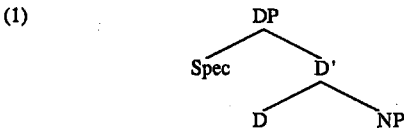


Chinese NP Structure*

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1. Introduction

It has generally been believed that an argument position in a sentence is usually filled, if not by an S, with an NP, which is the maximal projection of a head noun. However, this assumption is challenged by Abney 1987, who, in his MIT dissertation, argues extensively that a determiner phrase (DP) should be required in place of an NP so that some similarities between sentences and noun phrases can be captured. According to this proposal, a traditional NP should be analyzed as a DP that has the following configuration:



At first blush some Chinese facts may seem to support this analysis. For instance, the following sentences in (2) and (3) can be treated as examples¹ of topicalization (Xu and Langendoen 1985).

- (2) Píngguǒ_i, tā chī-le sān gè *t_i*
apples he eat-LE three CL
'He ate three apples.'
- (3) Níqiú_i, tā zhuā-le wǔshí tiáo *t_i*.
loach he catch-LE fifty CL
'He caught fifty loaches.'

If we maintain, as in standard GB Theory, that topicalization involves a movement to sentence initial position, we face some potentially serious problems with examples like (2) and (3). Note first that it is generally assumed that only a lexical head or a maximal projection can move. When a lexical head moves, it is joined to the next (lexical) head, as exemplified by English INFL-to-C

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¹ In the gloss of Chinese examples, DE can be a possessive marker, complement-of-noun marker, or relativizer that heads a relative clause. LE is the (perfective) aspect marker. CL refers to classifier.

movement to form questions. When a maximal projection moves, it is adjoined to a maximal projection or moves to a Spec position. However, *píngguǒ* 'apple' in (2) and *níqiū* 'loach' in (3) are not maximal projections if we assume with the generally accepted point of view that the argument in the object position of *chī-le* 'ate' in (2) and *zhuā-le* 'caught' in (3) are NPs; it follows that such examples cannot be topicalization since topicalization always involves maximal projections. But such examples cannot be a kind of head movement either, since the topic is not a lexical head position.

However, things are quite different if we assume the DP Hypothesis and analyse Chinese noun phrases as having the structure in (1) where *píngguǒ* 'apple' or *níqiū* 'loach' is the NP while the phrase *sān gè píngguǒ* 'three apples' or *wǔshí tiáo níqiū* 'fifty loaches' is a DP. Thus when *píngguǒ* 'apple' in (2) is in the topic position, we can say that this is an instance of topicalization where the maximal projection NP has moved out of the object DP to the sentence initial position, just like any instance of topicalization in English.

So far, it seems that the DP Hypothesis has offered a nice solution to the problem that Chinese topicalization had raised. However, things are not so simple. The following examples show why.

- (4) Wū gè píngguǒ, tā chī-le sān gè.
 five CL apple he eat LE three CL
 'Of the five apples, he ate three of them.'
- (5) Shí bēn xīn shū, tā mǎizǒu-le jiǔ bēn.
 ten CL new book he buy-go-LE nine CL
 'He bought nine of the ten new books.'

In (4) and (5) the topicalized elements are full DPs while the gaps in the remaining sentences are merely NPs. This raises the question whether topicalization is the right analysis for structures like those in (2) - (5).

Although the Chinese data mentioned above do not turn out to be supporting evidence for the DP Hypothesis, they are not evidence against it either. In this article, I will examine one analysis which not only is a direct application of the DP Hypothesis but also extends it to exactly parallel the sentential structure assumed in standard GB Theory. I will point out some difficulties that this analysis faces with its own data. In Section 3 I will propose a new analysis, which does not follow the DP Hypothesis, but assumes the NP structure. A large body of data will be provided to show that the new analysis is theoretically sound and empirically correct. In Section 4 I will examine an alternative analysis and show that the alternative may seem to be able to explain the same data. In Section 5 more data are introduced and the two analyses are compared. It is suggested that the analysis proposed in Section 4 may be preferred.

2. The DP Hypothesis in Chinese

2.1 The KP Extension

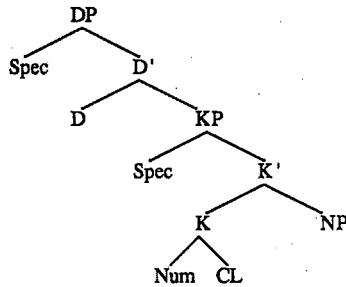
Although the DP Hypothesis has not been assumed in the main trends of syntactic analysis of noun phrases, its resemblance to the sentential structure has led to some very interesting analyses. One example is the application and extension of the DP Hypothesis in the analysis of Chinese NP structure in Tang 1990.

As Tang 1990 and other Chinese grammarians have pointed out, one of the major differences between Chinese and English is the use of classifiers in Chinese noun phrase structures. In Chinese, demonstratives and numerals cannot modify the head noun unless they cooccur with a classifier and their relative position must be that the demonstrative precedes the numeral, which is then followed by the classifier. The following examples show this.

