

Two Types of Modifiers and Parallelisms between DPs and TPs in Chinese^{*}

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Based on the occurrences of *shenme* ‘what’ in a nominal phrase, this study finds it necessary to distinguish two types of modifiers (including adjectives, relative clauses and nominals) in Chinese—individual-level modifiers and stage-level modifiers. It is argued that there is a syntactic correlate for the two types of modifiers. The former are DP/D’ modifiers, while the latter NP/N’ modifiers. This analysis is based on several parallelisms found between DPs and TPs, including modification at different levels, subject raising and quantifier floating.

Key words: i-level modifiers, s-level modifiers, nominal phrases, word order, quantifier floating

1. Introduction

Ever since Abney’s (1987) work on DPs, the DP analysis has been proposed or assumed for Chinese nominal phrases in many studies (Tang 1990, Li 1999, among others). However, there has been no agreement on the internal structure of a DP in Chinese and it is still not very clear as to what to project under which node inside a DP. My study starts with the interaction between *shenme* ‘what’ and adjectives/relative clauses. It provides a new perspective on the internal structure inside a nominal phrase, hinging upon an analysis based on some similarities between DPs and TPs. It is shown in this paper that two types of modifiers including adjectives/relative clauses and nominals have to be distinguished—individual-level (i-level) modifiers and stage-level (s-level) modifiers. I-level modifiers are argued to be NP/N’ modifiers, while s-level modifiers are DP/D’ modifiers, just like VP and TP modifiers at the clause level. Furthermore, I propose that the subject of a nominal, i.e. the Demonstrative(-Number)-Classifier (DNC) sequence or the Number-Classifier (NC) sequence, is based-generated in the Spec of NP and raises to the Spec of DP, just like the subject of a clause moving

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from the Spec of VP to the Spec of TP. When the demonstrative raises alone, the NC sequence is stranded just like quantifier floating at the clause level. Various word order possibilities exhibited in a nominal phrase are derived accordingly.

This paper is organized as follows. In §2, the interaction between *shenme* ‘what’ and adjectives/relative clauses in a nominal phrase is discussed. Following Larson & Takahashi’s (2002) analysis for Japanese, I propose that two types of adjectives/relative clauses be distinguished for Chinese—i-level modifiers modify NPs while s-level modifiers modify DPs. In §3, I shall show that Aoun & Li’s (2003) analysis, which claims that adjectives/relative clauses in Chinese are adjoined to NPs, is not satisfactory. In §4, I argue against Aoun & Li’s raising analysis for the adjectives/relative clauses that occur before the DNC sequence. In §5, adjectives/relative clauses are shown to be modifiers for both maximal and intermediate projections. Section 6 includes the cases with no demonstratives. In §7, cases with freer word order are discussed. That nominal modifiers can also be distinguished into two types is included in §8. Finally, conclusions are given in §9.

2. DP modifiers vs. NP modifiers

First, consider (1) and (2), where *shenme* ‘what’ interacts with an adjective/relative clause. The *wh*-word is licensed in different positions in a nominal phrase.¹

- (1) a. Ni kanjian [[ta zuotian mai de] [shenme dongxi]] ma?²
 you see he yesterday buy DE what thing PART
 ‘Did you see anything that he bought yesterday?’
 b. *Ni kanjian [shenme [[ta zuotian mai de] dongxi]] ma?
 you see what he yesterday buy DE thing PART
- (2) a. Ta mai-le [shenme [[haochi de] dongxi]] ma?
 he buy-ASP what delicious DE thing PART
 ‘Did he buy any delicious thing?’

¹ *Wh*-words in Chinese can be interpreted interrogatively or non-interrogatively depending on the contexts. Please refer to Cheng (1991) and Li (1992) for the discussion of how they are licensed and interpreted.

² The abbreviations used in this paper are as follows:

ASP: aspect	BA: the preverbal object marker <i>ba</i>
CL: classifier	DE: the modification marker <i>de</i>
DM: demonstrative	NUM: numeral
PART: particle	Q: quantifier
DemP: Demonstrative Phrase	

- b. *Ta mai-le [[haochi de] [shenme dongxi]] ma?
 he buy-ASP delicious DE what thing PART

As shown in the above examples, *shenme* either modifies the head noun *dongxi* directly or the complex nominal which contains the adjective/relative clause and the head noun. In either case, the particle *de* following the adjective or the relative clause is required.³ The contrast between (1) and (2) seems to lie in the different nature of the modifiers. While (1) has a relative clause that specifies a specific event, (2) contains an adjective/relative clause that does not.

This contrast parallels one found in Japanese. According to Takahashi (cited in Larson & Takahashi 2002), relative clauses expressing generic, i-level properties and relative clauses expressing temporally anchored, s-level properties order freely among themselves.⁴ However, the former (the i-level modifiers) must stay closer to the head noun than the latter (the s-level modifiers). For example,

³ *De* is being treated differently in the literature. For example, in Kitagawa & Ross (1982), *de* is inserted as a modification marker between the modifying element and the head noun via an insertion rule, while *de* is treated as a genitive marker in Li (1990). Tang (1993) disagrees with the above analyses and treats the different uses of *de* differently:

piaoliang *de* yifu (*De* is a functional category or a clitic as suggested in Huang (1987).)

- (i) beautiful DE clothes
 'beautiful clothes'
- (ii) Wo xue-guo yi-ci de gangqin. (*De* is inserted by an insertion rule.)
 I learn-ASP one-time DE piano
 'I have learned piano once.'
- (iii) Ta ku ta de, wo xiao wo de. (*De* is a genitive marker and is base-generated under D.)
 he cry he DE I laugh I DE
 'I cry as I like; he laughs as he likes.'

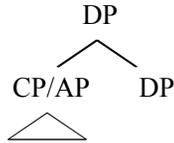
On the other hand, *de* is argued to occupy the position of D in Simpson (2001). In this paper, I simply take it to be a modification marker without further discussion.

⁴ Carlson (1977) distinguishes stage-level predicates like *available* from individual-level predicates such as *admirable*. When occurring with a bare plural subject, the former, but not the latter, allow an ambiguity between the generic reading and the existential reading. Only the generic reading is available for individual-level predicates. The distribution in prenominal vs. postnominal position for adjectives in English can also be argued to be determined by the distinction between the two types of predicates. As first pointed out by Bolinger (1967), if a given adjective is available for both positions, the adjective is interpreted as a characteristic property in the prenominal position, but an occasional, temporary property in the postnominal position.

