairen**.
he be one CL businessman
'He is a businessman.'

The above examples show that the numeral *yi* ‘one’ in Chinese has all the five kinds of uses. Now consider the omission of *yi* in the latter three uses. Based on the studies in Lü (1990[1994]) and Huang (1987) and hers, Chen concludes that the extent of the phonological reduction of *yi* correlates perfectly with the order of its development through the five stages of grammaticalization: the less referential a nominal is, the more likely it is for *yi* to be omitted. This statement, however, needs to be qualified because it is not convincing to say that the so-called ‘numeral’ use of *yi* is referential.

More importantly, Chen (2003) discusses a use of *yi ge* with definite expressions such as proper names or kinship terms, a usage first observed in Lü (1990[1994], 1990[1948]) and has not been reported for indefinite articles or the numeral ‘one’ in other languages.

- (107) a. *Zhi zhe yi ju, ba (yi) ge Jiangping hu-le yi tiao.*
 only this CL utterance BA one CL Jiangping scare-ASP one CL
 ‘Just this one utterance gave Jiangping a fright.’
 b. *Ta qiannian si-le ge die, qunian you si-le ge niang.*
 he year:before:last die-ASP CL father last:year die-ASP CL mother
 ‘His father died the year before last, and his mother died last year.’

This use of *yi ge* is different from treating a proper name like a common noun, as exemplified in the following example.

- (108) *You (yi) ge Jiangping xiang yao jian ni.*
 have one CL Jiangping think want see you
 ‘There is a certain Jiangping who wants to see you.’

In (108), *yi ge Jiangping* means *a certain Jiangping*. In contrast, the proper name in (107a), i.e., *Jiangping*, is a definite expression of uniquely identifiable reference. Moreover, just like in the case of non-referentiality, *yi* in this usage is optional and the general classifier *ge* is used instead of a more specific classifier. Chen argues that the use of *yi ge* before a definite expression is for marking low thematic importance, which is related to non-referentiality in the sense that a nominal marked as semantically non-referential is necessarily pragmatically unimportant.

Chen reasons that while the omission of *yi* weakens the force of quantification of *yi* ‘one,’ the substitution of *ge* for the special sortal classifier for the particular noun further weakens the individuation of the entity introduced by *yi* ‘one.’

Now the crucial question one may ask is how such a sentence is derived. If proper names are merged in D or if anything occupies the D or the Spec of DP for marking the definiteness interpretation, where does (*yi*) *ge* occur? In our analysis, we can simply derive such a sentence by merging the #P headed by (*yi*) *ge* in the Spec of DP and the proper name in the D position, just like a proper name. The derivation of such a sentence, however, is a problem for the head-complement analysis. Finally, the availability of this use of (*yi*) *ge* shows that *yi* is not fully grammaticalized into an indefinite article yet.

Now let us consider the reduplication of classifiers.

- (109) a. **Ge ge** haizi dou zhang-de you gao you zhuang.
CL CL child all grow-DE again tall again strong
‘Each child grows big and tall.’
b. **Yi ge ge** haizi dou zhang-de you gao you zhuang.
one CL CL child all grow-DE again tall again strong
‘All the children are big and tall.’
- (110) a. ...da-zhe **yi ge ge** zhangpeng. (A. S. Corpus)
pitch-ASP one CL CL tent
...(many) tents were pitched...’
b. ...yi kuai pinji ji faren hehu de yuandi, neng kai-chu
one CL barren and lack care DE land can grow-out
duo duo jiankang de huarui... (A. S. Corpus)
CL CL health DE flower:bud
‘...barren and unattended patch of land is able to produce (many)
healthy kinds of flower.’

Recall from our discussion in Chapter 2 that [CL-CL] marks distributivity while [*yi*-CL-CL] marks plurality, as illustrated in (109b) and (110). It should be noted that *yi* in (110b) is omitted. Given the fact that it gives the plural reading, it is assumed that *yi* is originally there but is deleted. The deletion of

this *yi* is also due to the fact that the noun phrase is non-specific, just like the above cases.

If the omission of *yi* ‘one’ is a way to mark semantic non-referentiality and/or thematic unimportance, then what about *yi* preceded by demonstrative or quantifiers such as *mei* ‘every’ or *you* ‘have’? The omission of *yi* in those cases does not seem to be the same with the cases seen above. Consider the following examples.

- (111) a. **Na (yi) ge xuesheng** you lai le.
that one CL student again come PART
‘That student came again.’
b. **Na (yi) xie xuesheng** zuotian you lai le.
that one XIE student yesterday again come PART
‘Those students came again yesterday.’
- (112) a. **Mei (yi) wei chushi** dou zuo-le yi dao cai.
every one CL chef all do-ASP one CL dish
‘Every chef made a dish.’
b. Gongyuan li, you **(yi) xie ren** zai lian gong.
park inside have one XIE person in practice martial:arts
‘Some people were practicing martial arts in the park.’

The omission of *yi* in the above examples does not seem to be related to semantic referentiality and/or thematic unimportance. A possible analysis for these examples is to say that *yi* is incorporated into the demonstratives or even the quantifiers. Though there is no direct evidence for this analysis of the quantifier *mei* or *you*, it is clear that *yi* can be incorporated into demonstratives and the two become a morpheme instead of remaining as two morphemes:

- (113) a. nei ge ren
that CL person
‘that person’
b. zhei ge ren
this CL person

This is related to an observation made in Hsieh (2005). When a demonstrative occurs with the numeral *yi*, it cannot be separated from it.

- (114) a. Jingcha zhua-zou-le [**na yi/san ge**] [xian dongshou da
policeman take-away-ASP that one/three CL first move:hand hit
ren de] daitu.
person DE gangster
'The police took away the gangster/three gangsters that first started
the fight.'
- b. Jingcha zhua-zou-le [**na**] [xian dongshou da ren de]
policeman take-away-ASP that first move:hand hit person DE
[*(**yi**)/**san ge**] daitu.
one/three CL gangster
'The police took away the gangster/three gangsters that started the
fight first.'

This fact can be accounted for if it is assumed that incorporation is necessary for demonstratives and the numeral *yi*.

Now let us consider a *renhe* phrase. The following examples show, in contrast to a *mei* phrase or a noun phrase introduced by *you*, that a *renhe* phrase will require the presence of the numeral *yi* 'one' when the classifier is present, no matter whether it is a free-choice *any* or an existential *any*.

- (115) a. **Renhe *(yi) ge chushi** dou keyi lai.
any one CL chef all may come
'Any chef may come.'
- b. **Renhe chushi** dou keyi lai.
Any chef all may come
'Any chef may come.'
- (116) a. Wo meiyou kanjian **renhe *(yi) ge ren**.¹⁸

18 It is pointed out that in Lee and Horn (1995) that an NPI *any* does not occur with a numeral other than one:

I not see any one CL person
 ‘I didn’t see anyone.’

- b. Wo meiyou kanjian **renhe ren**.

I not see any person
 ‘I haven’t seen anyone.’

I will take these readings to refer to pure quantity and assume that the numeral here is a real numeral. The definite reading in (112a) comes from the use of *dou*. The following examples further show that *yi* still needs to be incorporated into *renhe* when *yi* is present:

- (117) a. Ni keyi qu [**renhe san/yi ge**] [ta qu-guo de] difang.
 you may go any three/one CL he go-ASP DE place
 ‘You may go to any place/three places that he has been to.’
 b. Ni keyi qu [**renhe**] [ta qu-guo de] [**san/*(yi) ge**] difang.
 you may go any he go-ASP DE three/one CL place

3.6 Conclusion

This chapter revises Hsieh’s (2005) two layer analyses and claims that the DP layer and the NP layer are needed for a referential and a pure quantity interpretation, respectively. A classifier/massifier forms a constituent with a numeral or a quantifier, that is, a #P. A #P (with or without a demonstrative) moves from the Spec of NP to the Spec of DP to check the $\pm R$ feature of the D head, in the same fashion that the subject of a clause moves to the Spec of TP to check the D- or N-feature of the T. Similarly, quantifiers that occur with classifiers are shown to be organized under the same umbrella of a #P.

-
- (i) a. There isn’t **any one** best answer to the problems.
 b. *There aren’t **any two** best answers to the problems.

This is also true for Chinese, as illustrated below:

- (ii) *Wo meiyou kanjian **renhe liang ge** wanju.
 I not see any two CL toy
 ‘I didn’t see any two toys.’

CHAPTER 4

THE PLURAL MARKER *-MEN**

4.1 Introduction

In this chapter, I will investigate the so-called plural marker *-men* and the number and referential issues it raises. As mentioned in Chapter 1, many studies show that a classifier language usually does not exhibit plural morphology. If this is the case, what is then the status of *-men*? Noticeably, the use of this marker does not depend on the presence of a classifier, unlike the plural marking discussed in Chapter 2. In fact, it is generally assumed that a common noun suffixed with *-men* cannot occur with a sortal classifier. On the other hand, as mentioned in Chapter 1, this generalization is not true. The question is then how to account for all of the data concerning *-men*. In this chapter, I will first summarize some alleged characteristics of the suffix *-men* found in the literature and examine the previous analyses of this marker. This will then be followed by my non-uniform analysis which distinguishes three different usages of *-men*. I will show how to account for its compatibility with sortal classifiers and derive various possible interpretations.

4.2 The Characteristics of *-Men* in the Literature

There are several characteristics of *-men* discussed in the literature. First, according to Iljic (2001), a noun suffixed with *-men* differs from a bare noun in that the former marks a subjective grouping, either relative to the speaker or to some character whose point of view the narrator provisionally takes. For example, *haizi-men* in (1b) can only be interpreted as the speaker's children, but not 'some children' or 'children in general.' In contrast, the interpretation of *haizi* in (1a) is vague. While it can refer to the speaker's children, it does not have to.

* Part of this chapter was presented at the Formal Workshop on Syntax and Semantics V, held at National Kaohsiung Normal University, Kaohsiung, April 21-22, 2007. I would like to thank Ting-Chi Tang, W.-T. Dylan Tsai and Jo-wang Lin for their discussions and comments, which led to substantial revisions of this chapter.

- (1) a. Wo qu zhao haizi.
I go find child
'I will go find the/some child/children.'
b. Wo qu zhao haizi-*men*.
I go find child-MEN
'I will go find the children.'

The contrast is further illustrated in (2) and (3), taken from Iljic (1994, p. 94).

- (2) a. You ren.
have person
'There is (are) somebody (some people).'
b. *You ren-*men*.
have person-MEN
- (3) a. Mei you ren.
not have person
'There is nobody.'
b. *Mei you ren-*men*.
not have person-MEN

The above examples indicate that a noun suffixed with *-men* is definite because it cannot occur in an existential construction, in contrast to a bare noun without *-men*.

Furthermore, it is claimed that a noun suffixed with *-men* never receives a generic reading (Rygaloff 1973, Yorifuji 1976, cited in Iljic 1994). *Ren-men* 'human being+MEN' can only mean 'given individuals,' not 'people (in general).' For example,

- (4) a. Ta-*men* shi laoshi.
he-MEN be teacher
'They are teachers.'
b. *Ta-*men* shi laoshi-*men*.
he-MEN be teacher-MEN
'They are teachers.'

While (4a) is acceptable, (4b) is not.

Third, a noun suffixed with *-men* is claimed to be incompatible with a numeral (followed by a classifier) in the position of a modifier (e.g., Iljic 1994, 2001, Cheng and Sybesma 1999, Y.-H. Li 1999, among others).

- (5) a. na xie xuesheng-**men**
that XIE student-MEN
'those students'
b. *san ge xuesheng-**men**
three CL student-MEN
'three students'

While (5a) is fully acceptable, (5b) is taken to be ungrammatical.

Fourth, sometimes the presence of *-men* brings out a connotation that is characterized as 'affective' in Yorifuji (1976). As shown in (6), the speaker has an emotional relationship with what s/he describes.

- (6) Tianqi zai re, ye re-bu-guo zhanshi-**men** de xin qu.
weather again hot also hot-not-pass soldier-MEN DE heart go
'However hot the weather may be, it cannot be hotter than the hearts
of [our dear] soldiers.' (*Xiandai Hanyu Cidian* (1977, p. 384), cited in
Iljic (1994)).'

Finally, *-men* is generally, though not exclusively, added to nouns designating human beings.

- (7) a. haizi-**men** /laoshi-**men**/ta-**men**
child-MEN teacher-MEN he-MEN
'children/teachers/they'
b. *chezi-**men**/*shu-**men**
car-MEN book-MEN
'cars/books'

According to Iljic (1994, p. 96), when nouns designating animals or inanimate objects are used with *-men*, 'it is less a question of personification,

in the sense of anthropomorphization, than of projection by the enunciator of a personal link to these animals or objects.’

As will be seen later, some of the above-mentioned characteristics *-men* will be shown to be only partially true.

4.3 A True Plural Marker or Not

A central question surrounding the study of *-men* is whether it is a true plural marker. At one extreme, it is simply taken to be a collective marker. At the other extreme, it is considered to be a plural marker just like the English plural marker *-s*. In between, there are studies which show that it occurs as a collective marker or a plural marker according to differences in usage. In this section, I will review some recent studies on this issue and point out some problems facing them.

4.3.1 A Collective Marker

In Iljic (1994, 2001), the suffix *-men* is simply taken to be a collective marker, which refers to a situationally defined or anchored group. According to Iljic (1994), *-men* constructs a group from several already posited elements.

4.3.2 A True Plural Marker

Y.-H. Li (1999), as well as H. Yang (2005), proposes that *-men* can be treated on a par with the ‘true’ marker in non-classifier languages like English. The two differ as to the location where *-men* is generated.