- (6)a. *zhè shū
 this book
- b. *sān shū
 three book
- c. *běn shū
 CL book
- (7)a. zhè běn shū
 this CL book
 'this book'
- b. *běn zhè shū
 CL this book
- (8)a. sān běn shū
 three CL book
 'three books'
- b. *běn sān shū
 CL three book
- (9)a. zhè sān běn shū
 this three CL book
 'these three books'
- b. *zhè běn sān shū
 this CL three book
- c. *sān zhè běn shū
 three this CL book

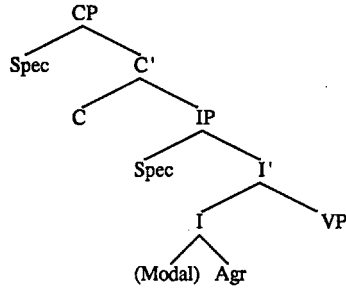
These facts lead Tang 1990 to assume that a classifier phrase (KP) should be included in a DP. Thus she proposes that a Chinese noun phrase has the structure in (10).

(10)



Tang calls particular attention to the resemblance of the Chinese noun phrase structure in (10) to the sentential structure adopted in GB Theory, which is illustrated in (11).

(11)



This resemblance of the sentential CP-IP-VP with the proposed Chinese noun phrase structure DP-KP-NP is crucial in Tang's analysis² because some of the principles applicable to sentences are applied directly to Chinese noun phrases without further motivation. But there are some differences between the CP-IP-VP structure and the proposed DP-KP-NP structure which Tang fails to point out. One of these differences is the agreement facts. In an English sentence, for instance, the agreement is always seen to be between the Spec of IP and the head I. In a Chinese noun phrase, however, the agreement is between the head K and its complement NP. This difference is shown in the following examples.

(12)a. [_{CP} [_{IP} John [_I does not]] [_{VP} run very fast]

b. *[_{CP} [_{IP} John [_I do not]] [_{VP} run very fast]]

² Tang's analysis is different from Abney's in that Abney takes the parallel to be between DP and IP, not DP and CP. In this sense, Tang's analysis is not an extension, but a revision of the DP hypothesis. See also Grimshaw 1991 for a different approach, where PP is taken to be the extension of DP, which in turn is the extension of NP.

(13)a. [DP [KP [K yī gè] [NP háizi]]]
 one CL child

b. *[DP [KP [K yī gè] [NP háiizimen]]]
 one CL children

The data in (12) and (13) show at least that different agreement principles have to be established to account for Chinese noun phrases in Tang's proposal.

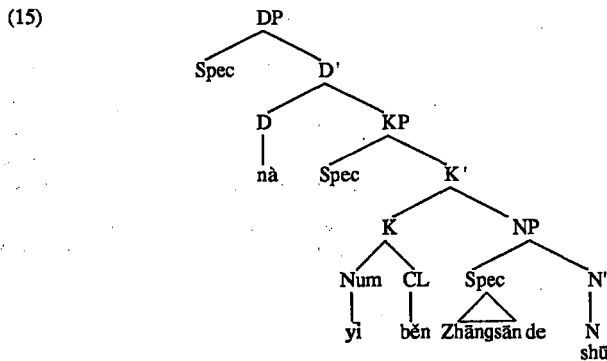
Now suppose that this agreement difference can be explained in a way consistent with Tang's proposal. Let's look at some similarities that Tang has explored. Tang claims that the following variations of a Chinese noun phrase can be accounted for by general rules analogous to V-to-I movement and I-to-C movement (in English).

(14)a. nà yī-běn Zhāngsān de shū
 that one-CL Zhangsan DE book
 'that book of Zhangsan's'

b. *nà Zhāngsān de yī-běn shū
 that Zhangsan DE one-CL book

c. Zhāngsān de nà yī-běn shū
 Zhangsan DE that one-CL book
 'that book of Zhangsan's'

Tang proposes that (14a) is the base-generated structure, as in (15)



In order to derive the grammatical (14c), *Zhāngsān de* 'Zhangsan's' has to move first to the Spec of KP. Tang claims that this movement is parallel to (hence licensed by) the V-to-I movement

in the sentence level in English, where if no modals appear, V must move to I.³ This movement results in (14b). However, since (14b) is not a grammatical structure in Chinese, Tang is forced to assume an obligatory K-to-D movement parallel to I-to-C movement in English subject-auxiliary inversion. This K-to-D movement will move *Zhāngsān de* 'Zhangsan's' from the Spec of KP to the Spec of DP and the result is the grammatical structure (14c).

We must point out that Tang gives no independent evidence to support her proposed sequence of movements from Spec of NP to Spec of DP except the parallelism she draws between her proposed Chinese noun phrase structure and the generally assumed English sentential structure in GB Theory. However, I-to-C movement at the sentential level is not obligatory, since the existence of declarative sentences shows that V can stay in I. Thus Tang should provide independent theoretical justification for the assumption that the movement from Spec of KP to Spec of DP is obligatory. However, no such justification is provided.