- (i) the only navigable river
- (ii) the only river navigable

For the syntactic relevance of this distinction in Chinese syntax, please see Shyu (1995).

b. s-level modifier



Now let us go back to the Chinese examples in (1) and (2), repeated here in (9) and (10).

- (9) a. Ni kanjian [_{DP} [_{CP} ta zuotian mai de] [_{DP} shenme dongxi]] ma?
 you see he yesterday buy DE what thing PART
 ‘Did you see anything that he bought yesterday?’
 b. *Ni kanjian [_{DP} shenme [_{DP} [_{CP} ta zuotian mai de] dongxi]] ma?
 you see what he yesterday buy DE thing PART
- (10) a. Ta mai-le [_{DP} shenme [_{NP} [_{AP} haochi de] dongxi]] ma?
 he buy-ASP what delicious DE thing PART
 ‘Did he buy any delicious thing?’
 b. *Ta mai-le [_{DP} [_{AP} haochi de] [_{DP} shenme dongxi]] ma?
 he buy-ASP delicious DE what thing PART

Before I proceed to explain the contrast between (9) and (10), let us consider the status of *shenme*. Basically, *shenme* introduces an indefinite phrase and when it is used non-interrogatively, it is interpreted as ‘some’ or ‘any.’ Given the fact that D is the locus of referentiality, I assume it is an indefinite determiner and sits under D when it is followed by a head noun.⁶ Given this assumption and the analysis in (8), now let us consider (9) and (10).

First, (9a) is ruled in because the s-level modifier *ta zuotian mai de* modifies a DP projected by *shenme dongxi*. In contrast, (10b) is ruled out because the i-level modifier *haochi de* does not take a DP. Second, (10a) is grammatical because the determiner *shenme* takes an NP projected by *dongxi*. Finally, (9b) is ruled out because *shenme*, a determiner, cannot take another DP. Overall speaking, the analysis given in (8) seems to be on the right track, but as I shall show below this analysis needs to be revised.

The analysis that distinguishes these two types of modifiers and recognizes adjunction to two different positions differs from the one proposed in Aoun & Li’s (2003). In §3, I shall consider Aoun & Li’s analysis and point out why their analysis is not satisfactory.

⁶ And possibly, *shenme* can also sit in D when it is used without a head noun. Alternatively, it may be generated in N and move to D.

3. NP modifiers only?

In Aoun & Li (2003), adjectives/relative clauses are adjoined to NPs, creating NP structures.⁷ The crucial data that Aoun & Li use to support the NP analysis involve the use of *jian* ‘and,’ the connector which connects two properties of a single individual:

- (11) Ta shi yi-ge [mishu jian daziyuan]
 he be one-CL secretary and typist
 ‘He is a secretary and typist.’

According to Aoun & Li, *jian* ‘and’ connects NPs, while *he/gen* ‘and’ connects two individual-denoting expressions (i.e. two DPs), which include proper names, pronouns, expressions containing demonstratives, or expressions containing the NC sequence:

- (12) a. Wo hen xihuan [[ta] he/gen [Zhangsan]]
 I very like he and Zhangsan
 ‘I like him and Zhangsan.’
 b. Wo hen xihuan [[zhe-ge xuesheng] he/gen [na (yi-)ge xuesheng]]
 I very like this-CL student and that one-CL student
 ‘I like this student and that student.’
 c. Wo xiang zhao [[yi-ge mishu] he/gen [yi-ge daziyuan]]
 I want find one-CL secretary and one-CL typist
 ‘I want to find a secretary and a typist.’

Now consider the examples in (13) and (14). The English examples in (13) show that the occurrence of a relative clause forces the projection of a DP. On the other hand, the appearance of Chinese *jian* in (14) suggests that the connected categories are NPs, not CPs or DPs.

- (13) a. *He is an [[actor that wants to do everything] and [producer that wants to please everyone]].
 b. He is [[an actor that wants to do everything] and [a producer that wants to please everyone.]]

⁷ According to Li (2002) and Aoun & Li (2003), gapped relative clauses are derived in different ways. They can be derived by moving an NP directly to the head noun, or they can be formed by having an operator movement similar to the one in English.

- (14) Wo xiang zhao yi-ge [[fuzhe Yingwen de mishu] jian [jiao xiaohai de jiajiao]]
I want find one-CL charge English DE secretary and teach kid DE tutor
'I want to find a secretary that takes care of English and tutor that teaches kids.'

But a closer examination shows that these data involve i-level properties only. Therefore, what is discussed is that Chinese adjectives/relative clauses can be adjoined to NPs. It does not exclude the possibility that adjectives/relative clauses can be adjoined to DPs. In fact, the ungrammaticality of the following example shows that relative clauses can be adjoined to DPs:

- (15) *Wo zai zhao na-ge [zuotian shangban de mishu] jian [jiao wo xiaohai de jiajiao]
I in find that-CL yesterday work DE secretary and teach I kid DE tutor
'I am looking for the secretary who worked yesterday and who taught my child.'

More importantly, adjectives/relative clauses in Chinese can occur before the DNC sequence, as exemplified below:

- (16) a. [na (yi-)ben [wo zuotian mai de shu]]
that one-CL I yesterday buy DE book
'the book that I bought yesterday'
b. [[wo zuotian mai de] na (yi-)ben shu]
I yesterday buy DE that one-CL book
- (17) a. [na (yi-)zhi [fei de] yang]
that one-CL fat DE sheep
'that fat sheep'
b. [[fei de] na (yi-)zhi yang]
fat DE that one-CL sheep
'the sheep that is fat'

The existence of the DNC sequence indicates the existence of a DP. While (16a) and (17a) can be derived by Aoun & Li, something needs to be said about (16b) and (17b) if they only allow NP adjunction. As a matter of fact, in a footnote (p.253) they propose that (16b), and presumably (17b), must be derived by a raising process.⁸ However, it is not clear why this raising process takes place. I shall assume Aoun & Li's adjunction analysis for adjectives/relative clauses in Chinese, but will argue against such a raising analysis in §4.⁹

⁸ In contrast to Aoun & Li (2003), Li (2002) allows DP modification without mentioning raising.

⁹ Note that I do not follow Simpson's (2001) analysis of adjectives/relative clauses, which

4. To move or not move

As discussed in the preceding section, Aoun & Li (2003) propose a raising analysis for the adjectives/relative clauses that precede the DNC sequence. This analysis does not seem to be favored theoretically. In core computation it is usually assumed that an adjunct does not move. Adjunction of adjuncts is prohibited in the framework of Chomsky (1995) and subsequent work. But before the raising analysis is disregarded, let us consider whether there is any motivation for the raising analysis and whether there are alternative analyses.