4.3.2.1 Y.-H. Li (1999)

Y.-H. Li (1999) argues that the suffix *-men* is a true plural morpheme and a classifier language can have a plural morpheme within a nominal expression. In Y.-H. Li (1999, pp. 78-81) it is claimed that *-men* is not a collective marker as argued in Iljic (1994, 2001). One of the arguments she gives is that the fact that both [common noun-*men*] and [pronoun-*men*] can occur with the distributive marker *dou* contradicts the collective analysis.

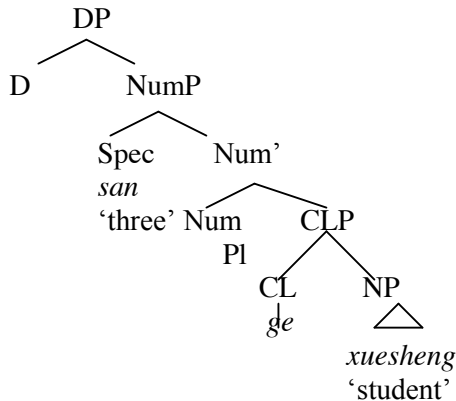
- (8) a. [Xuesheng-**men**] dou likai le.
 student-MEN all leave PART
 'Each of the students has left.'
 b. [Ta-**men** liang ge] dou jiehun le.
 he-MEN two CL all marry PART
 'The two of them have been married (to two different people).'
 (not 'The two of them have been married to each other.')

The use of *dou* must involve individuals and should thus not be compatible with nouns that concern a collective group.

In her analysis, both *-men* in Chinese and *-s* in English are similar in being generated under the node Num, though different in where they are realized: plurality is realized by the element generated in N in a classifier-less language and by the element in D in a classifier language. Crucially, in such an analysis there is only one *-men*, which sits under Num.

For example, the structure proposed for (5b) in Y.-H. Li is given in (9):

(9)



In (9), the common noun *xuesheng* cannot raise to Num to realize the Pl morpheme under Num because of the existence of the overt classifier. In other words, (5b) can never be derived. But just as in English the Pl morpheme can still be realized in N when there is no intervening Cl. The

combination in (5a) is possible, assuming that *xie* is incorporated into *zhe* ‘this’ in the D position.

Moreover, while the Pl feature in (9) cannot be suffixed to N, the Pl morpheme can raise to D and be suffixed to the nominal elements in D (realized as *-men*), i.e., pronouns, and proper names, but not to a common noun, deriving the following noun phrases:

- (10) a. Wo qing [ta-**men** san ge] (haizi) chifan.
I invite he-MEN three CL child eat
‘I invited the three children for a meal.’
b. Wo qing [Xiao-Qiang-**men** san ge] (ren) chifan.
I invite Xiao-Qiang-MEN three CL person eat
‘I invited Xiao-Qiang and his two associates for a meal.’
c. *Wo qing [pengyou-**men** san ge] (ren) chifan.
I invite friend-MEN three CL eat
‘I invited three friends for a meal.’

Y.-H. Li’s relates the collective reading of both [proper name-*men*] and [pronoun -*men*] to the fact that both pronouns and proper names sit in the D position. *Xiao-Qiang-men* means ‘Xiao-Qiang and his associates’ because *Xiao-Qiang* serves as the anchor for the identification of the group that *Xiao-Qiang* is in. Noticeably, plural pronouns work the same way. The so-called first person plural pronoun, for example, does not mean multiple speakers. It means the group of people that the speaker is in. On the other hand, a common noun is generated in N and takes only a “regular” plural reading.

As elegant as the analysis may seem to be, Y.-H. Li’s analysis suffers from some problems. First, if a massifier is treated as a sortal classifier as argued in Chapter 2, it would predict that a sentence such as (11) is ungrammatical, contrary to the fact. The example in (11) shows that a massifier can co-occur with a [common noun-*men*]. It is then not clear why (11) is possible if the massifier takes the same position as a classifier.

- (11) na (yi) qun xuesheng-**men**
that one group student-MEN
‘that group of students’

Second, as mentioned in Chapter 1, the following example from the A. S. Corpus shows that the presence of a sortal classifier does not block the raising of the common noun as argued in Y.-H. Li:

- (12) Yuanben jingmi de shucong zhong que chuxian yi qun ren,
 originally quiet DE bush inside unexpectedly appear one CL person
 qizhong you **ji ge** dianshitai, zazhishe
 among:them have several CL TV:station magazine:office
 de jizhe-**men**... (A. S. Corpus)
 DE reporter-MEN
 ‘A group of people came out from one originally quiet bushes. There
 were several reporters from TV stations and magazines among
 them...’

Third, Y.-H. Li maintains that a [common noun-*men*] can only be definite. She raises the question why a bare noun cannot be suffixed with *-men* when it is interpreted as an indefinite. She reasons that ‘for the same reason that *zhe xie/na xie xuesheng-men* ‘these/those students’ is possible, *xuesheng-men* ‘students’ should also be possible with an indefinite interpretation.’ (Y.-H. Li 1999, p. 89) In this case, *zhe xie* ‘these’ and *na xie* ‘those’ will take up the D position and *xuesheng-men* ‘students’ will thus have to assume a lower position. Y.-H. Li’s solution to this problem is to resort to a structure difference between a definite NP and an indefinite NP. She posits that a DP has to be projected for a definite NP because there is a [+Def] feature in D that has to be identified (by the raised NP which also has a [+Def] feature, adopting the mechanism of feature checking in the Minimalism Program). In contrast, assuming that D is always [+Def], an indefinite bare noun is simply generated as NP, without a D and the intervening empty Num and Cl. Given this, an indefinite bare noun will not be suffixed with *-men*.

Empirically, this is problematic. Consider the following examples.

- (13) a. Ta zai gen [yi qun haizi-**men**] wan.
 he in with one CL child-MEN play
 ‘He is playing with a group of children.’
 b. You [yi xie haizi-**men**] lian xie dou mai-bu-qi.
 have one XIE child-MEN even shoe all buy-not-up
 ‘Some children cannot even buy shoes.’

It is clear that *haizi-men* in (13) can take an indefinite interpretation, when it is modified by quantifying expressions such as *yi qun* and *yi xie*.¹

In summary, Y.-H. Li's analysis suffers from some theoretical and empirical problems.

4.3.2.2 H. Yang (2005)

Assuming that [common noun-*men*] cannot occur with a numeral and that it is always definite, H. Yang (2005) also proposes that *-men* is a true plural marker. But unlike in Y.-H. Li, it is generated in a lower position than Num for the following reason. H. Yang claims that (14) will be generated in Y.-H. Li's analysis if the plural feature raises to the demonstrative which is generated under D, as shown in (15).

1 It is interesting to note that there exists some discrepancy in grammaticality judgments and interpretations for the use of *-tati* in Japanese, a form similar to the suffix *-men* in Chinese. Kurafuji (2004) takes *-tati* and *-men* to be definite markers and to have the same syntactic distribution. On the other hand, Nakanishi and Tomioka (2004) argue against Kurafuji's proposal and claim that N-*tati* is not marked for definiteness. They analyze a *-tati* plural as a non-uniform plural whose extension can include entities that are not in the extension of the common noun to which *-tati* is attached. They also show that *-tati* can occur with numerals. The following example is originally from Kurafuji (1999, p. 80), cited in Nakanishi and Tomioka (2004, p. 118).

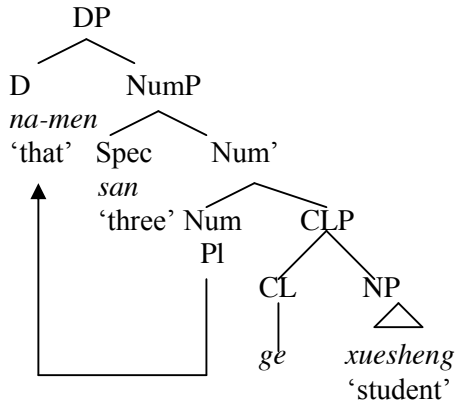
- (i) ??san-nin-no gakusei-**tati**
 three-CL-Gen student-TATI
 'three students'

Moreover, N-*tati* can appear in an existential construction:

- (ii) Kooen-ni kodomo-**tati**-ga ita. (Nakanishi and Tomioka 2004, p. 120)
 Park-Loc child-TATI-Nom existed
 'There were children in the park.'

- (14) **na-men* *san ge xuesheng*
 that-MEN three CL student
 ‘those three students’

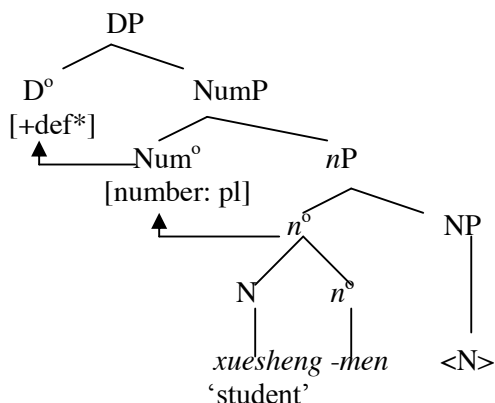
(15)



Arguing against Y.-H. Li's analysis, H. Yang proposes that *-men* is generated under the little *n* head of *nP* which sits between *NumP* and *NP*, in analogous to *vP* at a clausal level, and that it has the same function as a [+PL] *Num* head in picking out pluralities from the set denoted by *nP*. But at the same time, it also has special pragmatic functions, such as referring to a subjective grouping and explicitly or implicitly referring to the referents mentioned in the discourse (as observed in Iljic (2001)). It also has an uninterpretable human feature, which will be checked off only if the *n* c-commands an appropriate noun phrase.

Now let us see how the noun phrase *xuesheng-men* 'students' is derived.

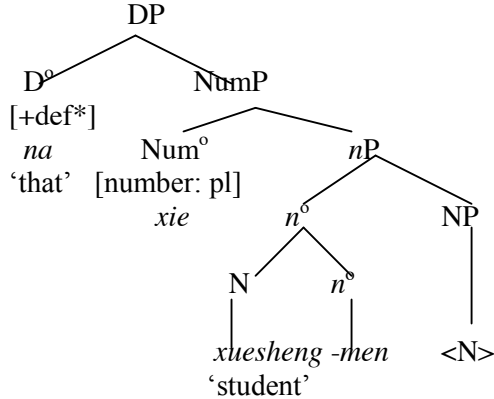
(16)



As shown in (16), the head noun N will first move to adjoin to the small *n*, which also satisfies the suffixal nature of *-men*. This movement is obligatory. The following movement, from *n* to CL to Num and finally to D, is triggered by the [+def*] feature under the D. The [+PL] feature will be picked up by this movement and hence the plural feature is in a sense overtly marked. Similarly, a plural pronoun is derived from the same sets of movement.

Now compare the derivation of (15) with (16), where a demonstrative is involved:

(17)



In this case, the [+def*] feature does not trigger movement and *xie* is inserted as a last result to save the Num head from not being realized on a lexical item or a functional element. A problem such an analysis faces is that it is not clear why there is such a contrast between *-men* and *xie*.

As far as the compatibility between a numeral and [common noun-*men*] is concerned, H. Yang takes it to be a semantic restriction. For H. Yang, *nP-men* denotes a set of plural entities. Therefore, it cannot occur with an element whose function is to take singularities as arguments. Consider how the following examples are ruled out:

- (18) a. **san xuesheng-men*
 three student-MEN
 b. **san ge xuesheng-men*
 three CL student-MEN

Following Ionin and Matushansky's (2004) proposal that numerals take singularities as arguments, H. Yang rules out (18a) by using a semantic mismatch: numerals require a set of singularities, but *nP-men* gives a set of pluralities. Similarly, (18b) is ruled out because classifiers pick up singularities from a set denoted by *nP* and if CL combines with *nP-men*, CLP will denote an empty set.

H. Yang's analysis suffers the same empirical problems as in Y.-H. Li's analysis.

4.3.3 A Collective Marker and a Plural Marker

In some studies, the suffix *-men* is taken to be a collective marker when attached to pronouns but a plural morpheme when attached to common nouns (cf. Lü 1947, Chao 1968, Norman 1988, among others). This is also the position taken in Cheung (2003). Based on the same empirical data in Mandarin Chinese as Y.-H. Li and H. Yang, Cheung suggests that a numeral does not occur with either [common noun-*men*] or [pronoun-*men*] because the projection of NumP must bar the existence of the cardinal phrase. On the other hand, while she assumes with Y.-H. Li that a common noun moves to Num and to D in order to check off the [+def] feature in the latter, she proposes that a [pronoun-*men*] should be considered as a single lexical item occupying the D position just like in English, contra Y.-H. Li (1999). Her main reason for proposing this is because she follows Iljic's (1994, 2001) idea that the suffixation of *-men* onto pronouns does not amount to the pluralization of the pronouns. In other words, *-men* is a collective marker when attached to a pronoun.

4.3.4 Summary

In this section, several recent studies of *-men* were examined. Iljic (1994, 2001) argues that it is a collective marker, whereas Y.-H. Li (1999) and H. Yang (2005) take it to be a pure plural marker. Finally, Cheung (2003) follows Y.-H. Li in treating it as a plural marker in general but regards it as a collective marker when it is suffixed to a proper noun or pronoun.

4.4 Towards a Solution

In light of the various analyses of *-men*, the challenge lies as to where *-men* can be generated or realized, how to derive the different readings of *-men*, and how to account for the new data. In this section, I will review Tsai and Feng's study before I propose my non-uniform analysis, which distinguishes two usages of *-men*.

4.4.1 Tsai and Feng (2006)

In Tsai and Feng (2006), it is pointed out that there are constraints on the use of a [common noun-*men*]. Consider the contrast in (19) and (20).