Moreover, there is a major flaw in Tang's analogy between the movements assumed for sentential structure and the ones in her proposed structure. V-to-I and I-to-C movements in the sentential level are head movements. But although Tang repeatedly uses the term K-to-D movement, the movement from Spec of KP to Spec of DP is not a head movement, nor is the movement from Spec of NP to Spec of KP. Hence there actually exists no parallelism between the movements Tang mentions at the sentential level and the proposed movements in Chinese noun phrases.

Suppose that Tang has simply made a mistake in terminology and that what she intends is a movement from Spec to Spec when *Zhāngsān de* 'Zhangsan's' changes position from (14a) to (14c). Then the appropriate analogy in the sentential structure is with the movement of NP from Spec of VP to Spec of IP, assuming with Koopman and Sportiche 1985, Kitagawa 1986, and Speas 1990 that the external argument of a predicate is base-generated at D-Structure under Spec of VP.⁴ This argument NP is forced to move to Spec of IP to get Case at S-Structure since Spec of VP is not a Case position. But if this is the true story behind Spec of VP to Spec of IP movement, then we have to ask what the story is behind the optional movement from Spec of NP to Spec of KP. It is also unclear what drives *Zhāngsān de* 'Zhangsan's' to move from Spec of KP to Spec of DP since this is, according to Tang, an obligatory movement. This is a very serious question that Tang provides no answer for.

³ The current standard analysis seems to be I lowering to V in S-structure, and then back to I in LF. See Pollock 1989 and Chomsky 1991 for discussion.

⁴ But see Koopman and Sportiche 1991 and Johnson 1991 for a somewhat different approach, where the external argument is believed to be base-generated adjoined to VP.

Still another question concerns Tang's treatment of genitive phrases. Tang notes that in a Chinese noun phrase, unlike in an English noun phrase, the genitive phrase can be iterated. She gives the following example to support her claim.

- (16) wǒ de Zhào Yuánrèn de yǔyánxué de shū
 I 's Chao Yuanren 's linguistics 's book
 'the book on linguistics that is written by Chao Yuanren and that belongs to me.'

Note that Tang's translation is not the only possible reading of the sentence, though it may be the most obvious one because Chao Yuanren is one of the most famous Chinese linguists. If we replace the possessive phrases in (16) with other names, the pragmatic preference for one reading disappears. This is shown in (17) below.

- (17) Zhāngsān de Lìsì de nà běn Wángwū de xiǎoshuō
 Zhangsan DE Lisi DE that CL Wangwu DE novel
 a) 'the novel about Wangwu that is written by Lisi and that belongs to Zhangsan.'
 b) 'the novel about Wangwu that belongs to Lisi and that is written by Zhangsan.'

There are at least two natural readings available. That is, of the first two genitive phrases, either one could denote the possessor of the book. Since Tang later states that a genitive phrase is base-generated in the Spec of NP position, we are left wondering how two genitive phrases can be squeezed into this position in the D-Structure. And what about the phrase *Wángwū de* 'Wangwu's'? Should it also be base-generated in Spec of NP?

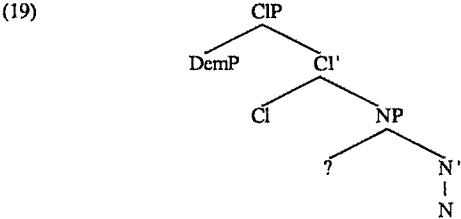
At this point we want to mention that, in a Chinese noun phrase, it is also possible to have prenominal relative clauses. The following examples show this.

- (18)a. wǒ rènshi de nà wèi jiāo yǔyánxué de yīngguó lǎoshī
 I know DE that CL teach linguistics DE British teacher
 'the English teacher that I know who teaches linguistics'
- b. nà wèi wǒ rènshi de jiāo yǔyánxué de yīngguó lǎoshī
 that CL I know DE teach linguistics DE British teacher
 'the English teacher that I know who teaches linguistics'
- c. wǒ rènshi de jiāo yǔyánxué de nà wèi yīngguó lǎoshī
 I know DE teach linguistics DE that CL British teacher
 'the English teacher that I know who teaches linguistics'
- d. *nà wǒ rènshi de wèi jiāo yǔyánxué de yīngguó lǎoshī
 that I know DE CL teach linguistics DE British teacher
- e. *nà wǒ rènshi de jiāo yǔyánxué de wèi yīngguó lǎoshī
 that I know DE teach linguistics DE CL British teacher
- f. *wǒ rènshi de nà jiāo yǔyánxué de wèi yīngguó lǎoshī
 I know DE CL teach linguistics DE CL British teacher

Note that the examples in (18) show that the relative clauses have the same syntactic properties as the genitive phrases discussed earlier: they are iterable and can appear in exactly the same positions as genitive phrases do. This suggests that it is appropriate to treat relative clauses as having the same syntactic status as genitive phrases. Since we have already seen that it is very problematic to treat genitive phrases as specifiers, we may anticipate that the same problems will rise if relative clauses are treated as specifiers. Therefore an alternative treatment should be sought for both relative clauses and genitive phrases. In Section 3 I will discuss this alternative analysis.