Consider those modifiers that are adjective-like. The initial observation of (18) indicates that the modifier *fei de* ‘fat’ and *ai shuohua de* ‘talkative’ are used contrastively. Imagine the following scenario. Suppose Zhangsan bought two sheep. One was fat and the other was skinny. He can use (18a) to tell people that he has given the fat one away. Similarly, he can compare two students and use (18b) to identify the one that is talkative.

- (18) a. Wo mai-le liang-zhi yang, [[fei de] na (yi-)zhi] song ren le
I buy-ASP two-CL sheep fat DE that one-CL give person PART
‘I bought two sheep. The fat one was given away.’
- b. Wo you liang-ge xuesheng, [[ai shuohua de] na (yi-)ge]
I have two-CL student love talk DE that one-CL
bijiao bu yonggong
more not hard-working
‘I have two students. The one that is talkative is less hard working.’

The fact that the two modifiers are used contrastively is evidenced by the fact that

adopts the complement analysis of Kayne (1994). The derivation of (i) is given in (ii)-(iv):

- (i) lü de huaping
green DE vase
‘green vase’
- (ii) [_{DP} de [_{CP} [_{IP} huaping lü]]]
DE vase green
- (iii) [_{DP} de [_{CP} huaping_i [_{IP} t_i lü]]]
- (iv) [_{DP} [_{IP} t_i lü]_m [_D de [_{CP} huaping_i t_m]]]

In (ii), *de* sits under *D* which takes a CP complement, where the adjective *lü* functions as a predicate to the head noun *huaping*. The head noun then moves to the Spec of CP in (iii). Finally, the movement of the remnant IP to the Spec of DP results in (iv). Such an analysis is problematic for attributive adjectives such as *benlai* ‘original’ and *gongtong* ‘common’ because they cannot function as predicates. Please see Paul (2003) for more discussion of this.

they can occur in the *shi...de* focus construction:

- (19) a. Na (yi-)zhi yang shi fei de
that one-CL sheep be fat DE
'That sheep is the fat one.'
b. Na (yi-)ge xuesheng shi ai shuohua de
That one-CL student be love talk DE
'That student is the one who is talkative.'

By the same test, modifiers such as *lan de* 'blue' and *gao de* 'tall' can be shown to be contrastive. However, as shown in (20), a modifier does not have to be contrastive in order to occur before the DNC sequence.

- (20) a. [na (yi-)ben [houhou de] shu]
that one-CL thick DE book
'that thick book'
b. [[houhou de] na (yi-)ben shu]
thick DE that one-CL book

This usage of adjectives involves reduplication, creating an effect of vividness. It is descriptive, but the adjective in question can still occur in the *shi...de* construction.

- (21) Na (yi-)ben shu (shi) houhou de
that one-CL book be thick DE
'That book is (indeed) thick.'

However, unlike the above case with contrastive focus, *shi* is optional in this case and when *shi* is present, it is emphatic. Other examples of this type include *pangpang de* 'fat' and *maorongrong de* 'fluffy.'

The above two types of adjective-like modifiers contrast sharply with adjectives such as *keai* 'lovely,' which cannot occur before the DNC sequence unless a degree adverb is added.

- (22) a. [na (yi-)zhi [keai de] yang]
that one-CL lovely DE sheep
'that lovely sheep'
b. *[[keai de] na (yi-)zhi yang]
lovely DE that one-CL sheep

- c. [[hen/man keai de] na (yi)-zhi yang]
 very/quite lovely DE that one-CL sheep
 ‘the sheep that is very/quite lovely’

Moreover, such adjectives without a modifier cannot occur in a *shi...de* construction:

- (23) a. *Na (yi-)zhi yang (shi) keai de
 that one-CL sheep be lovely DE
 ‘That sheep is lovely.’
 b. Na (yi-)zhi yang (shi) hen/man keai de
 That one-CL sheep be very/quite lovely DE
 ‘That sheep is very/quite lovely.’

Other similar adjectives of this type include *haochi* ‘delicious’ and *congming* ‘intelligent.’

Based on their ability to precede the DNC sequence and occur in a *shi...de* construction, three types of adjective-like modifiers can now be distinguished:

- (24) 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’

Three hypotheses can be formed. First, it may be claimed that there is a predication relation between an adjective-like modifier and what it modifies. Under this hypothesis, if an adjective-like modifier can function as a predicate, i.e. predicate-modifier, it can precede the DNC sequence. Second, it is possible that focus may be involved. An adjective-like modifier raises to the position preceding the DNC sequence when it is focused. Third, it may be argued that different modifiers can be base-generated in different positions along the line of Larson & Takahashi (2002).

Let us consider the above hypotheses one by one. The first hypothesis does not seem to be a viable analysis given the fact that attributive adjectives such as *gongtong de* ‘common’ can also occur before the DNC sequence:

- (25) a. [na(yi-)xie [gongtong de] caichan]
 those common DE property
 ‘those common properties’
 b. [[gongtong de] na(yi-)xie caichan]
 common DE those property

As shown in (26), *gongtong* cannot occur as a predicate without *shi* and *de*.

- (26) a. Na(yi-)xie caichan shi (tamen) gongtong de
those property be they common DE
'Those properties are shared by them.'
b. *Na(yi-)xie caichan (hen) gongtong
those property very common

The fact that *gongtong de* can occur before the DNC sequence in (25b) shows that no predication relation is involved.

Now consider the second hypothesis. Is it possible that focus raising is involved? This hypothesis seems to be promising when (2b) and (1a) are considered. They are repeated in (27) again.

- (27) a. *Ta mai-le [[haochi de] [shenme dongxi]] ma?
he buy-ASP delicious DE what thing PART
'Did he buy any delicious thing?'
b. Ni kanjian [[ta zuotian mai de] [shenme dongxi]] ma?
you see he yesterday buy DE what thing PART
'Did you see anything that he bought yesterday?'

Let us assume that *shenme* in (27a) is the focus of the yes/no question. Given this, (27a) can be explained because no focus movement of a different element is allowed. In other words, *haochi de* cannot be moved. For the same reason, the relative clause preceding *shenme dongxi* in (27b) cannot be moved there. It is base-generated there.

This hypothesis seems to fare well. But it has its problem. Consider the examples in (28).