- (19) a. A-Q hen teng [haizi-**men**].
 A-Q very love:dearly child-MEN
 ‘A-Q loves his children dearly.’
 b. A-Q hen teng [hair-**men**].
 A-Q very love:dearly child-MEN
 ‘A-Q loves his children dearly.’
 c. *A-Q hen teng [xiaohai-**men**].
 A-Q very love:dearly child-MEN
 ‘A-Q loves his children dearly.’
- (20) a. A-Q hen teng [sunzi-**men**].
 A-Q very love:dearly grandson-MEN
 ‘A-Q loves his grandsons dearly.’
 b. A-Q hen teng [sunr-**men**].
 A-Q very love:dearly grandson-MEN
 ‘A-Q loves his grandsons dearly.’
 c. *A-Q hen teng [ersun-**men**].
 A-Q very love:dearly son:grandson-MEN
 ‘A-Q loves his sons and grandsons dearly.’

While the (a) and (b) examples in (19) and (20) are perfectly acceptable just as those with plural pronouns as given in (21), the (c) examples in (19) and (20) are not acceptable.

- (21) A-Q hen zenzhong [ni-**men**/wo-**men**/ta-**men**].
 A-Q very respect you-MEN I-MEN he-MEN
 ‘A-Q respects you/us/them.’

Tsai and Feng claim that this contrast arises from the interaction between the nuclear stress assignment proposed in Feng (2002) and the fact that the nouns with *-men* in the former and the pronouns are (derivational) words and

that the suffix *-men* in the latter is actually a functional category which has its own projection.

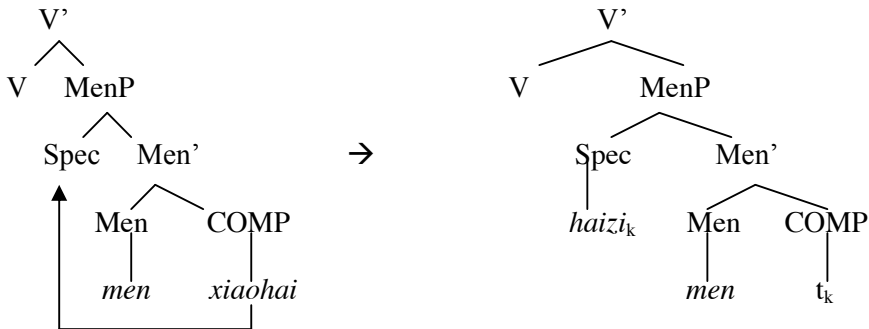
Feng (2002) claims that nuclear stress assignment in Chinese is determined by verb-selection:

(22) G-NSR (in Chinese):

Given two sister nodes C1 and C2, if C1 and C2 are selectionally ordered, the one lower in selectional ordering and containing an element governed by the selector is more prominent.

In (19) and (20), the (a) and (b) examples are not problematic for the assignment of nuclear stress because the whole word will carry the stress, but the (c) examples are problematic because after the movement of the head noun as shown in (23), the unstressed *-men* cannot bear the nuclear stress.

(23)



4.4.2 A Non-Uniform Analysis

Three different usages of *-men* should be distinguished. First, following Iljic and Cheung, I will take the *-men* in a [proper name-*men*] and a [pronoun-*men*] to be a collective marker, marking collective plurality, as it is clear that it does not take a true plural reading in this usage. In fact, Y.-H. Li's (1999) argument using *dou* cannot be a piece of evidence against the collective analysis if *dou* is a maximality operator as Cheng and Giannakidou (2005), T.-H. Lin (2007) and Xiang (2008) argue, rather than a distributive marker

as argued in Cheng (1995). For example, it is clear that *dou* cannot be a distributive operator in the following examples.

- (24) a. Zheng zuo qiao **dou** dao-xialai le. (T.-H. Lin 2007)
 whole CL bridge all fall-down PART
 ‘The whole bridge collapsed.’
 b. Xuesheng-men de chengji **dou** hen jiejin. (T.-H. Lin 2007)
 student-MEN DE score all very close
 ‘All the scores of the students’ are very close.’

According to Lin, in (24a), that the entire bridge collapsed does not imply that each brick collapsed and likewise, in (24b) that all the scores of the students’ are very close does not mean that each of the scores of the students is very close.

The same usage of *-men* is also found when it is suffixed to a common noun. This is the case when the common noun is not modified by any quantifying expressions. They are typically used as vocatives used to address to people, though they are not restricted to such a usage.

- (25) a. Haizi-**men**, jiayou.
 child-MEN come:on
 ‘Children, come on!’
 b. Pengyou-**men**, rang wo-men yiqi nuli.
 friend-MEN let I-MEN together work:hard
 ‘Friends, let us work hard together.’

The purpose of this usage is for the speaker to relate him/herself to the listener(s), making the speaker part of body of the listener(s).² A special characteristic of this usage is that just like in the cases with pronouns and proper names, a [common noun-*men*] is definite.

2 Scholars such as Feng-Fu Tsao and Chinfa Lien (p.c.) take *-men* to be a solidarity marker, which is used to show the solidarity between the speaker and the group of people in question.

If a [common noun-*men*] of this type is always definite, it is not surprising that it can occur as the object of a verb in the sense of Tsai and Feng.

- (26) A-Q hen teng [haizi-**men**].
 A-Q very love:dearly child-MEN
 'A-Q loves his children dearly.'

This is because it is invisible to the stress assignment rule. A cluster of elements such as pronouns and definite expressions are metrically invisible to G-NSR.

- (27) Invisibility
 In Chinese, anaphoric elements are prosodically invisible constituents that have no bearing on prosodic analysis.

Now the question is how the definite interpretation of such a [common noun-*men*], e.g., *haizi-men*, is derived. Before the discussion of the answer to this question, let us consider where such a combination is generated in a nominal, using the test of adjectives discussed in Chapter 3:

- (28) a. [Keai de haizi-**men**], qing yuanliang wo!
 lovely DE child-ASP please forgive I
 'Lovely kids, please forgive me!'
 b. Hu Laoshi nian guo liushi, [nianqing laoshi-**men**] yi
 Hu teacher age over sixty young teacher-MEN with
 Da Jie xiangcheng.
 Big Sister call
 'Hu Laoshi is over sixty. The young teachers called her Big Sister.'

The two examples in (28) show that *haizi-men* can be modified by a Type C adjective (with or without *de*), an adjective which is not allowed to precede a demonstrative:

- (29) a. *[keai de na xie haizi]
 lovely DE that XIE child

- b. *[nianqing na xie haizi]
young that XIE child

The contrast shows that it is unlikely that a [common noun-*men*] sits as high as the D position even both of the noun phrases in (29) take definite interpretations. I will come back to the definite interpretation later.

For the time being, let us consider another usage of *-men*, which is a semantic plural marker added to a common noun as a derivational morpheme. The suffix *-men* functions as a semantic plural marker when the common noun is modified by quantifying expressions such as *yi qun*, *yi xie* and *ji ge*, repeated from (12) and (13).

- (30) Yuanben jingmi de shucong zhong que chuxian yi qun ren,
originally quiet DE bush inside unexpectedly appear one CL person
qizhong you *ji ge* dianshitai, zazhishe
among:them have several CL TV:station magazine:office
de jizhe-**men**... (A. S. Corpus)
DE reporter-MEN
'A group of people came out from one originally quiet bushes. There were several reporters from TV stations and magazines among them...'
- (31) a. Ta zai gen [yi qun haizi-**men**] wan.
he in with one CL child-MEN play
'He is playing with a group of children.'
b. You [yi xie haizi-**men**] lian xie dou mai-bu-qi.
have one XIE child-MEN even shoe all buy-not-up
'Some children cannot even buy shoes.'

All the quantifying expressions are analyzed as #P in Chapter 2. It is not surprising that when a [common noun-*men*] is modified by these quantifying expressions, the whole noun phrase is interpreted as an indefinite or definite NP, as this is also the case when a noun without *-men* is modified by such expressions as discussed in Chapter 3. Now the question is how to capture the relation. Consider the following example.

- (32) *[san ge dianshita, zazhishe de jizhe-**men**]³
 three CL TV:station magazine:office DE reporter-MEN

The contrast between (31) and (32) is reminiscent of the contrast seen in Chapter 2 for the use of *de*. The feature analysis can be then applied here. The plural marker *-men* in this case marks the [common noun-*men*] with the semantic [+plural] feature. This feature will agree with the [+PL, +IND] features of the #P, but not the [+PL, -IND] features. In addition, a collective massifier which is inherently marked with a semantic [+plural] feature can also occur with such a [common noun-*men*].

- (33) When a [common noun-*men*] is quantified, the [common noun-*men*] is marked with [+PL] and can occur with any #P with the [+PL, +IND] features, or a group massifier which is marked with a semantic [+plural] feature.

A more revealing case involves the use of reduplication:

- (34) a. ***Ge ge haizi-men** dou hen kaixin.
 CL CL child-MEN all very happy
 'Each child is happy.'
 b. **Yi ge ge haizi-men** dou hen kaixin.

3 In contrast to what is assumed in the text, plenty of examples as such can be found on the internet:

- (i) a. Getian ta ba **liu ge haizi-men** jiao dao chuang bian shuo... (internet)
 second:day he BA six child-MEN call to bed side say
 'The second day he called his six children to his bedside and said...'
 b. Kandao **liang ge haizi-men** wan-de name kaixin, zhen hao. (internet)
 see two CL child-MEN play-DE that:way fun really good
 'Seeing the two kids having fun playing is really good.'

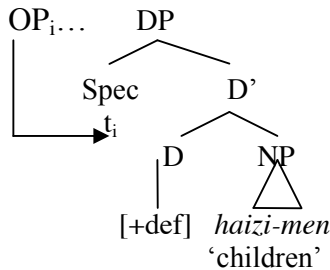
Such speakers allow the #P to be marked with the [+PL] feature, regardless whether it is marked with [+IND] or [-IND].

one CL CL child-MEN all very happy
 ‘All children are happy.’

As discussed in the previous chapters, reduplication takes either a singular interpretation or plural interpretation depending on whether the numeral *yi* is present. The contrast between the two examples in (34) can be analyzed as follows. *Ge ge* in (34a) is marked with the [-PL] feature, while *yi ge ge* in (34b) is marked with the [+PL, +IND] features. This will then explain why only the latter is compatible with *haizi-men*.

Now let us go back to the [common noun-*men*] that is not quantified and can only be definite. Very importantly, the inalienable meaning is lost when they are modified by quantifying expressions. I suggest that this means that the position of the Spec of DP of this type of phrase is already occupied by something else instead of a #P, which precludes any quantificational or indefinite interpretations. I propose that there is a variable bound by a subjective operator related to the speaker of the sentence, giving rise to the definite interpretation with the speaker as part of the extension. Through this operator, the extension of the noun phrase includes the speaker. But if the Spec of DP is occupied by quantifying expressions, then this option is ruled out, thus allowing both definite and indefinite interpretation.

(35)



If this is on the right track, our analysis then predicts very different judgments from those given in Tsai and Feng. Consider the following example in (36), which is claimed to be ungrammatical in Tsai and Feng.

- (36) A-Q zhaodao-le [changgong-**men**] le.
 A-Q find-ASP long:term:laborer-MEN PART
 'A-Q found the long-term laborers.'

Given an appropriate context, (36) can indeed be acceptable.⁴ Imagine the following scenario. A group of long-stay workers were missing. After they were found, (36) can be used to report on the situation. The oddness judged by Tsai and Feng may come from the speaker's disassociation with laborers. On the other hand, (37) may indeed be odd because it is harder for the speaker to associate himself/herself with the group of children if *xiaohai* is used instead of *haizi*, as evidenced by the fact that *xiaohai-men* is not used as a vocative, in contrast to *haizi-men*.

- (37) a. ?A-Q hen teng xiaohai-**men**.
 A-Q very love:dearly child-MEN
 'A-Q love children dearly.'
 b. ?Xiaohai-**men**, jiayou.
 child-MEN come:on
 'Come on, children!'

All the ungrammatical examples claimed by Tsai and Feng (2006) cannot be explained away in a similar way with the exception of only one example. As shown below, (38b), but not (38a), is acceptable.

- (38) a. *A-Q gu-guo [liang nian changgong-**men**].
 A-Q hire-ASP two year long:term:laborer-MEN
 'A-Q has hired long-term laborers for two years.'
 b. A-Q gu-guo [liang nian na xie changgong-**men**].
 A-Q hire-ASP two year that XIE long:term:laborer-MEN
 'A-Q has hired those long-term laborers for two years.'

In my analysis, *-men* should be a plural marker because it is modified by a #P, though the latter is actually measuring the whole event. Here I suggest

⁴ Thanks to Bingfu Lu for this judgment.

that the existence of such a #P will occupy the Spec of NP. What rules out (37) is the agreement between the #P and the [common noun-*men*]. But when *na xie* ‘those’ occurs in the Spec of DP, according to the analysis in Chapter 2, *liang nian* does not have to form any agreement relation with the [common noun-*men*].⁵

With this analysis, now let us go back to Y.-H. Li’s examples where quantifying expressions occur after words with *-men*:

- (39) a. Wo qing [ta-men san ge] (haizi) chifan.
I invite he-MEN three CL child eat
‘I invited the three children for a meal.’
b. Wo qing [Xiao-Qiang-**men** san ge] (ren) chifan.⁶
I invite Xiao-Qiang-MEN three CL person eat
‘I invited Xiao-Qiang and his two associates for a meal.’
c. *Wo qing [pengyou-**men** san ge] (ren) chifan.
I invite friend-MEN three CL person eat
‘I invited three friends for a meal.’

The examples in (39b) and (39c) involve a pronoun and a proper name. It is generally assumed that personal pronouns are deictic and are generally assumed to be base-generated under D (Postal (1969)). On the other hand, proper names are claimed to be base-generated in N and moved to D in Longobardi (1994). Y.-H. Li (1997, cited in Y.-H. Li 1999) claims that proper names are either base-generated in N or D, depending on their interpretations. When they are interpreted as common nouns, they are base-generated in N just like common nouns are. Otherwise, they are generated in D. Following the above analyses of pronouns and proper names, *ta-men san ge* and *Xiao-Qiang-men san ge* in (39a) and (39b) can be generated because the pronoun and the proper name can occupy the D position and be followed by a #P.