2.2 An Alternative DP-Style Analysis

I have criticized Tang's treatment of Chinese noun phrase structures. However, another analysis along the lines of the DP Hypothesis is possible, viz. to treat the classifier phrase (CIP) as the analogue of the English DP. A typical CIP then would take the following configuration.



In (19) demonstratives are in the [Spec, CIP] and NP's are classifier complements. There are some advantages in (19) over Tang's analysis. For instance, relative clauses (RC) can be treated as XP adjuncts. If we assume Grimshaw's 1991 proposal, we may suggest that RC's are base-generated adjoined to XP[+N].⁵ Since CIP and NP are nominal projections, this may explain the synonymy of the sentences in (19). Possessive phrases (PossP's) are not treated as specifiers of NP, but XP[+N] adjuncts, just like RC's (see discussion of similarities between PossP and RC in Section 3). However, questions remain. For instance, if PossP's are treated as adjuncts, what is going to fill the [Spec, NP] position?⁶ How do we guarantee the presence of DemP when a classifier lacks a numeral morpheme (see Subsection 3.4 for discussion)? If we assume the Spec-Head Agreement Principle proposed in recent studies (Chomsky 1992, Rizzi 1991), how do we get the agreement right between the noun phrases and the classifier phrases? In the face of such difficulties, I will not pursue this line of analysis in this paper.

⁵ There are still problems with this. For instance, in Grimshaw 1991, PP is suggested to be an F₂ level of the nominal projections. But in Chinese RC's are not found to be PP adjuncts.

⁶ But this question may be avoided if we could assume that certain categories such as N simply don't have a Spec position. See Fukui 1986 for similar suggestions in Japanese.

3.2. Scrambling

Having laid down the general theoretical frame for my analysis, let's now look at some more facts about Chinese noun phrases.

We have noted that in a Chinese noun phrase the head noun is always the last (rightmost) element. We can also have a (demonstrative)-numeral-classifier sequence. Let's call this sequence a classifier phrase (CIP) for the time being. A possessive phrase (PossP) may appear before CIP or after CIP as is shown in (14) and (21). Within a noun phrase we may also have relative clauses. A relative clause (RC) may also appear either before or after the classifier phrase. This is shown in (18) and (22).

- (21)a. Zhāngsān de nà jǐ zhǐ qiānbǐ
Zhangsan DE that several CL pencil
'those pencils of Zhangsan's'
- b. nà jǐ zhǐ Zhāngsān de qiānbǐ
that several CL Zhangsan DE pencil
'those pencils of Zhangsan's'
- (22)a. wǒ xǐhuān de nà sān zhǒng zázhi
I like DE that three CL magazine
'the three magazines that I like'
- b. nà sān zhǒng wǒ xǐhuān de zázhi
that three CL I like DE magazine
'the three magazines that I like'

Now let us consider cases where a noun phrase includes all three kinds of phrases at the same time. We find that the positions that each of the three phrases can take are relatively free. This is shown in (23).

- (23)a. wǒ xǐhuān de Zhāngsān de nà sān zhǐ qiānbǐ
I like DE Zhangsan DE that three CL pencil
'those three pencils of Zhangsan's that I like'
- b. wǒ xǐhuān de nà sān zhǐ Zhāngsān de qiānbǐ
I like DE that three CL Zhangsan DE pencil
'those three pencils of Zhangsan's that I like'
- c. nà sān zhǐ wǒ xǐhuān de Zhāngsān de qiānbǐ
that three CL I like DE Zhangsan DE pencil
'those three pencils of Zhangsan's that I like'
- d. Zhāngsān de wǒ xǐhuān de nà sān zhǐ qiānbǐ
Zhangsan DE I like DE that three CL pencil
'those three pencils of Zhangsan's that I like'

- e. Zhāngsān de nà sān zhǐ wǒ xǐhuān de qiānbǐ
 Zhangsan DE that three CL I like DE pencil
 'those three pencils of Zhangsan's that I like'
- f. nà sān zhǐ Zhāngsān de wǒ xǐhuān de qiānbǐ
 that three CL Zhangsan DE I like DE pencil
 'those three pencils of Zhangsan's that I like'

The fact that RC, CIP and PossP are freely ordered in prenominal positions suggests that these three kinds of phrases should have the same syntactic status. If we assume with HPSG (or the main trend in GB) that NP is the maximal projection of the lexical head noun, then the position that these phrases can take cannot be the SPR position. In other words, the relation between the head noun and any of these phrases cannot be taken to be the relation between specifier and head, since in each maximal projection only one specifier is allowed. Here we cannot use the Head-Subject Schema either, because the head in a NP is not a full phrase (= a maximal projection). Then can the structure in (23) take the form of a head-complement structure? My answer to this question is negative for the following reasons. First, these phrases do not seem to be subcategorized for by the head noun. Second, a lexical head usually does not tolerate the iteration of the same complements. Note that we have pointed out in Section 2 that a PossP can be iterated and so can an RC. Thirdly, I will show in the next subsection that there are better candidates for the complement position in a noun phrase and they behave differently from CIP's, PossP's, or RC's. Can the structure in (23) be a head-adjunct structure? The answer seems to be positive, since there is no limit on the number of times that the Head-Adjunct Schema can be iterated.