- (28) a. [qiyu de] [na liang-ge xuesheng] (cf. Zhang 2004)
remaining DE that two-CL student
'the two remaining students'
b. [lingwai de] [na liang-ge xuesheng]
other DE that two-CL student
'the other two students'

Neither do the two modifiers *qiyu de* 'remaining' and *lingwai de* 'other' occur in a position following the DNC sequence. Take *qiyu de* as an example:

- (29) *[na liang-ge] [qiyu de] xuesheng
 that two-CL remaining DE student
 ‘the two remaining students’

Now let us consider the third hypothesis, along the lines of Larson & Takahashi (2002): Different types of modifiers occur in different positions. It may be argued that those preceding the DNC sequence are s-level modifiers rather than i-level modifiers. This does not seem to be implausible. For example, consider the property of *gao de* ‘tall,’ a Type A modifier. While the adjective *gao de* ‘tall’ can be considered to be denoting a permanent property, something that does not change, it may be used to denote a temporary property when a comparison is made. For the latter usage, it involves a specific situation and thus it should be considered to be an s-level modifier. As for Types B and C, the comparison can also be established between the bare form and the form with the reduplication morphology or degree adverbs. The latter form can be used as an s-level modifier.

To conclude, the modifiers that occur before the DNC sequence are s-level modifiers. Following Larson & Takahashi (2002), I assume this is a position that is adjoined to DP and no raising is involved. On the other hand, i-level modifiers are adjoined to NP. In the next section, I shall turn to the question of whether the two types of modifiers can only be adjoined to a maximal projection.

5. Adjunction to maximal projections only?

In this section, the parallelism between DPs and TPs (§5.1) will be discussed, which is crucial for my analysis of the various word order possibilities that I present in the two remaining subsections (§§5.2-5.3). It will be shown that an i-level modifier is adjoined to NP/N', whereas an s-level modifier is adjoined to DP/D'.

5.1 Parallelisms between DPs and TPs

It is proposed above that an i-level modifier is adjoined to NP, while an s-level modifier is adjoined to DP. This analysis should not be too far-fetched given the similarities between DPs and TPs as pointed out by many studies.¹⁰ It is known that

¹⁰ The most noticeable one is to treat the genitive DP as a subject of the overall DP (Abney 1987, Szabolcsi 1994, Kayne 1994, among others):

(i) John's book

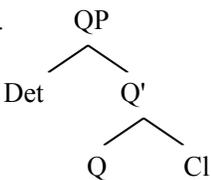
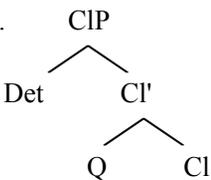
Such an analysis is proposed for Chinese in Li (1985). But see Tang (1993) for arguments against this approach. It has also been claimed that the functional hierarchies in the clause

there are different types of modifiers at the clause level: Manner adverbs such as *manman de* ‘slowly’ modify a VP, while time adverbs such as *zuotian* ‘yesterday’ modify a TP:

- (30) a. Ta manman de zou
 he slow DE walk
 ‘He walked slowly.’
 b. Zuotian women qu le
 Yesterday we go PART
 ‘We went yesterday.’

In addition to the similarity in allowing modification at different levels, another similarity between DP and TP that I propose is that a DNC sequence is base-generated in Spec of NP and raises to Spec of DP just like a subject of a clause.

To examine this proposal, let’s consider the analyses of a DNC sequence in the literature. Huang (1982) proposes two possible structures for a DNC sequence:

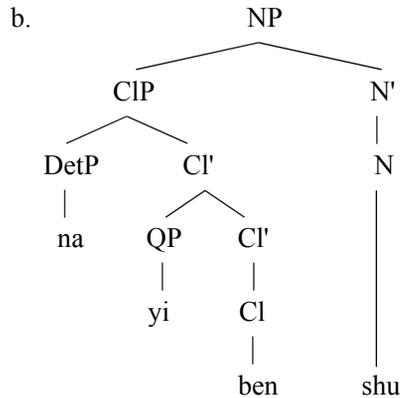
- (31) a. 
 b. 

In (31a) the quantifier/numeral is treated as the head, while in (31b) the classifier represents the head. Huang proposes that the whole QP or ClP is an adjunct or the specifier of the NP.

Following Huang’s analysis that the DNC sequence is a single modifying constituent, Lin (1997a) proposes a new structure in (32b) for (32a).

proposed for adverbs by Cinque (1999) and Tenny (2000) might be observable in the DP as well. (cf. Scott 2002, Chao et al. 2001, Laenzlinger 2000).

- (32) a. na yi-ben/*zhi shu
that one-CL book
'that book'



The main difference between Huang's analysis and Lin's is that Lin's analysis conforms to the X'-Theory because both the demonstrative and the quantifier project. The former is DetP (Determiner Phrase) and the latter QP.¹¹ Furthermore, the DNC sequence is projected as CIP and sits in the Spec of NP. This captures the fact that the classifier has to agree with the head noun in Chinese as exemplified in (32a), where the head noun *shu* 'book' agrees with the classifier *ben*. Moreover, this structure also explains why the classifier is obligatory, and why a head noun cannot occur with a demonstrative alone, as illustrated in and (33a) and (33b) respectively.

- (33) a. *na yi shu
that one book
b. *na shu
that book

The classifier is obligatory because it heads the CIP. For a similar reason, in general a CIP cannot project with only a specifier.

Maintaining Lin's insight, I shall assume the CIP analysis. However, I differ from Lin's in placing the CIP under the Spec of DP instead of the Spec of NP, adopting the DP analysis as proposed by Tang (1990) and Li (1999).¹² What sits in the Spec of the

¹¹ Demonstratives have been claimed to occupy the position of D in the literature (cf. Li 1998, Simpson & Wu 2002).

¹² Citing Giusti (1997), Simpson (2002) points out that demonstratives may be generated in low positions inside DPs in many languages. For example, the order reported for Irish is given in

CIP is a DemP. I shall further assume that the CIP raises to Spec of DP.¹³ The CIP in question is thus like the subject of a DP.¹⁴ Thus it is plausible that the CIP may originate in the Spec of NP under the assumption that the theta-position of arguments should be within the projections of the heads to which they are thematically related (the PISH); cf. Horstein, Nunes, & Grohmann 2003. The evidence contributing to the raising of the internal subject to the Spec of TP in English comes from floating quantifiers. Consider the example in (34a) and its tree structure given in (34b); cf. Sportiche 1988.