Now the question is how (39c) can be ruled out. Two observations are relevant here. First, in my analysis, *pengyou-men* should be generated in a

5 More discussion of the structure higher than DP in a nominal is given in Chapter 5.

6 As reported in Y.-H. Li and H. Yang (2005, pp. 150-151), such a combination is not acceptable for every speaker.

low position and *san ge* can only be an appositive. Second, *pengyou-men* can be a vocative, as shown below:

- (40) [Pengyou-**men**], buyao fangqi.
 friend-MEN not:want quit
 ‘Friends, don’t quit.’

In other words, what is involved in here is a collective marker, indicating the inalienable meaning. Thus I suggest that (39c) is not acceptable because this collective meaning is in conflict with the quantificational meaning.

Compare (40) with (41):

- (41) [ge-**menr**] san ge
 brother-MEN three CL
 ‘the brothers, the three [of them]’
 (Zhang and Sang (1986, p. 492), cited in Iljic (1994, p. 93))

In my analysis, (41) is only acceptable when *ge-menr* refers to a group of people excluding the speaker. This is indeed the case as it is more natural for it to appear with *ta-men*.

- (42) [ta-**men** ge-**menr**] [san ge]
 he-MEN brother-MEN three CL

In a similar sense, when *pengyou-men* refers to a group of people excluding the speaker, it can be followed by a quantifying expression:

- (43) Wo qing-le [ta-men pengyou-**men**] [san ge] chifan.⁷
 I invite-ASP he-MEN friend-MEN three CL eat
 'I invited them three friends for a meal.'

4.4.3 Summary

In this section, arguing against Tsai and Feng's (2006) analysis, *-men* is claimed to either mark collective plurality or semantic plurality depending on the existence of a quantifying expression. When *-men* is added to a pronoun noun/proper name or a bare common noun, it is a collective plural marker. But when it is added to a common noun modified by a quantifying expression, it functions as a semantic plural marker.

4.5 Conclusion

This plural status of *-men* may be a recent innovation influenced by English, as witnessed by the much freer use of *-men* in terms of agreement in number on the internet. This marker is better analyzed as a derivational morpheme, thus creating no conflict with the inflectional system introduced by classifiers in the sense of Borer (2005), which is claimed to mark syntactic plurality. A final point about the study of *-men* shows that the feature analysis, the NumP analysis and the raising of #P analysis all work together in giving us a better picture of how *-men* is used.

7 Consider the following example in the literature.

- (i) ni-men si wei taitai-xiaojie-men (Iljic 1994)
 you-MEN four CL lady-young:lady-MEN
 'you four, ladies and young ladies'

I follow Iljic's (1994, p. 93) double apposition analysis for this example—*si wei* is apposed to *nimen*, both being in turn (after a prosodic pause) referred to by *taimai-xiaojie-men*.

CHAPTER 5

HIGHER UP

5.1 Introduction

In the previous chapters, the focus is on number and referentiality within the DP layer. But a Chinese noun phrase can involve a structure that is more complicated. As seen in Chapter 1, there are elements that may occur at a higher level than DP. Now the questions are what can actually occur higher than DP and how they are parallel/not parallel to those in English. In this chapter, I will first review a universal hierarchy for noun phrases as proposed in Vangsnes (2001), an amalgamation of various proposals in previous works. I will then show that a functional projection higher than DP is needed in Chinese as well, supporting the universal hierarchy. However, unlike Vangsnes (2001), the highest functional projection is not marked for the presence/absence of unique reference. It is marked for totality/partitivity.

5.2 A Universal Hierarchy

In English, quantifiers such as *each*, *every*, *no*, and *any* are taken to be determiners which modify nouns, just like articles (*a*, *some* and *the*), genitives (*my*, *his*, etc.) and demonstratives (*this* and *that*). In general, these words constitute a single grammatical category because they always occupy the same position in the noun phrase, a position preceding the noun and any adjectives.¹

- (1) a. **the** book/**this** book/**a** house/**our** house
 b. ***the this** book/**a our** house

1 The English examples in (1)-(3) are mainly taken from Berk (1999).

A quantifying term can also occur after a determiner but precede all adjectives. It is a post-determiner, a category which includes cardinals and ordinal numerals:²

- (2) a. The **three** girls are here.
 b. My **second** choice is chocolate.
 c. A **few** people came.
 d. I'm having a **little** trouble with my printer.

Furthermore, a determiner can be simultaneously preceded by a pre-determiner and followed by a post-determiner, as illustrated in the following example:

- (3) **All the three** linguists speak at least two languages.

The relative ordering of the three determiners, i.e., the universal quantifier, the definite determiner, and the cardinal determiner in the above example is fixed, as illustrated in Vangsnes (2001):

2 Jackendoff (1991) divides quantifiers in English into two syntactic categories. The first type of quantifiers can be preceded by genitive NPs and demonstratives, while the second type cannot:

- (i) a. **Fred's/the/those/which** many/few/several dwarfs
 b. ***Fred's/the/those/which** some/each/all/no/any dwarfs

It is argued that the second type of quantifiers occupy the same position as genitive NPs and demonstratives.

Note that no two quantifiers can occur together:

- (ii) a. ***no many** men
 b. ***all several** men
 c. ***any much** wine

The ungrammaticality is argued to be a semantic constraint.

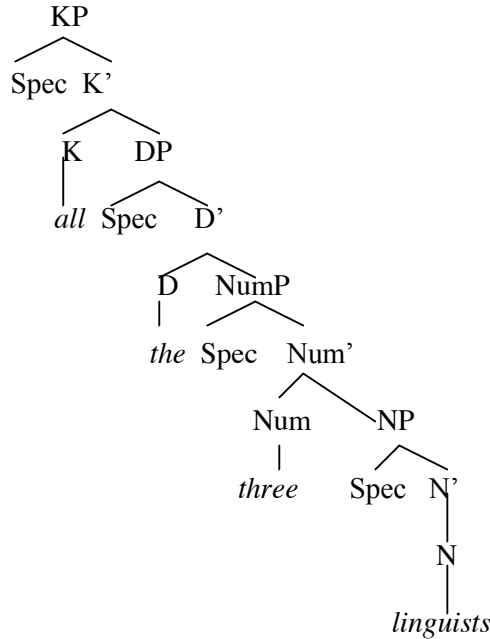
- (4) a. ***all three the** linguists
 b. ***three all the** linguists
 c. ***three the all** linguists
 d. ***the three all** linguists
 e. ***the all three** linguists

Based on the idea that functional categories are abstract heads that are correlated with specific referential categories, Vangsnes (2001) claims that at least three functional projections representing semantic properties of noun phrases are universal. They are KP, DP and NumP, represented as in (5).

- (5) [KP/QP $\forall$...[DP...[QP $\exists$ /NumP...[NP...]]]

The noun phrase in (3), for example, is represented in (6):

(6)



The structure of (5), according to Vangsnes, is an amalgamation of various proposals in previous works. First, the idea that quantifying determiners head a functional projection QP occurring between DP and NP is first seen in Abney (1987, p. 338f). Second, the proposal that universally quantifying determiners (e.g., *all*, *every* and *each*) head a separate QP above the DP-level, leaving the lower QP for the existentially quantifying determiners, is given in Shlonsky (1991) and Giusti (1991), among others. Third, another functional category, i.e. NumP, associated with the morphological category number, is postulated to sit between DP and NP, as in Ritter (1991). Finally, as suggested in Lamontagne and Travis (1986), there is a functional category related to Case above the DP-level, which is labelled as K(ase)P and taken to be the equivalent of the clausal functional projection CP.

Universally quantifying determiners such as *all*, *every* and *each* and the definite article *the* are all strong quantifiers in contrast to cardinal determiners which belong to the class of weak quantifiers. The distinction between the two is first observed in Milsark (1977) and is later given the strong/weak label by Barwise and Cooper (1981). According to Milsark, while noun phrases with (only) a cardinal determiner can occur as the post-verbal argument of existential sentences in English and a number of other languages, noun phrases containing universally quantifying and definite determiners are excluded from such a position. For example,

- (7) a. There were **three** linguists/**no** linguists/***the** linguists/***those** linguists/***both** linguists at the meeting.
 b. There was **a** linguist/***every** linguist/***each** linguist at the meeting.
 c. There is beer/**much** beer/**a lot of** beer/***all** beer/***my** beer in the fridge.

Based on Milsark's distinction, determiners in English can be categorized as follows:³

(8)

Table 1: Classification of Determiners as Strong or Weak

Strong		Weak
' $\forall$ '	'definite'	
all each every both [...]	the this that my [...]	one, two, three,... many some a no a lot of [...]

For Vangsnes, there is a correlation between functional projections and a certain semantic classification of determiners in (5): *all* belongs to the class

³ This table is taken from Vangsnes (2001).

of universally quantifying determiners, *the* to the class of definite determiners, and *three* to the class of cardinal determiners. ‘Universally quantifying determiners’ entails that the noun phrase is ‘uniquely referring,’ ‘definite determiners’ entails that the noun phrase is ‘discourse anaphoric,’ and ‘cardinal determiners’ specifies that the noun phrase they occur in is ‘countable.’

Consider ‘countability’ first. It is used in the sense that the referent of the noun phrase consists of distinct parts that may be counted. Determiners such as *many* and the indefinite article *a* are also considered to involve countable noun phrases in a broad sense.

The notion of ‘unique reference’ simply means that the listener will always be able to retrieve a referent for the noun phrase no matter what the context. The notion of ‘discourse anaphoricity’ or ‘specificity’ is used in the sense that the referent is a part of the context for the utterance whenever the speaker has a particular individual (or set of individuals) in mind. Crucially, a universal set does not count as a ‘particular individual.’

Compare the two sentences in (9):

- (9) a. All linguists speak at least two languages.
- b. All the linguists speak at least two languages.

The sentence in (9a) is a generic statement about linguists with the subject noun phrase referring to all existing linguists, i.e., the universal set of linguists. The sentence in (9b) is a statement about a ‘given’ or ‘familiar’ group of linguists, a subset of the universal set, and the subject noun phrase refers to the whole of this set. The difference between the two sentences in (9) is that the subject noun phrase in (9b) denotes a referent which is either contextually given or contextually inferred whereas the subject noun phrase in (9a) does not. Both noun phrases have an extension which can be identified by the listener, and that is what ‘unique reference’ refers to.

The three properties, i.e., unique reference, discourse anaphoricity and countability, may be freely combined with each other. For example,

- (10) a. Put the beer in the fridge!
- b. Put the beers in the fridge!

Note that *the beer* in (10a) is ambiguous between a set and a mass reading, while *the beers* in (10b) only has a set reading. This contrast illustrates that a noun phrase does not need to be countable in order to be discourse anaphoric. Furthermore, (11) below shows that a noun phrase needs not be countable or discourse anaphoric in order to be uniquely referring:

(11) All German beer is brewed according to das Deutsche Reinheitsgebot.

As a matter of fact, Vangsnes argues that the functional projections are not headed by the determiners but rather by abstract functional categories, listed in the lexicon, and it is these abstract functional heads that are correlated with the referential properties. The eight types of noun phrases and their examples from English are given in (12) and (13).

- (12) a. KP [+u] DP NumP NP
(+unique, +discourse anaphoric, +countable)
b. KP [+u] DP NP
(+unique, +discourse anaphoric, -countable)
c. KP [+u] NumP NP
(+unique, -discourse anaphoric, +countable)
d. KP [+u] NP
(+unique, -discourse anaphoric, -countable)
e. KP [-u] DP NumP NP
(-unique, +discourse anaphoric, +countable)
f. KP [-u] DP NP
(-unique, +discourse anaphoric, -countable)
g. KP [-u] NumP NP
(-unique, -discourse anaphoric, +countable)
h. KP [-u] NP
(-unique, -discourse anaphoric, -countable)

- (13) a. the chair
b. the beer
c. all chairs
d. all beer
e. a certain chair

- f. a certain beer (i.e., 'a certain type/brand of beer')
 g. a/no chair
 h. beer

The idea that there might be a higher function projection seems to be on the right track, but the content of this functional projection invites further exploration. Let us examine more carefully the elements that occur higher than DP. Two types of pre-determiners can be distinguished depending on whether the partitive preposition *of* is optional or required.

- (14) a. **All (of)** the linguists speak at least three languages.⁴
 b. **Half (of)** the students missed the class.
 c. **Both (of)** my sons like math.
 d. This was **one fourth (of)** the cost.
- (15) a. **many *(of)** the linguists
 b. **some *(of)** the linguists
 c. **three *(of)** the linguists

Vangsnes' analysis of the examples in (14) and (15) is as follows. The author suggests that the noun phrases in (15) may be analyzed in the same way as the noun phrases discussed above. Thus (15a) may be analyzed as follows:

- (16) [_{KP} [_K^o many_i-of-*k* [_{DP} [_D^o t_i-the- $\hat{o}$ [_{NumP} [_{Num}^o t_i-*v* [_{NP} linguists]]]]]]]]

As shown in (16), *of* is merged in K^o, adjoined to *k*, and the determiner *many* has raised from Num^o and adjoined to *of*.

This analysis, according to Vangsnes, is desirable. One of the reasons is that KP is by hypothesis associated with Case, and *of* being a preposition surely could be regarded as a partitive Case marker, i.e., yielding a subset interpretation. As for the motivation for raising, Vangsnes suggests that this has to do with scope: the determiner raises to a higher position to take scope over the whole of the KP in order to quantify over the denoted set.