We have seen in (18) that RC can be iterated within an NP. (24) confirms this observation.

- (24) wǒ rènshi de nà jǐ wèi cóng yīngguó lái de zhùzài yǒuyì-bīnguǎn
 I know DE that several CL from Britain come DE live-in friendship-hotel
 de měi xīngqīwǔ dōu dào běi-dà shòukè de yǔyánxué-jiaoshòu
 DE every Friday all to Beijing-University teach DE linguistics-professor
 'the several linguistics professors that I know who come from UK, live in Friendship
 Hotel, and teach at Beijing University every Friday'

This shows that the number of RC occurrences in an NP is in principle unlimited.

We also note (see (17) above) that PossP can be iterated as well, subject only to semantic/pragmatic conditions. For instance, our common knowledge may tell us that, for a given possession relation, usually an object is owned by one owner. So when more than one PossP appear within an NP, they correspond to different possession relations with the head noun. For example, in (17) the translation given interprets the first possessor Zhangsan as the owner of the (physical) book but the second possessor Lisi as the copyright owner. (Li wrote the book so he owns the copyright.) Similarly in (25), two kinds of possession relation are suggested, one being a

temporary owner (because he is holding the pencil) and another being the permanent owner (because he bought it).

- (25) Zhāngsān de Lìsì de nà zhī qiānbǐ
Zhangsan DE Lisi DE that CL pencil
a) 'the pencil that Zhangsan has which belongs to Lisi'
b) 'the pencil that Lisi has which belongs to Zhangsan'

So far we have seen examples that can have only one classifier in each NP. If iterability is one of the properties of adjuncts, the non-repeatability of CIP's may seem to pose a problem for my analysis. To deal with this, again, I resort to semantic considerations. For instance, I suggest that the limited number of CIP occurrences is due to the agreement between the head noun and the classifier compound. If more than one classifier appears within a single NP, it is very likely to cause agreement feature conflicts, due to the high sensitivity of the head noun towards selection of classifier (See Sections 3.4 and 3.5 for further discussion).

3.3. Complements in NP

Is there any head-complement structure within a Chinese noun phrase? There appears to be. Consider the following examples.

- (26)a. yī bù yǔyánxué de zhùzuo
one CL linguistics DE work
'a piece of work on linguistics'
b. *yǔyánxué de yī bù zhùzuo
linguistics DE one CL work
- (27)a. yī zhāng cǎisè de zhàopiàn
one CL multi-color DE photo
'a color photo'
b. *cǎisè de yī zhāng zhàopiàn
multi-color DE one CL photo
- (28)a. yī cì jīngjì de tāolùnhuì
one CL economy DE discussion-meeting
'a conference on the economy'
b. *jīngjì de yī cì tāolùnhuì
economy DE one CL discussion-meeting

The fact that the noun phrases after CIP and before the head noun in the (a) expressions in the above examples cannot switch position with the CIP's shows that these phrases do not have the same syntactic status as CIP's. The fact that they can only occur between CIP and the head noun suggests that they are lower in the structure and hence have a closer relation with the head noun. I

have already argued that CIP is an adjunct which combines with N' to form another N'. Then the noun phrase between CIP and the head noun should be something that combines with the head noun (N⁰) to form an N'. This relation in my framework is the head-complement structure licensed by (20c).

Second, the phrases that can combine with the head noun, according to my investigation, turn out to be those that are subcategorized for by the head noun. That is, the relation between the head noun and the noun phrase is very idiosyncratic. For instance, in (26a), the fact that *yǔyánxué* 'linguistics' has an idiosyncratic relation with the head noun *zhùzuò* 'works' is because the entities denoted by the nouns such as *zhùzuò* 'works' are understood to have some content and *yǔyánxué* 'linguistics' can denote this content. This 'about' relation can only exist with nouns like *zhùzuò* 'works', *xiǎoshuō* 'novel', and *gùshi* 'story'. Other nouns such as *qiānbǐ* 'pencil' and *yǐzi* 'chair' can not have the same kind of complements. This is analogous to English noun phrases such as *story about* NP, where there is a fixed idiosyncratic meaning relationship between the head noun *story* and the NP: the relation of a story and its contents.

Thirdly, unlike an RC or PossP, the noun phrases discussed here are not repeatable within the same NP. Thus the following examples are meaningless.

- (26)c. *yī bù yǔyánxué de wǔlǐ de zhùzuò
 one CL linguistics DE physics DE work
- (27)c. *yī zhāng cǎisè de hóngsè de zhàopiàn
 one CL multi-color DE red-color DE photo
- (28)c. *yī cì jīngjì de zhèngzhì de tāolùnhuì
 one CL economy DE politics DE discussion-meeting

The non-repeatability of the same kind of noun phrases shows that they behave just like complements.