(i), where the demonstrative occurs in a low position following determiners, numerals, and adjectives:

(i) Det Num N AP* Dem RC

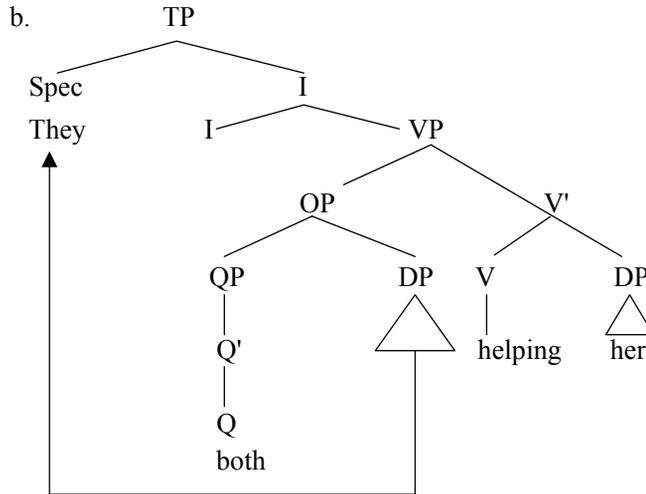
Giusti (1997) posits that demonstratives are perhaps universally base-generated in relatively low positions rather than directly in D and when they do occur initially, a raising process might have been involved. Following Giusti's suggestion, Simpson (2002) proposes that the demonstratives in Chinese may be base-generated either in a lower DP-internal position or in a second higher/DP-initial position. Alternatively, it may also move from a lower position to the higher position. This kind of analysis is proposed for the languages that allow demonstratives to occur either in a prenominal position or a postnominal position. But it is clear that demonstratives can only occur prenominally in Chinese.

Tang proposes several possible structures for DPs. In one analysis, D takes a CIP as its complement and CL in turn takes an NP as its complement. There is thus a parallelism between CP-IP-VP at the sentence level and DP-CIP-NP at the noun level. The head CL takes both Num (numeral) and Cla (classifier). In another analysis suggested by her, there is a NumP between DP and CIP. For the discussion of Tang's various analyses, see Lin (1997a).

¹³ Note that Abney (1987) posits that two distinct Spec positions are necessary with the noun phrase, one for the possessor (the external argument), and the other for the measure phrase (and the quantifier).

¹⁴ CIP is treated as an argument of the noun. A question related to this is the theta role of this argument. But if having a theta role is related to a certain position rather than having a relation with a theta-role assignor, then the question does not arise.

(34) a. They are both helping her.



Chinese also has quantifier floating. It is argued in Chiu (1993) that the quantifier *dou* is stranded after its associate sitting in the Spec of the DouP (projected by *dou*) raises to a higher position.

- (35) a. Ta mai de shu [mei-yi ben] yinggai *(dou) hen haokan
 he buy DE book every-one CL should all very interesting
 'Every book he bought should be interesting.'
 b. Ta jia de ren [mei-yi ge] wo *(dou) renshi
 he family DE person every-one CL I all know
 'I know each of his family members.'

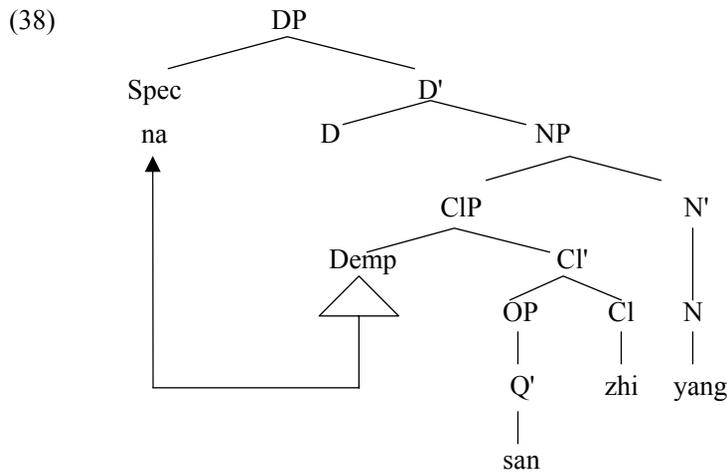
The structures for (35) are given in (36):

- (36) a. Ta mai de shu [[mei-yi ben]_i] yinggai [[_{DouP} t_i [dou]] [hen haokan]]
 he buy DE book every-one CL should all very interesting
 b. Ta jia de ren [[mei-yi ge]_i] [wo [[_{DouP} t_i [dou]] renshi]]
 he home DE person every-one CL I all know

Similarly, the CIP in a Chinese nominal may move as a whole or the NC may be stranded. In case of stranding, (37a) can be partially represented as in (38).¹⁵

¹⁵ I do not include the discussion of quantifiers such as *henduo* 'many' and *mei* 'every.' It is possible that QP can be more complicated than it is assumed here. For example, Q may take a

- (37) a. [na [fei de] [san-zhi] yang] (Type A)¹⁶
 that fat DE three-CL sheep
 ‘that three sheep that are fat’
 b. [na [houhou de] [san-ben] shu] (Type B)
 that thick DE three-CL book
 ‘those three thick 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’



My analysis will thus allow different modifiers to occur between the demonstrative and the NC sequence, capturing the fact that the demonstrative can be separated from the NC sequence. More examples supporting this analysis will be given in §5.2 below.

Numeral Phrase as its complement. In this case, numerals must occur under Num instead of under Q, so the QP, *mei yi-ge*, can be generated:

- (i) *mei yi-ge pengyou*
 every one-CL friend
 ‘every friend’

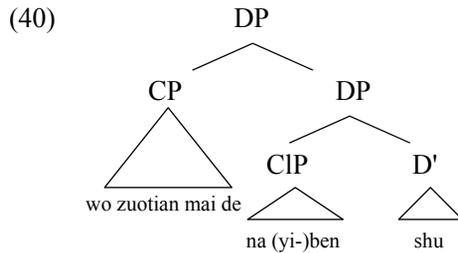
¹⁶ Note that the numeral *yi* ‘one’ behaves differently from other numerals with respect to the modifiers it can occur with and their order. Zhang (2001) has shown that *yi* has properties of an indefinite determiner. I shall not discuss the issue here.

5.2 DP/D' modifiers

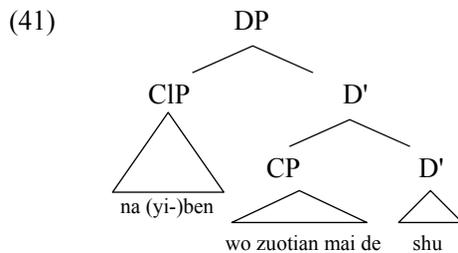
In this subsection, let us consider s-level modifiers first. I have proposed in the above subsection that a DNC sequence is projected as a CIP and it is assumed to be base-generated in the Spec of NP and raises to the Spec of DP. Given that the position of the CIP is fixed, now let us consider the two word order possibilities as given in (39), originally from (16).