4 According to Vangsnes (2001), American English prefers to have *of* in this case.

Moreover, the same analysis is suggested for the example in (17a), where a pseudo-partitive is involved:

- (17) a. I want a glass of water.
 b. $[_{KP} [a \text{ glass}]_i [_{K^\circ} \text{ of-}k [_{NumP} t_i [_{Num^\circ} v [_{NP} \text{ water}]]]]]$

For this type of noun phrase, *of* is also obligatory. Given this possibility, Vangsnes further suggests that (15a) may have the structure as in (18) in analogy to that in (17b).

- (18) $[_{KP} \text{ many}_i [_{K^\circ} \text{ of-}k [_{DP} t_i [_{D^\circ} \text{ the-} \delta [_{NumP} t_i [_{Num^\circ} v [_{NP} \text{ linguists}]]]]]]]$

The determiner *many* projects a maximal projection and raises to the Spec of KP. Finally, consider the following noun phrases.

- (19) a. **all three** of the linguists
 b. all of the **three** linguists

In (19a), the universal quantifier and the cardinal determiner constitute a phrase, which is initially merged in the Spec of NumP. This complex phrase can move to the Spec of KP, giving rise to the word order where the two determiners precede *of*. Or, only the determiner moves to the Spec of KP leaving the cardinal determiner behind.

- (20) a. $[_{KP} [\text{all three}]_i [_{K^\circ} \text{ of-}k [_{DP} t_i [_{D^\circ} \text{ the-} \delta [_{NumP} t_i [_{Num^\circ} v [_{NP} \text{ linguists}]]]]]]]$
 b. $[_{KP} \text{ all}_i [_{K^\circ} \text{ of-}k [_{DP} t_i [_{D^\circ} \text{ the-} \delta [_{NumP} [t_i\text{-three}] [_{Num^\circ} v [_{NP} \text{ linguists}]]]]]]]$

Two notes are pertinent. First, what is crucial to the projection of KP does not seem to be the presence or lack of unique reference thereof. Instead, it is partitivity (indicated by the determiners such as *many*, *some* and *three*) and totality (indicated by the determiners such as *all* or the combination of the universal quantifier and the cardinal determiner such as *all three*). In the next section, I will discuss whether this proposed hierarchy can be maintained in Chinese.

Second, the suggestion that the KP analysis is also applied to the noun phrase in (17a), which involves a pseudo-partitive, may not be on the right track. A pseudo-partitive is different from a partitive. They are exemplified as follows.

- (21) a. a lot of the leftover turkey [partitive]
 b. a lot of leftover turkey [pseudo-partitive]

The two differ in the presence/lack of an overt determiner in the noun phrase after *of*: a partitive usually has an overt determiner, while a pseudo-partitive does not.⁵

Semantically, a pseudo-partitive denotes a measured amount of a non-specific entity, while a partitive denotes a measured amount of a specific entity.

Syntactically, as pointed out in Selkirk (1977, p. 304), the two are different in extraposition.

[partitive]

- (22) a. **A lot of the leftover turkey** has been eaten.
 b. **A lot** has been eaten **of the leftover turkey**.

[pseudo-partitive]

- (23) a. **A lot of leftover turkey** has been eaten.
 b. ***A lot** has been eaten **of leftover turkey**.

[partitive]

- (24) a. Only **a handful of those questions concerning electromagnetism** were asked.

⁵ According to Selkirk (1977, p. 315), it does seem to be possible for a partitive to contain a null determiner in the noun phrase after *of*:

- (i) I heard too much of **one speech** and not enough of the other.

The possibility, however, is only available when that noun phrase is interpreted as [+specific].

- b. *Only **a handful of those questions** were asked **concerning electromagnetism**.

[pseudo-partitive]

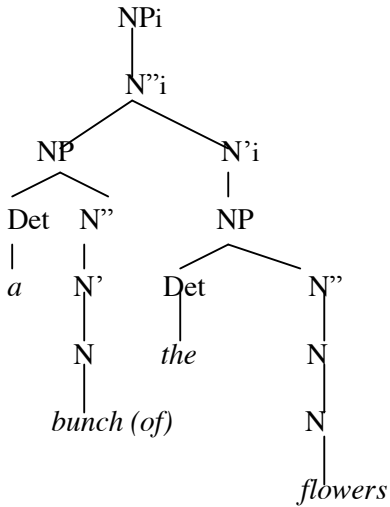
- (25) a. Only **a handful of questions concerning electromagnetism** were asked.
- b. Only **a handful of questions** were asked **concerning electromagnetism**.

As shown in (22)-(25), while a partitive allows the extraposition of the *of* phrase and disallows that of a modifier, a pseudo-partitive disallows the former but allows the latter.

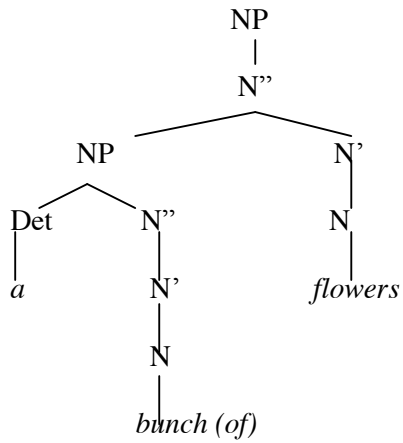
Selkirk proposes a simple noun phrase analysis for a pseudo-partitive, but suggests two layers of NPs for a partitive. The tree structures illustrated for the partitive and the pseudo-partitive in (26) are given in (27) and (28) respectively.

- (26) a. a bunch of the flowers
- b. a bunch of flowers

(27) [partitive]



(28) [pseudo-partitive]



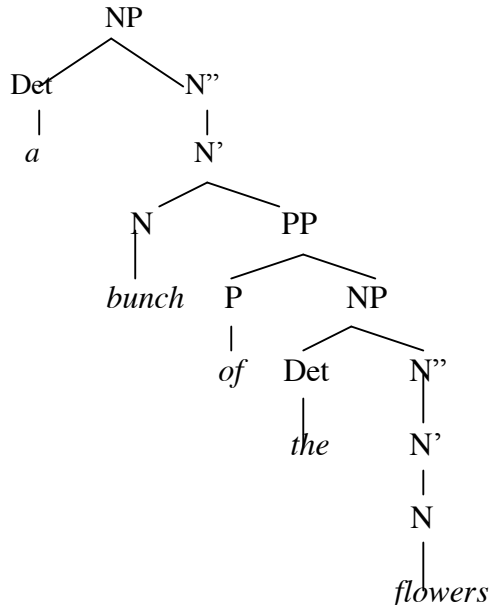
The fact that *the leftover turkey* in the partitive (22) can be extraposed but not *leftover turkey* in the pseudo-partitive (23) is because, according to Selkirk, the extraposition rule is specified to be applied to move a NP, which is preceded by *of*, not a *of-N'*.⁶ On the other hand, the extraposition of a PP is allowed in a pseudo-partitive because the movement crosses only one cyclic node, i.e., NP, while it is not due to the fact that two NPs are crossed.

Note that the two phrases in (26) are ambiguous: on one interpretation *a bunch* is a “measure phrase,” indicating the amount of flowers; on the other *bunch* functions as a head noun and is further characterized or qualified by the phrase (*of*) *the flowers* (Akmajian and Lehrer (1975) and Ross (1976), cited in Selkirk).

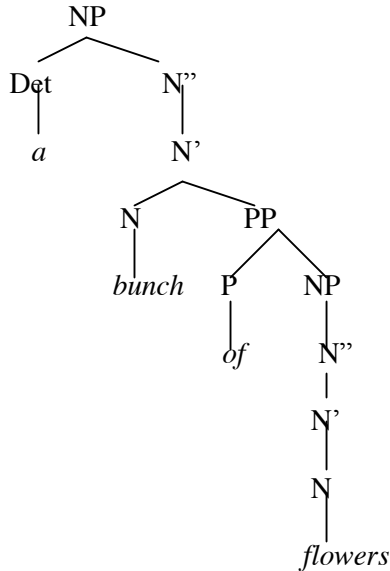
Selkirk proposes the following structures for the noun complement structure for the second reading:

6 This analysis does not seem to work very well with the actual tree structure that is proposed by Selkirk. The second NP in a partitive actually is dominated by N', which results in the *of-N'* sequence.

(29) Noun Complement



(30) Noun Complement



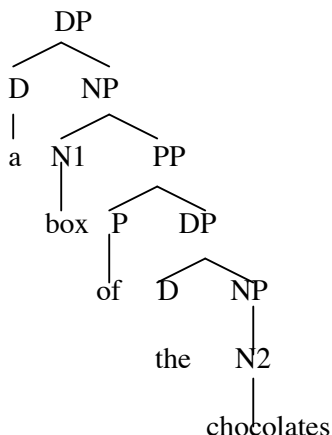
The differences between the two possible readings are reflected in number agreement, pronominalization and selectional restrictions. Take number agreement as an example.

(31) **A bunch of those flowers was/were** thrown out on the back lawn.

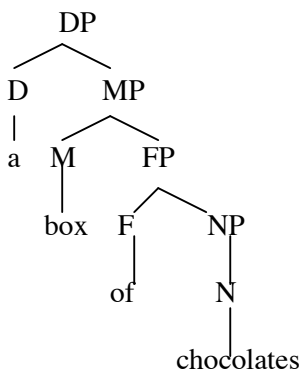
In the partitive example in (31), either *bunch* or *flowers* will be the head of the noun phrase, which will determine whether *was* or *were* is used.

On the other hand, Stickney (2004a, b) proposes the following structures for the partitive and pseudo-partitive in (32):

(32) [partitive]



(33) [pseudo-partitive]



Stickney proposes the two structures based on the data with respect to the extraposition discussed in Selkirk as seen in (22)-(25) and a difference noted in Jackendoff (1991). According to Jackendoff, an adjective preceding a pseudo-partitive has a reading that is not available to a partitive. Consider the following examples.

- (34) a. a **moldy** box of those chocolates [partitive]
 b. a **moldy** box of chocolates [pseudo-partitive]

In (34b), the adjective *moldy* preceding the pseudo-partitive can modify the head noun, *chocolates*. This is not possible for the adjective preceding the partitive, as shown in (34a). In other words, in (34a), only the box can be moldy. On the other hand, the noun phrase in (34b) can be used in situations where the box is moldy, the chocolates are moldy, or both.

I will not go into the details of this proposal, but only point out that a pseudo-partitive is different from a partitive and the two should not be analyzed to be the same like Vangsnes does. Moreover, a partitive in Chinese cannot be analyzed as one in (27), (29) or (32) because as will be seen below that in the place of N1 in (27), Chinese has a classifier/massifier, and it cannot be analyzed as a noun.⁷ On the other hand, the KP analysis proposed in Vangsnes (2001) is more promising.

5.3 What Does Chinese Say?

Is it possible for the universal hierarchy to be maintained in Chinese? The answer seems to be yes and no. I will show that Chinese will need a functional projection higher than DP, but it is not specified for marking ‘unique reference’ as suggested in Vangsnes (2001).

5.3.1 *Totality/Partitive*

First, let us go back to the structure in (5), a structure claimed to be universal in the sense that it is for languages that have overt grammatical markers, as well as for those languages that do not overtly mark the semantic distinctions.⁸ It is pointed out that the core referential property of the definite determiner in English may be expressed in an article-less language in two

⁷ Recall that an N-C sequence with a head noun in Chinese cannot be analyzed as a pseudo-partitive as proposed in Watanabe (2006). Please see Chapter 2 for the relevant discussion.

⁸ Please see Vangsnes (2001) for the identification of these functional abstract projections: Identification is accomplished when an element with the relevant morphological features is merged within the functional head projection. Articles take the highest priority to serve as identifiers if they are appropriate in identifying a functional projection in a given language.

ways--either without a definite article or with a demonstrative added to the noun phrase following the universal quantifier.⁹ This is illustrated in the following examples from Finnish, an article-less language.

- (35) a. **Kaikki** kielitietelikjät puhuvat kahta kieltä.
all-NOM linguists-NOM speak two-PAR language-PAR
'All (the) linguists speak two languages.'
- b. **Kaikki nämä** kielitietelikjät puhuvat kahta
all-NOM these-NOM linguists-NOM speak two-PAR
kieltä.
language-PAR
'All these linguists speak two languages.'

Now let us consider the Chinese data. Unlike English, Chinese does not have articles, but like Finnish, it has demonstratives. Moreover, the Chinese equivalent of *all* is the collective universal quantifier *suoyou (de)* 'all.'¹⁰ Now consider the interaction between the plural demonstrative and *suoyou (de)*. As shown in the following examples, *suoyou (de)* can occur either before *na xie* or after it.

- (36) a. [suoyou de][na xie] yuyanxuejia
all DE that XIE linguist
'all those linguists'
- b. [na xie] [suoyou de] yuyanxuejia
that XIE all DE linguist
'all those linguists'

Recall from the discussion in Chapter 3 that a DP/D' modifier can occur either before *na xie* 'those' or after it.

- (37) a. **[na xie][canjia huiyi de]** yuyanxuejia
-

9 For the existence of DP in Russian, another article-less language, please see Pereltsvaig (2007).

10 *Suoyou* is taken to be a determiner in R. Yang (2001, p. 91).