In his dissertation, Dai 1992 claims that some noun-noun sequences are actually compounds. That is, the noun (phrases) have actually been incorporated into the head nouns. The noun phrases that can be incorporated into the head nouns in his analysis are mostly those that are treated as complements in our analysis. The difference between our complement-head sequence (not a word) and Dai's noun-noun compounds is that our complement noun phrases always bear a complement marker *de* while Dai's compounds do not have this marker. This difference is actually one of Dai's

criteria in distinguishing (compound) words from phrases.⁹ The fact that the noun (phrases) in (26)-(28) can have the option of being incorporated into the head nouns (dropping the complement marker *de*) also shows that these noun phrases indeed have closer relation with their head nouns.

- (29) *yī bù yǔyánxué-zhùzuo*
 one CL linguistics-work
 'a piece of work on linguistics'
- (30) *yī zhāng cǎisè-zhàopiàn*
 one CL multi-color-photo
 'a color photo'
- (31) *yī cì jīngjì-tǎolùnhuì*
 one CL economy-discussion-meeting
 'a conference on economy'

Based on the semantic and syntactic relations discussed above, I believe that my distinction between adjuncts and complements for prenominal phrases is correct. That is, some noun phrases with the marker *de* are complements, while CIP's, RC's, and PossP's are adjuncts. This distinction will help us solve the following puzzle.

- (32) *nà běn Zhāngsān de shū*
 that CL Zhangsan DE book
 a. 'that book of Zhangsan's'
 b. 'the book about Zhangsan'
- (33) *Zhāngsān de nà běn shū*
 Zhangsan DE that CL book
 a. 'that book of Zhangsan's'
 b. *'that book about Zhangsan'

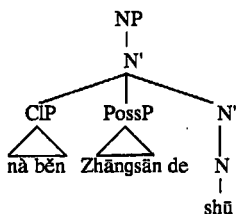
In (32) the phrase *Zhāngsān de* is between the CIP and the head noun. There are two possible structures that can be assigned to it: one being an adjunct as in (34a)¹⁰ meaning 'that book of Zhangsan's' and another being a complement as in (34b) meaning 'the book about Zhangsan'.

⁹ Actually Dai's incorporated nouns cannot be full phrases, while our complement nouns are full phrases. The following examples show this.

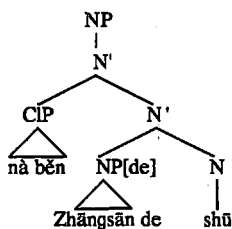
- (i) *yī-bù nà wǔ-wèi lièshi de xiǎoshuō*
 one-CL that five-CL martyr DE novel
 a. 'a novel about the five martyrs.'
 b. 'a novel that belongs to the five martyrs.'
- (ii) **yī-bù nà wǔ-wèi lièshi-xiǎoshuō*
 one-CL that-five-CL-martyr-novel

¹⁰ It is not my intension to assume any preference over the flat structure in (34a). A strictly binary tree will serve the same purpose here.

(34)a.

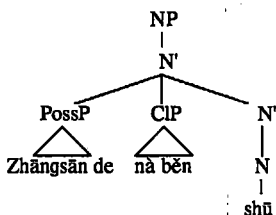


b.



However, (33) is not ambiguous because the phrase *Zhāngsān de* appears before the CIP and there is only one possible structure to assign to it. This is shown as (35).

(35)



That is, since the CIP is necessarily an adjunct, the PossP to its left must also be an adjunct.

3.4. Classifier Phrase and Agreement

Although Tang's KP Hypothesis has some difficulties, her treatment of the numeral-classifier sequence as being under the same lexical head K is worthy of note. She does not make clear why the numeral and the classifier must be under a single lexical node, nor does she explain how this treatment should be interpreted. In this subsection I will take up this question and give evidence to show that numeral-classifier sequence should be treated as a compound word.

The first piece of evidence comes from the fact that a numeral and a classifier always act as a

single unit. Nothing can be inserted syntactically to separate the two.¹¹

- (36) a. sān zhī Lìsì de qiānbǐ
three CL Lisi DE pencil
'Lisi's three pencils'
- b. *sān Lìsì de zhī qiānbǐ
three Lisi DE CL pencil
- c. *sān de zhī Lìsì de qiānbǐ
three DE CL Lisi DE pencil
- d. Lìsì de sān zhī qiānbǐ
Lisi DE three CL pencil
'Lisi's three pencils'

The second piece of evidence comes from universal tendency. Rijkhoff 1990 has surveyed more than a dozen classifier languages and found that all of them, without a single exception, have inseparable numeral-classifier or classifier-numeral sequences. Thus the closeness of numeral and classifier in Chinese is not an accident.