- (39) a. [[na (yi-)ben] [wo zuotian mai de shu]]
 that one-CL I yesterday buy DE book
 ‘the book that I bought yesterday’
 b. [[wo zuotian mai de] [na (yi-)ben] shu]
 I yesterday buy DE that one-CL book
 ‘the book that I bought yesterday’

For (39b), the structure is given in (40).



Now consider (39a). If it is correct to claim that CIP occurs in the Spec of DP, it is unlikely for the relative clause to be adjoined to DP. A plausible possibility is that the relative clause is adjoined to D' in this case. The nominal in (39a) thus has the structure in (41).



Given the possibilities of adjoining to DP/D', the stacking of s-level modifiers on either side of the DNC sequence should be possible. The prediction is borne out. In Lin (1997b), the following sentences in (42) are considered acceptable.

- (42) a. [na-yi ben [Zhangsan bu xihuan de] [wo zuotian mai de] shu]
 that-one CL Zhangsan not like DE I yesterday buy DE book
 'The book that Zhangsan doesn't like that I bought yesterday'
 b. [Zhangsan bu xihuan de] [wo zuotian mai de] na-yi ben shu
 Zhangsan not like DE I yesterday buy DE that-one CL book

Now, consider the case where the demonstrative *na* raises alone, as illustrated in (43).

- (43) a. ?[na [wo zuotian mai de] [yi-ben] shu]
 that I yesterday buy DE one-CL book
 'the book that I bought yesterday'
 b. Ni ba [na [xian dongshou da ren de] [san-ge] xuesheng] cang zai nali?
 you BA that first move:hand hit person DE three-CL student hide in where
 'Where did you hide those three students who started the fight first?'

The example in (43a) does not sound perfect,¹⁷ but (43b) is perfectly acceptable. The fact that (43a) is somewhat degraded may be due to the fact that the occurrence of both the "subject" of the CIP and the subject of the relative clause makes the processing difficult. If this problem is avoided by having the subject of the relative clause *wo* 'I' as a possessor occurring in a higher position, the sentence becomes perfectly acceptable:

- (44) [Wo [na [zuotian jie de] [san-ben] shu]] dao nali qu le?
 I that yesterday borrow DE three-CL book arrive where go PART
 'Where are those three books that I borrowed yesterday?'

¹⁷ As a matter of fact, Tang (1990) excludes the following sentences:

- (i) a. ?na [wo xie de] san-ben shu
 that I write DE three-CL book
 'those three books that I wrote'
 b. na [gaogaoshou de] san-wei nanhai
 that tall-and-thin DE three-CL boy
 'those three tall and thin boys'

But according to the native speakers whom I consulted, while they thought (ia) was not perfect, they had no problem accepting (ib).

Therefore, this supports the analysis that a demonstrative can raise alone.

In summary, I propose that s-level modifiers can be either adjoined to DP/D'. In fact, this is similar to the fact that some sentential adverbs in Chinese can either occur before or after the subject:

- (45) Zuotian ta (zuotian) yinggai mai-le yi-ben shu
 yesterday he yesterday should buy-ASP one-CL book
 'He should have bought a book yesterday.'

The former is adjoined to TP, while the latter to T' as shown in (46) below. Thus an s-level modifier is just like a sentential adverb.

- (46) [_{TP} Zuotian [_{TP} wo [_{T'} (zuotian) [_{T'} mai-le yi-ben shu]]]]
 yesterday I yesterday buy-ASP one-CL book

Last but not least, my analysis is well supported by the following examples involving the question counterpart of the DNC sequence:

- (47) a. [[Na (yi-)ben] [ni zuotian mai de] shu] bujian le?
 which one-CL you yesterday buy DE book disappear PART
 'Which one of the books that you bought yesterday disappeared?'
 b. [[Ni zuotian mai de] [na (yi-)ben] shu] bujian le?
 you yesterday buy DE which one-CL book disappear PART

The fact that (47a) is grammatical contrasts with (1b), repeated in (48).

- (48) *Ni kanjian [shenme [[ta zuotian mai de] dongxi]] ma?
 you see what he yesterday buy DE thing PART

The fact that there is a contrast between the *na* phrase in (47a) and *shenme* in (48) is captured nicely by my analysis that the former sits in the Spec of DP while the latter sits in D. In (47a), the relative clause can be adjoined to D', but in (48), there is no position for the relative clause.

5.3 NP/N' modifiers

A question that immediately arises is whether an i-level modifier can also be adjoined to an N', in addition to an NP. I shall show that this is indeed the case. First,

consider the examples in (49) and (50).

- (49) a. [[na san-zhi] [keai de] yang]
that three-CL lovely DE sheep
'those three lovely sheep'
b. [na [keai de] [san-zhi] yang]
that lovely DE three-CL sheep
'those three sheep that are lovely'
- (50) a. [[na san-zhi] [fei de] yang]
that three-CL fat DE sheep
'those three fat sheep'
b. [na [fei de] [san-zhi] yang]
that fat DE three-CL sheep
'those three sheep that are fat'

In (49a) and (50a), the DNC sequence raises up as a constituent. In contrast, in (49b) and (50b) the demonstrative alone raises up to the Spec of DP. In both cases, the i-level modifier is adjoined to an NP.

Now consider the example in (51).

- (51) [na [keai de] [san-zhi] [maorongrong de] yang]
that lovely DE three-CL fluffy DE sheep
'those three lovely fluffy sheep'

The i-level modifier should be allowed to be adjoined to N' given the fact that (51) is perfectly acceptable. As claimed earlier, the NC sequence in the above example should be left behind. Thus the second i-level modifier can only be adjoined to N'. I thus assume that i-level modifiers should be able to be adjoined to N', in addition to NP.¹⁸

¹⁸ In this paper, only *de* modification is considered. For the distinction between *de* and *de*-less modification, please see Sproat & Shih (1988) and Paul (2003), among others. According to these two papers, ordering restrictions observed for other languages apply in the Chinese *de*-less modification as well. For example, modifiers pertaining to material, color and shape have to be closer to the head noun than those referring to e.g. size:

- (i) a. yi-tiao da hei gou
one-CL big black dog
b. *yi-tiao hei da gou
one-CL black big dog
(ii) a. yi-zhang xiao fang zhuor
one-CL small square table

In summary, an s-level modifier is adjoined to DP/D', whereas an i-level modifier is adjoined to NP/N'.¹⁹

6. When there are no demonstratives

So far all the examples that I use involve demonstratives. In this section, I shall consider examples without demonstratives. As a matter of fact, an NC sequence interacts with the two modifiers just like a DNC sequence. This is testified by the following examples involving an s-level modifier:

-
- b. *yi-zhang fang xiao zhuor
one-CL square small table
- (iii) a. yi-ge xiao boli chabei
one-CL small glass tea:cup
'one small glass tea cup'
- b. *yi-ge boli xiao chabei
one-CL glass small tea:cup

However, the ordering restriction does not seem to be observed when *de* is present: (cf. Paul 2003).