- that XIE attend meeting DE linguist
 ‘those linguists who attended the meeting’
- b. [**canjia huiyi de**] [**na xie**] yuanyxuejia
 attend meeting DE that XIE linguist
 ‘those linguists who attended the meeting’

When *suoyou de* is added, there are totally 6 possible combinations:

- (38) a. [**na xie**] [**suoyou de**] [**canjia huiyi de**] yuanyxuejia
 that XIE all DE attend meeting DE linguist
 ‘all those linguists who attended the meeting’
- b. [**suoyou de**] [**na xie**] [**canjia huiyi de**] yuanyxuejia
 all DE that XIE attend meeting DE linguist
- c. [**na xie**] [**canjia huiyi de**] [**suoyou de**] yuanyxuejia
 that XIE attend meeting DE all DE linguist
- d. [**suoyou de**] [**canjia huiyi de**] [**na xie**] yuanyxuejia
 all DE attend meeting DE that XIE linguist
- e. [**canjia huiyi de**] [**suoyou de**] [**na xie**] yuanyxuejia
 attend meeting DE all DE that XIE linguist
- f. [**canjia huiyi de**] [**na xie**] [**suoyou de**] yuanyxuejia
 attend meeting DE that XIE all DE linguist

I suggest that *suoyou (de)* is a QP which is a DP/D’ modifier. It can thus freely interact with *na xie* and the DP/D’ modifier *canjia huiyi de*. If this is the case, it seems to suggest that if there is KP, it has to be occupied by something else in Chinese.

5.3.2 A Higher Projection is Needed in Chinese

As discussed in Chapter 1, there are elements which occur higher than the DP layer. It seems to be true that Chinese also needs a higher functional projection.¹¹

11 The occurrence of the two examples in (38), according to one of the reviewers, may be rare. I do not contend the popularity of these two examples, but I would like to argue that they are indeed grammatical, at least in the Mandarin spoken in Taiwan.

- (39) a. Ta ba [**na xie**] [wo zuotian cai mai de] [**san ben**] shu
 he BA that XIE I yesterday only buy DE three CL book
 na-zou le.
 take-away PART
 ‘He has taken away all of the three books I just bought
 yesterday.’
- b. Ta na-zou-le [**san ben**] [wo zuotian cai mai de]
 he take-away-ASP three CL I yesterday only buy DE
 [na xie] shu.
 that XIE book
 ‘He has taken away three of the books I just bought yesterday.’

Szabolcsi (1983) proposes that the KOMP which heads KP is the equivalent of COMP and the domain through which embedded constituents may move out of the noun phrase. If KP does exist in Chinese and the distinction between DP and NP is maintained, a noun phrase will be projected as KP-

A Chinese speaker, nevertheless, will prefer the following use of the four types of sentences (cf. Shin 2008):

- (i) a. **Na xie shu, san ben** dou hen youqu.
 that XIE book three CL all very interesting
 ‘All of those three books are interesting.’
- b. **Na xie shu** bei ta na-zou-le **san ben**.
 that XIE book BEI he take-away three CL
 ‘Three of these books were taken away.’
- c. **Na xie shu**, ta kan-le **san ben**.
 that XIE book he read-ASP three CL
 ‘He read three of those books.’
- d. **Na xie shu**, you **san ben** bujian le.
 that XIE book have three CL disappear PART
 ‘Three of those books have disappeared.’

While the N-C sequence in (ia) takes a totality interpretation because of the presence of *dou* ‘all,’ those in (ib)-(id) will yield a partitive interpretation.

DP-NP in Chinese, parallel to CP-TP-VP for a clause. But this higher functional projection should not be designated for the marking of presence/absence of unique reference as proposed in Vangsnes. What is relevant seems to be either the totality interpretation or the partitive interpretation, as illustrated respectively in (39a) and (39b).

What is interesting is that when the DP/D' modifier in (39) is taken away, the two sentences become ungrammatical as shown in (40), an issue which I will turn to in the next subsection.

- (40) a. *Ta ba [**na xie**] [**san ben**] shu na-zou le.
 he BA that XIE three CL book take-away PART
 b. *Ta na-zou-le [**san ben**] [**na xie**] shu.
 he take-away-ASP three CL that XIE book

5.3.3 *Never Too Close?*

Just like the examples in (40), the following examples, which also contain two #Ps, are ungrammatical.

- (41) a. *Ta zhua-zou-le [**na xie**] [**mei yi zhi**] yang.
 he take-away-ASP that XIE every one CL sheep
 b. *Ta zhua-zou-le [**na xie**] [**henduo zhi**] yang.
 he take-away-ASP that XIE a:lot CL sheep
 c. *Ta zhua-zou-le [**na xie**] [**yi xie**] yang.
 he take-away-ASP that XIE one XIE sheep
 d. *Ta zhua-zou-le [**na xie**][**san zhi**] yang.
 he take-away-ASP that XIE three CL sheep
 e. *Ta meiyou zhua-zou [**na xie**] [**renhe yi zhi**] yang.
 he not take-away that XIE any one CL sheep
- (42) a. *Ta zhua-zou-le [**mei yi zhi**] [**na xie**] yang.
 he take-away-ASP every one CL that XIE sheep
 b. *Ta zhua-zou-le [**henduo zhi**] [**na xie**] yang.
 he take-away-ASP a:lot CL that XIE sheep
 c. *Ta zhua-zou-le [**yi xie**] [**na xie**] yang
 he take-away-ASP one XIE that XIE sheep
 d. *Ta zhua-zou-le [**san zhi**] [**na xie**] yang.

- he take-away-ASP three CL that XIE sheep
 e. *Ta meiyou zhua-zou [**renhe yi zhi**] [**na xie**] yang.
 he not take-away any one CL that CL sheep

But when the two #Ps are separated by a DP/D' modifier, the sentences all become grammatical:

- (43) a. Jingcha zhua-zou-le [na xie] [xian dongshou da ren de]
 policeman take-away-ASP that XIE first move:hand hit person DE
 [**mei yi ge/henduo ge/yi xie/san ge**] daitu.
 every one CL a:lot CL one XIE three CL gangster
 'The policeman arrested all/a lot/some/three of those gangsters
 who started the fight.'
 b. Jingcha bing meiyou zhua-zou [na xie] [xian dongshou da
 policeman actually not take-away that XIE first move:hand hit
 ren de] [**renhe yi ge**] daitu.
 person DE any one CL gangster
 'The policeman actually didn't arrest any one of those who started
 the fight.'
- (44) a. Ta kan-le [**mei yi ben/henduo ben/yi xie**] [wo zuotian
 he read-ASP every one CL a:lot CL one XIE I yesterday
 mai de] [na xie] shu.
 buy DE that XIE book
 'He read every book/a lot of books/some books of those books that
 I bought yesterday.'
 b. Ta meiyou kan-guo [**renhe yi ben**] [wo zuotian mai de]
 he not read-ASP any one CL I yesterday buy DE
 [na xie] shu.
 that XIE book
 'He hasn't read any of those books that I bought yesterday.'

When two #Ps occur together, it is unacceptable unless a DP/D' modifier marks the existence of the DP layer, forcing the higher #P to be merged into a higher projection. Therefore, a functional projection higher than the DP layer is required for those #Ps which occur higher. Furthermore, the higher #P has

to be merged there for the obvious reason than that there is no lower position for them to move from.

The problem seems to also lie in the types of #Ps. In other words, #Ps of the same type cannot occur together. When two #Ps of different types of classifiers are used one after another, the two #Ps can co-occur:

- (45) a. Gei wo [liang **jīn** zhe **zhōng** niurou].
 give I two CL this CL beef
 ‘Give me two catties of this kind of beef.’
 b. Gei wo [liang **kuai** zhe **ge**].
 give I two CL this CL
 ‘Give me two pieces of this.’
 c. Wo yao [liang **ge** zhe **ge**].
 I want two CL this CL
 ‘I want two pieces of this.’

In the first two examples above, the first classifier/massifier is more specific than the second one. Similarly, it can be argued that the second occurrence of *ge* in (45c) is more general in the sense that *zhe ge* is used to refer to an object, either a mass noun or a count noun.

When a classifier of a specific one stays closer to the head noun than that of a more general kind, it is ungrammatical.

- (46) a. *Gei wo [liang **ge** zhe **bei** (shui)].
 give I two CL this CL water
 ‘Give me two cups of water.’
 b. *Gei wo [liang **ge** zhe **kuai**].
 give I two CL this CL
 ‘Give me two pieces.’

In (46), *ge* as a general classifier is more general compared to *bei* and *kuai* and the order whereby *ge* may precede the more specific classifier/massifier is thus ruled out.

Finally, consider the following examples.

- (47) a. Ta kan-guo [**mei yi ben**] [wo zuotian mai de] [(**na**) **san ben**] shu.¹²
 he read-ASP every one CL I yesterday buy DE that three CL book
 ‘He has read each of the three books that I bought yesterday.’
 b. Ta meiyou kan-guo [**renhe yi ben**] [wo zuotian mai de]
 he not read-ASP any one CL I yesterday buy DE
 [(**na**) **san ben**] shu.
 that three CL book
 ‘He hasn’t read any of those three books that I bought yesterday.’

The fact that *na* ‘that’ is optional in the above sentences is in contrast to the situation where their partitive counterparts in English are in:

- (48) a. each of *(the) books
 b. any of *(the) books

The overt determiner *the* in (48) is required. This contrast then clearly shows that the DP/D’ modifier the Chinese examples plays the role of overtly marking the DP layer in the absence of a demonstrative.

5.4 Conclusion

If what is argued in this chapter is on the right track, a higher functional projection than the DP layer is needed. Such projection may be called KP. KP is marked for a totality or partitive interpretation.

12 The sentence with *na* ‘that’ is due to Jen Ting.

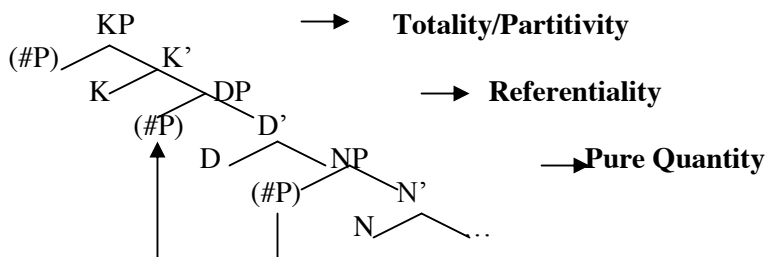
CHAPTER 6 CONCLUDING REMARKS

6.1 Summary

Three issues central to a noun phrase are investigated in this study: number, referentiality and totality/partitivity. Generally speaking, number refers to the notion of singularity/plurality, while referentiality concerns the interpretation of a noun phrase, i.e., referential (definite/indefinite) or non-referential (including pure quantity). Totality/partitivity, on the other hand, is related to both quantity and referentiality. It is argued that number in Chinese is syntactically encoded by a #P, i.e., NumP, the head of which is occupied by a classifier/massifier. Within a #P, plurality (marked in the # head) can only be identified once. Two kinds of syntactic plurality are distinguished by the use of features: [+PL, +IND] and [+PL, -IND]. They are found to be relevant for the use of *de*, modifies such as *zhengzheng* ‘as a whole’ and the plural suffix *-men*.

A #P contributes to quantity as well as referentiality. A #P may merge into the Spec of NP and remain there for a pure quantificational interpretation (and thus no DP layer is necessary) or move from the Spec of NP to the Spec of DP for a check of its referential interpretation with the D(eterminer) head. Finally, a #P may occupy the Spec of KP, i.e., the functional projection higher than DP, marking the totality/partitivity interpretation. The hierarchical structure proposed in this study is represented as follows:

(1)



The KP-DP-NP hierarchy at a nominal level is analogous to the CP-TP-VP Hierarchy at a clausal level.

6.2 Implications of this Study

The implications of this study are as follows. First, in this study a classifier/massifier is the locus of number. Whatever co-occurs with a classifier/massifier to mark quantity forms a constituent with the classifier/massifier, i.e., #P. This constituent can further combine with a demonstrative and the combination enters into a relationship with the N head, the D(eterminer) head and the K head for pure quantity, referentiality and totality/partitivity, respectively. This analysis identifies three major layers of noun phrases, analogous to the CP-TP-VP hierarchy at a clausal level. As a result, a classifier language does not look that much different from a classifier-less language such as English in terms of having the three major layers. But on the other hand, it shows that language may vary with respect to the combination of different functional projections. It remains, nevertheless, to be seen how this proposal may be applied to languages other than Chinese and English. There is no doubt that it would be a theoretically desirable result if the KP-DP-NP hierarchy can be maintained as analogous to the CP-TP-VP hierarchy at a clausal level.

Second, it is argued that syntactic plurality should be distinguished from semantic plurality and collective plurality. The former is a matter of grammar/inflectional morphology, while the latter two concern a lexeme/derivational morphology. This distinction accounts for the fact that syntactic plurality may occur with semantic plurality and the same plural marker may simply mark a plural entity or take a collective interpretation under different circumstances.

Finally, if the agreement relation captured by the use of features such as [$\pm$ PL], [$\pm$ IND] and [+plural] is on the right track, it shows that agreement may still play an important role even in a language with very little morphology.