11 There are some apparent counterexamples to this claim, as is shown in the following.

- (ia) yī zhuō kèrén
one CL guest
'guests that can fulfill a (dinner) table'
- b) yī dà zhuō kèrén
one big CL guest
'guests that can fulfill a big (dinner) table'
- (iia) yī wǎn shuǐ
one CL water
'a cup of water'
- b) yī xiǎo wǎn shuǐ
one small CL water
'a small cup of water'

To explain this, we must understand that there are two kinds of classifiers in Chinese. One is the permanent classifier, which has no other function but denoting the 'shape' (see Footnote 13) of objects, like *wèi* (denoting a (respected) person) and *pí* (denoting a horse). The other is the temporary classifier, which is originally used as a noun, like *zhuō* (a (dinner) table) and *wǎn* (a cup). Usually, the permanent classifiers do not allow any modifiers.

- (iii) yī (*dà/*xiǎo) wèi xuéshēng
one big/small CL student

Since most temporary classifiers were originally used as nouns, I suppose that they are borrowed either from simple nouns like *wǎn* and *zhuō* or from already compounded nouns like *dà-zhuō* and *xiǎo-wǎn*. See Section 3.3 and Dai 1992 for discussion of how Chinese compounds are treated.

A third piece of evidence can be seen from the agreement facts. It is generally true that the head noun in Chinese agrees with the numeral¹² and with the classifier in 'shape'¹³ or 'kind', as the following examples suggest.

- (37)a. yī gè hái zi
 one CL kid
 'a kid'
- b. *yī gè hái zimen
 one CL kids
 *'a kids'
- c. *yī běn hái zi
 one CL kid
- d. wǔ gè hái zi/hái zimen
 one CL kid/kids
 'five kids'

However, when the classifier is plural in nature such as *qún* 'flock', then even if the numeral is singular *yī* 'one', the head noun has to denote a plural entity although it does not have to be morphologically marked.

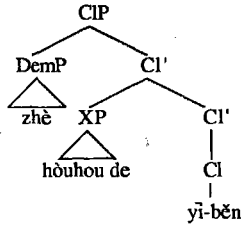
- (38) yī qún hái zi/hái zimen
 one CL kid/kids
 'a group of kids'

This suggests that any attempt to relate number agreement solely to the numeral would run into serious problems. However, this will present no difficulties if we treat numeral and classifier sequence as a compound since then the compound as a single unit will be responsible for both agreement features. I will abbreviate the numeral-classifier compound as Cl. I will treat the demonstratives as the specifier of CIP. Thus a classifier phrase will take the form in (39).

- (39) zhè hòuhou de yī-běn
 this thick-thick DE one-CL
 'this very thick (book)'

¹² Note that in Chinese only personal nouns have the option of using the overt plural marker *men*.

¹³ I borrow this term from Allen 1977 and Chin 1991. Note that not all agreement between the classifier and the head noun can be denoted by the literary meaning of 'shape'. Especially, the permanent classifiers are chosen arbitrarily. So the term 'shape' should not be taken literally, but understood to refer to a special agreement found in classifier languages.



I have already claimed that CIP is an adjunct to N'. Therefore the agreement between the CIP and the head noun can be captured by the head feature MOD on the classifier, as is shown by the following example of *yī-tiáo*.

- (40) $\left[\begin{array}{l} \text{PHON } \langle \text{yī-tiáo} \rangle \\ \text{SYNSEMILOCALICATIHEAD } \text{Cl}[\text{MOD } \text{N}[\text{NUM } \text{sing, SHAPE } \text{tiáo}]] \end{array} \right]$

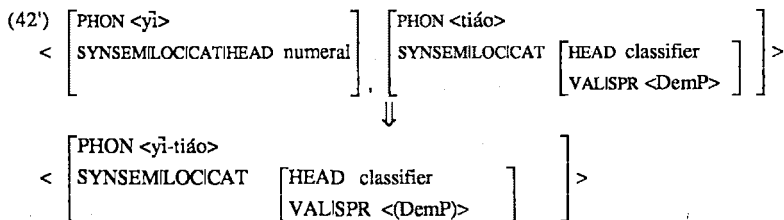
We must also note here that our CIP analysis has some other advantages over Tang's. Recall that Tang 1990 treats demonstratives as the head of DP, which subcategorizes for a KP. The difficulty in her analysis is how her structure can guarantee the presence of a demonstrative when the numeral is absent in the head K. Note that a classifier cannot modify the head noun by itself, as is shown in (6) and the following.

- (41) *Zhāngsān de zhǐ qiānbǐ
Zhangsan DE CL pencil

In my analysis, demonstratives are treated as specifier of CIP, which means that the presence of demonstratives is dependent on the presence of the head classifier. My treatment of numeral-classifier sequences as compounds makes it possible to specify when the specifier is obligatory. This can be achieved by a compounding rule such as (42), where the classifier head, before it is compounded with a numeral, must look for a specifier in order to project to its maximal projection.