- (iv) yi-tiao hei de da gou
yi-zhang fang de xiao zhuor
yi-ge boli de xiao chabei

For Sproat & Shih, *de*-less modification, a “direct” modification, is on a par with modification in languages like English, whereas *de* modification, an “indirect” modification, does not have any counterpart in English. Furthermore, Sproat & Shih treat the former as compounds. In contrast, Paul argues against the word status of *de*-less modification by deletion facts. For her, some of them have to be phrases. She thinks a modifier below *de* is interpreted as a defining characteristic, whereas a modifier in the domain above *de* is interpreted as a temporary property. Given the fact that an i-level modifier can occur with or without *de*, she has to claim that the one above *de* is presented as a temporary property.

- (v) congming (de) ren
intelligent DE person
'intelligent people'

I agree with Paul in analyzing the *de*-less modifier as introducing a defining property, resulting a natural, plausible classification. However, I do not agree with the view that *de* modification involves only temporary properties.

¹⁹ Tang (1990) also allows the possibilities of adjunction to XP or X'. But please note that from the minimalist program's (Chomsky 1995) point of view, it seems to be desirable if adjunction is restricted to only maximal projections and thus there is no vacuous X'-projections.

- (52) a. [[San-ben] [wo zuotian mai de] shu] bujian le
 three-CL I yesterday buy DE book disappear PART
 ‘Three books that I bought yesterday disappeared.’
 b. [[Wo zuotian mai de] [san-ben] shu] bujian le
 I yesterday buy DE three-CL book disappear PART
 ‘Three books that I bought yesterday disappeared.’

I assume that NC sequences also generate in the Spec of NP and raise to the Spec of DP. Given this, the fact that NC sequences behave like the DNC sequence is not surprising. What about *i*-level modifiers? The following examples also show that their interaction with NC sequences pattern like those involving DNC sequences.²⁰

- (53) a. ?[[San-ben] [hong de] shu] hen youqu (Type A)²¹
 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.’
- (54) 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.’
- (55) 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 lovely DE three-CL sheep send person PART
 ‘He has given away three sheep that were very lovely.’

²⁰ Zhang (2004) argues that the two word order possibilities involving NC sequence and its modifiers are correlated with specificity. The one with an internal modifier is ambiguous in specificity, while the one with a left-peripheral modifier is exclusively specific.

²¹ The two examples in (53) are from Lu (1998).

Note that (55b) is ungrammatical in contrast to (53b), (54b), and (55c). It can be safely argued that the NC sequence has to raise to the DP Spec obligatorily. If it could stay in the NP Spec, (55b) would be wrongly predicted to be grammatical.²²

Finally, let me compare my analysis with Lu's (1998:108). Lu claims that almost all Chinese *de* modifiers can occur in the position preceding a numeral. Lu notes that the only exception is that adjectives not having any referential function fail to appear in this position. He points out that while (56a) is grammatical, (56b) is not:

- (56) a. [[ta de] [yi-dui] [mingliang de] yanjing]
 he DE one-CL bright DE eye
 'a pair of bright eyes of his'
 b. *[[ta de] [mingliang de] [yi-dui] yanjing]
 he DE bright DE one-CL eye

Clearly, what is involved in (56) is a Type C adjective. According to Lu, (56b) is ruled out because *mingliang* does not distinguish the referent *yanjing* 'eyes' from other eyes and thus it is purely descriptive and cannot appear before the numeral. Lu seems to claim that things that are contrastive are more referential. He essentially proposes that modifiers that are more referential are placed in more "front" positions. My analysis fares better because when a DNC sequence is involved, there is no way that Lu can distinguish the two types of modifiers in terms of referentiality. The referentiality should be contributed by the DNC sequence.

- (57) *[[mingliang de] [na-shuang] yanjing]
 bright DE that-CL eye

In summary, in this section it is shown that NC sequences behave like DNC sequences with respect to the interaction with the two types of modifiers. Furthermore, it is also shown that the analysis proposed in this paper fares better than the functional analysis given by Lu (1998).

7. Cases with freer word order

In this section, let us consider some cases with freer word order. As pointed out to me by one of the reviewers, a disparity is found between the examples in (58) and (59), indicating that the existence of the demonstrative does matter.

²² But if the NC sequence denotes quantity, it can stay in the Spec of NP. (cf. Li 1998)

- (58) a. na san-ben [hongse de] [Laowang zuotian jiandao de] shu
 that three-CL red DE Laowang yesterday find DE book
 ‘the three books that Laowang found yesterday that were red’
 b. [hongse de] na san-ben [Laowang zuotian jiandao de] shu²³
 red DE that three-CL Laowang yesterday find DE book
 ‘the three books that Laowang found yesterday that were red’
- (59) a. [Laowang zuotian jiandao de] san-ben [hongse de] shu
 Laowang yesterday find DE three-CL red DE book
 ‘the three books that Laowang found yesterday that were red’
 b. *[hongse de] san-ben [Laowang zuotian jiandao de] shu
 red DE three-CL Laowang yesterday find DE book

Note that the contrast between (58b) and (59b) does not seem to have anything to do with the semantic constraint. But it should be pointed out that although the i-level modifier *hongse de* in (59) functions like an s-level modifier, it is still inherently an i-level modifier. Thus it is likely the semantic constraint still plays a role. What is interesting is that the semantic constraint is applied only when there is no demonstrative. A possible analysis is given as follows. When used as an s-level modifier, the inherent i-level modifier is situation-dependent and has the function to restrict the domain of the possible referents. This function, however, is in conflict with that of the s-level modifier occurring after the NC sequence because the s-level modifier also serves to identify the referent. But when a demonstrative is present, the demonstrative fixes the referent and the restriction function of both the inherent i-level modifier and the s-level modifier becomes redundant. Therefore, the semantic constraint does not seem to be relevant. Word order can thus be freer.

In summary, in general an i-level modifier is closer to the head noun than an s-level modifier. But when an i-level modifier is used as an s-level modifier, the semantic constraint still plays a role unless a demonstrative is present.