REFERENCES

- Abney, S. 1987. *The English Noun Phrase in its Sentential Aspect*. Cambridge: MIT dissertation.
- Adams, K. L. 1989. *Systems of Numeral Classification in the Mon-Khmer, Nicobarese and Asian Subfamilies of Austroasiatic*. Canberra: Pacific Linguistics.
- Aikhenvald, A. Y. 2000. *Classifiers: A Typology of Noun Categorization Devices*. Oxford: Oxford University Press.
- Akmajian, A. and A. Lehrer. 1975. NP-like Quantifiers and the Problem of Determining the Head of an NP. Paper presented at the LSA.
- Allan, K. 1977. Classifiers. *Language* 53: 284-310.
- Barwise, J. and Cooper, R. C. 1981. Generalized Quantifiers and Natural Language. *Linguistics and Philosophy* 4: 159-219.
- Becker, A. J. 1975. A Linguistic Image of Nature: The Burmese Numerative Classifier System. *Linguistics* 165: 109-21.
- Berk, L. M. 1999. *English Syntax: From Word to Discourse*. Oxford: Oxford University Press.
- Borer, H. 2002. Some Notes on the Syntax and Semantics of Quantity. Paper presented at the Stanford Semantics and Pragmatics Workshop: The Meaning of Construction. Stanford: Stanford University.
- Borer, H. 2004. *Structuring Sense. Vol. II*. Oxford: Oxford University Press.
- Borer, H. 2005. *Structuring Sense. Vol. I*. Oxford: Oxford University Press.
- Carlson, G. 1977. *Reference to Kinds in English*. Amherst: University of Massachusetts dissertation.
- Carlson, G. 1989. On the Semantic Composition of English Generic Sentences. *Properties, Types and Meaning*, Vol. II, ed. by G. Chierchia, B. H. Partee and R. Turner, 167-192. Dordrecht: Kluwer.
- Chao, Y. 1968. *A Grammar of Spoken Chinese*. Berkeley: University of California Press.
- Chen, P. 2003. Indefinite Determiner Introducing Definite Referent: a Special Use of 'Yi 'one' + classifier' in Chinese. *Lingua* 113: 1169-1184.
- Chen, P. 2004. Identifiability and Definiteness in Chinese. *Linguistics* 42.6: 1129-84.
- Cheng, L. L.-S. 1995. On the *Dou*-Quantification. *Journal of East Asian Linguistics* 4: 197-234.
- Cheng, L. L.-S. 1997. *On the Typology of Wh-Questions*. New York and London: Garland Publishing.
- Cheng, L. L.-S. and A. Giannakidou. 2005. The Non-uniformity of *Wh*-indeterminates with Free Choice in Chinese. Ms. Leiden: Leiden University and Chicago: University of Chicago.
- Cheng, L. L.-S. and R. Sybesma. 1998. *Yiwan Tang, Yige Tang*: Classifiers and Massifiers. *Tsing-Hua Journal of Chinese Studies. New Series* 28.3: 385-412.
- Cheng, L. L.-S. and R. Sybesma. 1999. Bare and Not-So-Bare Nouns and the Structure of NP. *Linguistic Inquiry* 30: 509-42.

- Cheung, C. 2003. *An Investigation of the Jingpo Nominal Structure*. Hong Kong: The Chinese University of Hong Kong dissertation.
- Chierchia, G. 1998a. Reference to Kinds Across Languages. *National Language Semantics* 6: 339-405.
- Chierchia, G. 1998b. Plurality of Mass Nouns and the Notion of "Semantic Parameter." *Events and Grammar*, ed. by S. Rothstein, 53-103. Dordrecht: Kluwer.
- Chomsky, N. 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- Chomsky, N. 1995. *The Minimalist Program*. Cambridge: MIT Press.
- Cinque, G. 1994. On the Evidence for Partial N-movement in Romance DP. *Paths Toward Universal Grammar: Studies in Honor of Richard S. Kayne*, ed. by G. Cinque, J. Koster, J.-Y. Pollock, L. Rizzi, and R. Zanuttini, 85-110. Washington DC: Georgetown University Press.
- Corver, N. 1998. Predicate Movement in Pseudopartitive Constructions. *Possessors, Predicates and Movement in the Determiner Phrase*, ed. by A. Alexiadou and C. Wilder, 215-257. Amsterdam: John Benjamins.
- Croft, W. 1994. Semantic Universals in Classifier Systems. *Word* 45: 145-171.
- Del Gobbo, F. 2003. *Appositives at the Interfaces*. Irvine: University of California at Irvine dissertation.
- Diesing, M. 1992. *Indefinites*. Cambridge: MIT Press.
- Dikken M. D. and P. Singhapreecha. 2004. Complex Noun Phrases and Linkers. *Syntax* 7.1: 1-54.
- Doetjes, J. 1997. *Quantifiers and Section: On the Distribution of Quantifying Expressions in French, Dutch and English*. Leiden: Leiden University dissertation.
- Dragunov, A. A. 1952. *Issledovanija Po Grammatike Sovremennogo Kitajskogo Jazyka* (Časti reči). Moscow-Leningrad: Akademija Nauk.
- Duanmu, San. 1998. Wordhood in Chinese. *New Approaches to Chinese Word Formation: Morphology, Phonology and the Lexicon in Modern and Ancient Chinese*, ed. by J. Packard, 135-196. Berlin and New York: Mouton de Gruyter.
- Feng, Shengli. 2002. *The Prosodic Syntax of Chinese*. Muenchen: Lincom Europa.
- Fukui, N. and Y. Takano. 1998. Symmetry in Syntax: Merge and Demerge. *Journal of East Asian Linguistics* 7:27-86.
- Fukui, N. and Y. Takano. 2000. Nominal Structure: An Extension of the Symmetry Principle. In P. Svenonius (ed.), *The Derivation of VO and OV*. Amsterdam: John Benjamins.
- Gao, Q. 1994. Chinese NP Structure. *Linguistics* 32: 475-510.
- Giannakidou, A. and L. L.-S. Cheng. 2006. (In)Definiteness, Polarity, and the Role of Wh-Morphology in Free Choice. *Journal of Semantics* 23.2: 135-83.
- Gil, D. 1995. Universal Quantifiers and Distributivity. *Quantification in Natural Language*, ed. by E. Bach, E. Jelinek, A. Kratzer and B. H. Partee, 321-362. Dordrecht: Kluwer.
- Giusti, G. 1991. The Categorical Status of Quantified Nominals. *Lingistische Berichte* 136: 438-454.
- Greenberg, J. 1990[1975]. Dynamic Aspects of Word Order in the Numeral Classifier. *On Language. Selected Writings of Joseph H. Greenberg*, ed. by K. Denning and S. Kemmer,

- 227-240. Stanford: Stanford University Press [First published 1975 in *Word Order and Word Order Change*, ed. by C. N. Li, 27-43. Austin: University of Texas Press, Austin.]
- Grimshaw, J. 1994. Minimal Projection and Clause Structure. *Syntactic Theory and First Language Acquisition*, ed. by B. Lust, M. Suñer, J. Whitman, 73-84. Hillsdale: Lawrence Erlbaum.
- Heim, I. 1982. *Semantics of Definite and Indefinite Noun Phrases*. Amherst: University of Massachusetts dissertation.
- Heine, B. 1997. *Cognitive Foundations of Grammar*. Oxford: Oxford University Press.
- Heycock, C. 1993. (Anti)-Reconstruction and Referentiality. *Proceedings of Twelfth Annual Meeting of the West Coast Conference on Formal Linguistics*, 267-281. Santa Cruz: University of California, Santa Cruz.
- Hsieh, M.-L. 2005. Two Types of Modifiers and Parallelisms between DPs and TPs in Chinese. *Language and Linguistics* 6.3: 397-429.
- Huang, C.-R. 1987. *Mandarin Chinese NP DE: A Comparative Study of Current Grammatical Theories*. Ithaca: Cornell University dissertation.
- Huang, C.-T. J. 1982. *Logical Relations in Chinese and the Theory of Grammar*. Cambridge: MIT dissertation.
- Huang, C.-T. J. 1987. Existential Sentences in Chinese and (In)definiteness. *The Representation of (In)definiteness*, ed. by E. J. Reuland and A. G. B. ter Meulen, 226-253. Cambridge: MIT Press.
- Huang, S. 1999. The Emergence of a Grammatical Category 'Definite Article' in Spoken Chinese. *Journal of Pragmatics* 31.1.
- Iljic, R. 1994. Quantification in Mandarin Chinese: Two Markers of Plurality. *Linguistics* 32: 91-116.
- Iljic, R. 2001. The Problem of the Suffix *-Men* in Chinese Grammar. *Journal of Chinese Linguistics* 29.1: 11-68.
- Ionin, T. and O. Matushansky. 2004. A Singular Plural. *WCCFL 23 Proceedings*, 101-14. Somerville: Cascadilla Press.
- Jackendoff, R. 1991. *X' Syntax: A Study of Phrase Structure*. 5th edition. Cambridge: MIT Press.
- Katz, J. J. and P. M. Postal. 1964. *An Integrated Theory of Linguistic Descriptions*. Cambridge: MIT Press.
- Kayne, 1994. *The Antisymmetry of Syntax*. Cambridge: MIT Press.
- Keenan, E. 1971. Quantifier Structures in English. *Foundations of Language* 7: 255-284.
- Kim, J. 2004. Specific Nominals in Chinese and Korean. *Language and Linguistics* 5.1: 243-70.
- Kitagawa, C. and C. Ross. 1982. Prenominal Modification in Chinese and Japanese. *Linguistic Analysis* 9.1: 19-53.
- Kratzer, A. 1995. Stage-Level and Individual-Level Predicates. *The Generic Book*, ed. by G. Carlson and F. J. Pelletier, 125-175. Chicago: University of Chicago Press.

- Krifka, M. 1995. Common Nouns: A Contrastive Analysis of Chinese and English. *The Generic Book*, ed. by G. Carlson and J. Pelletier, 398-411. Chicago: University of Chicago Press.
- Kurafuji, T. 1999. *Japanese Pronouns in Dynamic Semantics: A Critical Review*. New Jersey: Rutgers University dissertation.
- Kurafuji, T. 2004. Plural Morphemes, Definiteness and the Notion of Semantic Parameter. *Language and Linguistics* 5: 211-242.
- Kuroda, S.-Y. 1969. English Relativization and Certain Related Problems. *Modern Studies in English*, ed. by D. Reibel and S. Schane, 264-287. Englewood Cliffs: Prentice-Hall.
- Lamontagne, G. and L. Travis. 1986. The Case Filter and the ECP. *McGill Working Papers in Linguistics* 3: 51-75.
- Lee, T. 2007. Ongoing Change in the Nominal Structure of Hong Kong Cantonese: The Perspective from Child Language. Ms. Hong Kong: The Chinese University of Hong Kong.
- Lee, Y.-S. and L. Horn. 1995. *Any* as Indefinite plus *Even*. Ms. New Haven: Yale University. Available at http://www.yale.edu/linguist/faculty/doc/horn_any.pdf.
- Li, C. N. and S. Thompson. 1976. Subject and Topic: A New Typology of Language. *Subject and Topic*, ed. by C. N. Li, 457-461. New York: Academic Press.
- Li, C. N. and S. Thompson. 1981. *Mandarin Chinese: A Functional Reference Grammar*. Berkeley: University of California Press.
- Li, L. H. and C. C. Lin. 2008. Do Chinese Nouns Count? Semantics, Syntax, and Classifier Cognition. Paper presented at the 11th Internal Symposium on Chinese Languages and Linguistics (IsCLL-11). Hsinchu, Taiwan: National Chiao Tung University.
- Li, X.-P. 2008a. Semantics of Pre-Classifier Adjectives. *Proceedings of ConSOLE XVI*, 1-18.
- Li, X.-P. 2008b. *Big/Small* in Chinese Classifier Phrases: Pre-Classifier and Adnominal Adjectival Modifications. Ms. Israel: Bar-Ilan University.
- Li, Y.-H. A. 1997. Structures and Interpretations of Nominal Phrases. Ms. Los Angeles: University of Southern California.
- Li, Y.-H. A. 1998. Argument Determiner Phrases and Number Phrases. *Linguistic Inquiry* 29.4: 693-702.
- Li, Y.-H. A. 1999. Plurality in a Classifier Language. *Journal of East Asian Linguistics* 8: 75-99.
- Li, Y.-H. A. 2007. Syntax of Overt and Covert Pronouns. Ms. Los Angeles: University of Southern California.
- Li, Y.-H. A. and Y. Shi. 2003. NP as Argument. In Y.-H. A. Li and A. Simpson (eds.), *Functional Structure(s), Form and Interpretation: Perspectives from East Asian Languages*, 3-27. New York: Routledge Curzon.
- Lin, F.-W. 2004. The Co-Occurrence of *Dou* and *Mei* in Mandarin Chinese. *Journal of Chinese Linguistics* 32.2: 308-322.
- Lin, J. 1997. Noun Phrase Structure in Mandarin Chinese: DP or NP? *Language and Linguistics* 3: 401-434.

- Lin, J. 2003. On Restrictive and Non-Restrictive Relative Clauses in Mandarin Chinese. *Tsinghua Journal of Chinese Studies* 33.1: 199-240.
- Lin, J. 2007. The Order of Stage-Level and Individual-Level Relatives and Superiority Effects. Paper presented at the Internal Workshop on Relative Clauses. Taipei: Academia Sinica.
- Lin, T.-H. J. 2007. On *Ge* and Other Related Problems. Ms. Hsinchu, Taiwan: National Tsing-Hua University.
- Linebarger, M. 1980. *The Grammar of Negative Polarity*. Cambridge: MIT dissertation.
- Liu, F. 1997. *Scope Dependency in English and Chinese*. Los Angeles: University of California at Los Angeles dissertation.
- Longobardi, G. 1994. Reference and Proper Names. *Linguistic Inquiry* 25: 609-666.
- Lu, B. 1998. *Left-Right Asymmetries of Word Order Variation: A Functional Explanation*. Los Angeles: University of Southern California dissertation.
- Lü, S. 1947. *Zhongguo Wenfa Yaoliue* [Outline of Chinese Grammar]. Vols. 1-3. Beijing: Xueyuan Chubanshe.
- Lü, S. 1990[1944]. *Ge Zi de Yingyong Fanwei, Fu Lun Danweici Qian Yi Zi De Tuoluo* [Scope of the Uses of *Ge* and Omission of *Yi* in Front of Classifiers]. *Lü Shuxiang Wenji* [Collected Works of Lü Shuxiang], Vol. 2, 144-175. Beijing: Shangwu Press.
- Lü, S. 1990[1948]. *Ba Zi Yongfa de Yanjiu* [Studies in the Uses of *Ba*]. *Lü Shuxiang Wenji* [Collected Works of Lü Shuxiang], Vol. 2, 176-199. Beijing: Shangwu Press.
- Lyons, J. 1977. *Semantics*. Vols. 1 & 2. Cambridge: Cambridge University Press.
- Milsark, G. 1977. Toward an Explanation of Certain Peculiarities of the Existential Construction in English. *Linguistic Analysis* 3: 1-29.
- Nakanishi, K. and S. Tomioka. 2004. Japanese Plurals are Exceptional. *Journal of East Asian Linguistics* 13: 113-140.
- Nichols, J. 1992. *Linguistic Diversity in Space and Time*. Chicago: University of Chicago Press.
- Norman, J. 1988. *Chinese*. Cambridge: Cambridge University Press.
- Paris, M.-C. 1989. *Linguistique Générale et Linguistique Chinoise: Quelques Exemples d'Argumentation* [General Linguistics and Chinese Linguistics: Some Examples of Argumentation]. Paris: UFR, Université Paris 7.
- Partee, B. H. 1976. Some Transformational Extensions of Montague Grammar. *Montague Grammar*, ed. by B. H. Partee, 51-76. New York: Academic Press.
- Partee, B. H. 2006. A Note on Mandarin Possessives, Demonstratives, and Definiteness. *Drawing the Boundaries of Meaning: Neo-Gricean Studies in Pragmatics and Semantics in Honor of Laurence R. Horn*, ed. by Betty J. Birner and Gregory Ward, 263-280. Amsterdam: John Benjamins.
- Paul, W. 2007. The Insubordinator Subordinator *de* in Mandarin Chinese. Ms. Paris: Centre National de la Recherche Scientifique.
- Pereltsvaig, A. 2007. The Universality of DP: A View From Russian. *Studia Linguistica* 61.1: 59-94.
- Pesetsky, D. 1987. Wh-in-situ: Movement and Unselective Binding. *The Representation of (In)definiteness*, ed. by E. Reuland and A. ter Meulen, 98-129. Cambridge: MIT Press.