8. Modifiers that are nominal

My discussion of the internal structure of nominal phrases will not be complete without including modifiers that are nominals. In this section, I shall show that these

²³ Jo-wang Lin also pointed out to me that the following sentence is acceptable:

- (i) [Shengao 180 gongfen de] na-ge [wo zuotian yudao de] nühai
 height 180 centimeter DE that-CL I yesterday meet DE girl
 ‘the girl who I met yesterday who was 180 centimeter tall’

(i) can be analyzed just like the example in (58b).

nominals can also be distinguished as two types just like adjectives and relative clauses.

Consider genitive phrases as exemplified in (60) and (61), where the proper name *Chomsky* is interpreted as the author of the book, while the pronoun *ta* ‘he’ is only a possessor of the book. The two behave differently in a nominal phrase. First, there is a contrast between the two types of modifiers when they interact with *shenme*:

- (60) a. Ni mai-le [shenme [[Chomsky de] shu]] ma?
 you buy-ASP what Chomsky DE book PART
 ‘Did you buy any book by Chomsky?’
 b. Ni mai-le [[Chomsky de] [shenme shu]] ma?
 you buy-ASP Chomsky DE what book PART
 ‘Did you buy any book by Chomsky?’
- (61) a. Ni kandao [[ta de] [shenme shu]] ma?
 you see he DE what book PART
 ‘Did you see any book of his?’
 b. *Ni kandao [shenme [[ta de] shu]] ma?
 you see what he DE book PART

While *Chomsky de* can precede or follow *shenme*, *ta de* ‘his’ has to precede it. Also, the former cannot occur before the DNC sequence:

- (62) a. [[ta de] [na san-ben] [Chomsky de] shu]
 he DE that three-CL Chomsky DE book
 ‘his three book of Chomsky’
 b. *[[Chomsky de] [na san-ben] [ta de] shu]
 Chomsky DE that three-CL he DE book

Based on the above data, I would like to propose that *Chomsky de* can be an i-level modifier or s-level modifier, while *ta de* is an s-level modifier. *Zhangsan* and *zuotian* ‘yesterday’ in (63) below are two more examples of s-level modifiers that are nominal.²⁴

- (63) a. [Zhangsan [zuotian de] [yanli de] piping]
 Zhangsan yesterday DE severe DE criticism
 ‘Zhangsan’s severe criticism of yesterday’

²⁴ This contrast between (a) and (c) is in Lin (1997a:426).

- b. [Zuotian [Zhangsan de] [yanli de] piping]
yesterday Zhangsan DE severe DE criticism
- c. *[Zhangsan [yanli de] [zuotian de] piping]
Zhangsan severe DE yesterday DE criticism

As shown in (63a, b), the two can be ordered freely, but the i-level modifier, i.e. *yanli de*, cannot precede the s-level modifier.

Finally, I would like to discuss an interesting observation by Lu (1998:83-84):

- (64) a. [[yishujia de] [yi-shuang] shou]
artist DE one-CL hand
'his pair of hands of the artist'
- b. [[yi-shuang] [yishujia de] shou]
one-CL artist DE hand
'one pair of artist-like/skillful hands' or 'one pair of hands of an artist'

The two modifiers in (64) are interpreted differently. The former refers to a particular artist, while the latter means 'artist-like.'²⁵ Lu uses these examples to argue "that modifying nouns can directly affect their mother NP's referentiality." Lu points out that the referentially definite *yishujia* in (64a) makes its mother NP definite, while the nondefinite and attributive *yishujia* in (64b) does not. I agree with Lu that whether a nominal is interpreted as definite or indefinite depends on the genitive phrase that is used, as evidenced by the following examples.

- (65) a. [Zhangsan de gou] zai huayuan li
Zhangsan DE dog in garden inside
'Zhangsan's dog is inside the garden.'
- b. [Na-ge nanren de gou] zai huayuan li
That-CL man DE dog in garden inside
'That man's dog is inside the garden.'
- c. *[Yi-ge nanren de gou] zai huayuan li
One-CL man DE dog in garden inside
'A man's dog is inside the garden.'

²⁵ The use of *yishujia* in the lower position is like the "modification genitives" (Munn 1995) in English as exemplified in (i), in which the genitive is not a maximal projection and the determiner modifies the overall N-projection rather than the genitive.

(i) A man's hat is on the counter.

The example in (65c) is ruled out because of the definiteness effect exhibited in Chinese. But for (64) the more crucial thing is the position of the modifier. If an i-level usage of *yishujia* ‘artist’ is distinguished from an s-level usage, the examples in question can be generated and interpreted correctly as follows. When *yishujia* is used as an i-level modifier, it denotes artist-like properties and since it can only be adjoined to NP or N', it can only follow the NC sequence. On the other hand, as an s-level modifier, it refers to a specific artist and is adjoined to DP or D' (before or after the NC sequence).

In summary, just like adjectives/relative clauses, modifiers for nominals can be either i-level modifiers or s-level modifiers.

9. Conclusions

I begin with the occurrences of *shenme* ‘what’ in a nominal phrase and find it necessary to distinguish two types of modifiers (including adjectives/relative clauses and nominals) in Chinese—i-level modifiers and s-level modifiers. I argue that there is a syntactic correlate for the two types of modifiers. The former are NP/N' modifiers, while the latter DP/D' modifiers. In addition to this, the various word possibilities exhibited in Chinese nominal phrases are due to two other factors. First, the DNC sequence occupying in the Spec of NP can either raise to the Spec of DP as a whole just like the subject raising of a clause, or the NC sequence can be stranded like in the case of quantifier floating at a clause level. If my analysis is on the right track, nominal phrases are more similar to clauses than it is usually assumed. Namely, they both involve modification at different levels, subject raising and quantifier floating.

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現代漢語的兩種修飾語 以及 DPs 和 TPs 之間的相似性

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本文根據「什麼」這個詞在名詞詞組裡的用法，將現代漢語在名詞詞組裡的修飾語（包括：形容詞、關係子句、名詞），分為兩類：一類是個體層次修飾語，另一類是狀態層次修飾語；前者表示永久的狀態，後者表示暫時的狀態。兩者的句法表現則是前者是 NP/N' 的修飾語，後者是 DP/D' 的修飾語。本文主張名詞詞組內不同的語序是不同層次的修飾語，主語提升和數量詞遺留互動的結果，這樣的看法乃是基於 DPs 和 TPs 之間的一些相似性。

關鍵詞：個體層次修飾語，狀態層次修飾語，名詞詞組，詞序，數量詞遺留