- Postal, P. 1969. On the So-Called Pronouns in English. *Modern Studies in English*, ed. by D. A. Reibel and S. A. Shane, 201-224. Englewood Cliffs: Prentice-Hall.
- Quine, W. V. O. 1960. *Word and Object*. Cambridge: MIT Press.
- Ritter, E. 1991. Two Functional Categories in Noun Phrases: Evidence from Modern Hebrew. *Syntax and Semantics 25: Perspectives on Phrase Structure*, ed. by S. Rothstein, 37-62. San Diego: Academic Press.
- Ritter, E. 1995. On the Syntactic Category of Pronouns and Agreement. *Natural Language and Linguistic Theory* 13: 405-443.
- Ross, K. 1976. Quantifiers and the Structure of the Noun Phrase in English. Unpublished paper. Amherst: University of Massachusetts.
- Rothstein, S. 2007. Counting and the Mass-Count Distinction. Ms. Israel: Bar-Ilan University.
- Rygaloff, A. 1973. *Grammaire Élémentaire du Chinois*. Paris: PUF.
- Saito, M., T.-H. J. Lin and K. Murasugi. 2008. N'-ellipsis and the Structure of Noun Phrases in Chinese and Japanese. *Journal of East Asian Linguistics* 17: 247-271.
- Selkirk, E. 1977. Some Remarks on Noun Phrase Structure. *Formal Syntax*, ed. by P. Culicover, T. Wasow and A. Akamajian, 285-316. San Diego: Academic Press.
- Shin, Joonho. 2008. Hanyu de Shuliang Cizu [Numeral Phrases in Mandarin Chinese]. Hsinchu, Taiwan: National Tsing Hua University.
- Shlonsky, U. 1991. Quantifiers as Functional Heads: A Study of Quantifier Float in Hebrew. *Lingua* 84: 159-180.
- Simpson, A. 2001. Definiteness Agreement and the Chinese DP. *Language and Linguistics* 2.1: 125-156.
- Sio, J. U. 2006. *Modification and Reference in the Chinese Nominal*. Leiden: Leiden University dissertation.
- Sproat, R. and C. Shih. 1988. Prenominal Adjectival Ordering in English and Mandarin. *Proceedings of NELS 18*, Vol. 2, 465-489. Amherst: GLSA.
- Sproat, R. and C. Shih. 1991. The Cross-linguistic Distribution of Adjective Ordering Restrictions. *Interdisciplinary Approaches to Language. Essays in Honor of S.-Y. Kuroda*, ed. by C. Georgopoulos and R. Ishihara, 565-592. Dordrecht: Kluwer.
- Stickney, H. 2004a. The Pseudo-partitive, Extraposition, and Predication within the DP. Paper presented at the ECO5 Syntax Workshop. Amherst: University of Massachusetts.
- Stickney, H. 2004b. The Pseudopartitive and its Illusory Projections. Ms. Amherst: University of Massachusetts.
- Szabolcsi, A. 1983. The Possessor that Ran Away from Home. *The Linguistic Review* 3, 89-102.
- T'sou, B. 1976. The Structure of Nominal Classifier Systems. *Austroasiatic Studies* 2, ed. by P. N. Jenner, S. Starosa and L. C. Thompson, 1215-1247.
- Tai, J. H.-Y. and L. Q. Wang. 1990. A Semantic Study of the Classifier *Tiao*. *Journal of the Chinese Language Teachers' Association* 25: 35-56.
- Tang, C.-C. J. 1990. *Chinese Phrase Structure and the Extended X-Theory*. Ithaca: Cornell University.

- Tang, C.-C. J. 1993. Hanyu de *de* yu Yingyu de's [Chinese *de* and English 's]. *Bulletin of the Institute of History and Philology* [Academia Sinica, Taiwan] 63.4: 733-757.
- Tang, C.-C. J. 2005. Nouns or Classifiers: A Non-Movement Analysis of Classifiers in Chinese. *Language and Linguistics* 6.3: 431-72.
- Tang, C.-C. J. 2007. Modifier Licensing and Chinese DP: A Feature Analysis. *Language and Linguistics* 8.4, 967-1024.
- Travis, L. 1984. *Parameters and Effects of Word Order Variation*. Cambridge: MIT dissertation.
- Tsai, W.-T. D. 1994. On Economizing the Theory of A-bar Dependencies. Cambridge: MIT dissertation.
- Tsai, W.-T. D. and S. Feng. 2006. Shuo "Men" de Weizhi: Cong Jufa-Yunlu de Jiemian Tanqi [Talking about *Men*'s Position: From the Syntax-Phonology Interface]. *Yuyanxue Luncong* 32: 46-63. Beijing: The Commercial Press.
- Vangsnes, Ø. 2001. On Noun Phrase Architecture, Referentiality, and Article Systems. *Studia Linguistica* 55.3: 249-299.
- Watanabe, A. 2006. Functional Projections of Nominals in Japanese: Syntax of Classifiers. *Natural Language and Linguistic Theory* 24: 241-306.
- Wilhelm, A. 2008. Bare Nouns and Number in Dëne Sųłiné. *Natural Language Semantics* 16: 39-68.
- Wilkinson, K. 1991. *Studies in the Semantics of Generic NPs*. Amherst: University of Massachusetts dissertation.
- Xiandai Hanyu Cidian. 1977. Hong Kong: Shangwu Yinshuguan.
- Xiang, M. 2008. Plurality, Maximality and Scalar Inferences: A Case Study of Mandarin *Dou*. *Journal of East Asian Linguistics* 17: 227-245.
- Yang, H. S.-F. 2005. *Plurality and Modification in Mandarin Noun Phrases*. Austin: The University of Texas at Austin dissertation.
- Yang, R. 2001. *Common Nouns, Classifiers, and Quantification in Chinese*. Newark: The State University of New Jersey dissertation.
- Yorifuji, A. 1976. *Men* ni Tsuite [A Study of the Suffix *-Men*]. *Area and Culture Studies* 26: 73-88. Tokyo: Tokyo Gaikokugo Daigaku Ronshu.
- Zhang, Niina. 2006. Representing Specificity by the Internal Order of Indefinites. *Linguistics* 44.1: 1-21.
- Zhang, Niina. 2008. *Coordination in Syntax*. Cambridge: Cambridge University Press.
- Zhang, X. and Y. Sang. 1986. *Beijingren: Yibai ge Putong Ren de Zishu* [The People of Peking: A Hundred Accounts of Ordinary People in Their Own Words]. Shanghai: Shanghai Wenyi Chubanshe.

中文摘要(ABSTRACT IN CHINESE)

漢語名詞詞組的內在結構

本文探討漢語名詞詞組的內在結構，重點在名詞詞組的三大議題：數、指涉、部分/全體，主張這三個語意概念在漢語裡有相對應的語法表式。在數方面，有別於以往的研究，本文主張在漢語這類的分類詞語言中數的語法表式是標記在以分類詞為中心語所形成的 $\#P$ (參考 Borer 2005)。語法複數在 $\#P$ 內是由數詞、複數分類詞「些」、數量詞或分類詞重複所表示。而「-們」這個一般所謂的複數詞綴則是標記集合複數，或是語意複數，與語法複數有別。這說明了語法複數在所標記的複數是不定量時可以與「-們」所代表的語意複數共存的現象。

另外，不同於一般對於名詞詞組的分析，也就是中心語—補語 DP-NumP-ClP-DP 階層結構的分析，本文主張漢語的數詞或數量詞先與分類詞結合，形成 $\#P$ 。這個 $\#P$ (包含或不包含「這」或「那」指示詞) 再與名詞的中心語結合，代表純粹數量的語意，在涉及指涉時，也會從 Spec of NP 提升至 Spec of DP 檢查指涉的語意。而 $\#P$ 也可能出現在最高的 Spec of KP 得到部分/全體的語意 (註：K 代表格位，選擇 KP 來代表這個投射的中心語是因為有研究顯示對有些語言而言名詞詞組的最大投射與格位有關; Lamontagne and Travis 1986)。這樣的分析的主要論證來自不同類別名詞修飾語的句法表現以及兩個 $\#P$ 共存的限制。

就理論來說，以分類詞作為數的核心，以及允許一個 $\#P$ 可以出現在不同階層的分析所得到的一個重要結論就是看似複雜的名詞詞組有三個主要階層，也顯示不同的語言可能有相同的功能詞投射，但是功能詞投射如何結合，在不同的語言則有不同的表現。

ABSTRACT

This study investigates the internal structure of noun phrases in Chinese and argues that number, referentiality, and totality/partitivity are all syntactically represented. Viewing number in a new light, it claims that number in a classifier language is syntactically encoded via the use of a #P, i.e., NumP, the head of which is occupied by a classifier/massifier (cf. Borer 2005). Plurality is realized differently in a #P via the use of numerals, the plural classifier *xie*, quantifiers, or the reduplication of classifiers/massifiers. The plural marker *-men* is treated as a derivational suffix marking either collective plurality or semantic plurality, resolving the problem that syntactic plurality may co-occur with semantic plurality when syntactic plurality marks an indeterminate quantity.

Unlike the standard head-complement analysis that assumes a DP-NumP-CIP-DP hierarchy, this study argues that a numeral or a quantifier enters into a relation with a classifier/massifier, forming a #P. A #P (with or without a demonstrative) is then merged into the Spec of NP for the NP to take a pure quantificational interpretation and raises to the Spec of DP for a check of referential interpretation with the D(eterminer) head. The highest position, i.e., the Spec of KP, may be occupied by a #P for a totality/partitive interpretation (cf. Lamontagne and Travis (1986) for the use of K to represent Case). The evidence for the KP-DP-NP nominal hierarchy, analogous to the CP-TP-VP hierarchy at a clausal level, comes from different types of modifiers and the co-occurrence restrictions on the use of two #Ps.

Theoretically, the ideas that a classifier/massifier is the locus of number and that a #P is able to occur in different positions make it possible to identify three major layers of noun phrases. It is also shown that language may have the same functional categories, but the way they are combined may be different from language to language.

Miao-Ling Hsieh has a Ph.D. in linguistics from the University of Southern California. She has been teaching English and linguistics in the English department of National Taiwan Normal University since 2001. Her main research interests include syntactic theories, the interface between syntax and semantics and first language acquisition.

漢語名詞詞組的內在結構

系列主編：何萬順 徐嘉慧

作 者：謝妙玲

發行人：張富恭

出版者：文鶴出版有限公司 地 址：106 台北市金山南路二段 200 號 3 樓

電 話：(02) 2393-4497 傳 真：(02) 2394-3810

總公司：106 台北市金山南路二段 200 號 3 樓

TEL:(02) 2393-4497 FAX : (02) 2394-6822 / 2394-3810

各區業務及門市

北 區：106 台北市金山南路二段 200 號 3 樓

TEL:(02) 2393-4497 FAX:(02) 2394-6822

中 區：407 台中市台中港路二段 60-8 號 5 樓之 6

TEL:(04) 2317-0216 FAX:(04) 2314-0002

南 區：802 高雄市同慶路 88 號 2 樓

TEL:(07) 2270-888 FAX:(07) 2270-801

網路書店：<http://www.crane.com.tw>

網路書店客服信箱：crane.book@msa.hinet.net

法律顧問：蘇家宏律師 TEL:(02) 2365-1288

劃撥帳號：01079261 戶 名：文鶴出版有限公司

出版日期：2008 年 09 月初版一刷 定 價：375 元

I S B N : 978-986-147-275-1 書 號：002-0837

※著作權所有・翻印必究・非經本公司同意不得轉載、
仿製或局部使用於雜誌、網路或其他書籍、媒體上。
※若有缺頁，裝訂錯誤，煩請寄回更換。

The Internal Structure of Noun Phrases in Chinese

Series Edited by One-Soon Her & Kawai Chui

Written by Miao-Ling Hsieh

Published by Crane Publishing Co., Ltd.

3F, No.200, Sec. 2, Jinshan S. Rd., Da-an District,

Taipei City 10643, Taiwan

Tel: +886-2-2393-4497 Fax: +886-2-2394-6822

Crane Website: <http://www.crane.com.tw>

crane.book@msa.hinet.net

© 2008 Crane Publishing Co., Ltd. All rights reserved.