- (42) $\left\langle \left[\begin{array}{l} \text{PHON } [1] \\ \text{SYNSEMILOCALICATIHEAD } \text{numeral} \end{array} \right], \left[\begin{array}{l} \text{PHON } [2] \\ \text{SYNSEMILOCALICAT } \left[\begin{array}{l} \text{HEAD } \text{classifier} \\ \text{VALISPR } \langle \text{DemP} \rangle \end{array} \right] \end{array} \right] \right\rangle$
 \Downarrow
 $\left\langle \left[\begin{array}{l} \text{PHON } \text{append}([1],[2]) \\ \text{SYNSEMILOCALICAT } \left[\begin{array}{l} \text{HEAD } \text{classifier} \\ \text{VALISPR } \langle (\text{DemP}) \rangle \end{array} \right] \end{array} \right] \right\rangle$

The instantiation of the compounding rule with the lexical entry *yī-tiáo* is illustrated in (42') below.



3.5. Other Prenominal Modifiers.

Besides RC's, PossP's, and CIP's, there are other prenominals in Chinese, the properties of which need to be discussed. In this subsection, I will first discuss how adjective phrases (AP's) are treated. Then I will consider the necessity of distinguishing CIP's from measure phrases (MP). Finally, I will show that prenominal MP's can also be treated as RC's.

3.5.1. Adjective Phrases

Adjective phrases (AP's) behave differently from their English counterparts in that they can function as predicates of main clauses, while in English they must cooccur with a linking verb. Thus the English sentences in (a) and the Chinese sentences in (b) are acceptable, while the exact counterparts of (b) in English, shown as (c), are bad.

- (43)a. Mary is very pretty.
 b. Mǎlǐ hěn piàoliàng.
 Mary very pretty
 'Mary is very pretty.'
 c. *Mary very pretty.
- (44)a. John is extremely brave.
 b. Zhāngsān fēicháng yǒnggǎn.
 Zhangsan extremely brave
 'Zhangsan is extremely brave.'
 c. *John extremely brave.

That Chinese AP's can function as main predicates is also supported by the fact that they can be suffixed with aspect morphemes¹⁴ such as the perfective marker *-le* (Gao 1993a and 1993b) and the experiential marker *-guo* (Li and Thompson 1981).

¹⁴ But adjective predicates usually do not take the durative marker *-zhe*. This is because adjectives denotes states, not activities. Stative verbs such as *zhīdào* 'know' and *xǐhuān* 'like' do not take *-zhe*, either.

- (45) Fēngyè hóng-le.
maple-leaf red-LE
'The maple leaves have turned red.'
- (46) Lìsì gāoxìng-guo.
Lisi happy-GUO
'Lisi was once happy.'

Thus the adjectives in the above examples behaves just like intransitive verbs. When adjectives are used as prenominal modifiers, they also behave like verbs: they are marked by the relativizer *de* and may take aspect markers.

- (47)a. hěn piàoliàng de yī-wèi gūniang
very pretty DE one-CL girl
'a very pretty girl'
- b. yī-wèi hěn piàoliàng de gūniang
one-CL very pretty DE girl
'a very pretty girl'
- (48)a. hóng-le de jǐ-piàn fēngyè
red-LE DE several-CL maple-leaf
'several maple leaves that have turned red'
- b. jǐ-piàn hóng-le de fēngyè
several-CL red-LE DE maple-leaf
'several maple leaves that have turned red'

On the basis of such facts, I follow Sproat and Shih 1990 in treating the marker *de* as the same relativizer as that heads an RC. That is, prenominal AP's with *de* are taken to be RC's.

3.5.2. Measure Phrases

In the literature of Chinese grammar, classifiers are often conflated with measure words such as *bàng* 'pound' and *jīn* 'jin'¹⁵. Chao 1968 uses the term "measure phrase" to encompass both. Li and Thompson 1981 assume that measure words are used as classifiers when they are followed by other nouns; on this view, in prenominal positions, CIP's subsume measure phrases (MP's). Tai and Wang 1990 have made an attempt to identify semantic differences between CIP's and MP's. They propose that while a CIP categorizes an object, an MP simply measures an object. Their examples include *yī-bàng* 'one-pound' as an MP and *yī-kuài* 'one-piece' as a CIP. The reason for the distinction is basically that while a CIP is very sensitive to the nouns it can co-occur with, an MP is free in this respect. Thus, we can use *yī-bàng* 'one-pound' to measure *tiě* 'iron', *shāzi*

¹⁵ *Jin* is the most commonly used weight measurement in mainland China. It is equal to 500 grams.

'sand', *pīngguǒ* 'apple', and *miánhuā* 'cotton' as in *yī-bàng tiě* 'a pound of iron', *yī-bàng shāzi* 'a pound of sand', *yī-bàng pīngguǒ* 'a pound of apple', and *yī-bàng miánhuā* 'a pound of cotton'. But we have to use different classifiers for these objects as in *yī-kuài tiě* 'a piece of iron', *yī-lǐ shāzi* 'a grain of sand', *yī-gè pīngguǒ* 'an apple' *yī-tuán miánhuā* 'a ball of cotton'. For instance, we cannot say **yī-tuán pīngguǒ* 'a ball of apple', nor can we say **yī-lǐ tiě* 'a grain of iron'.

I will follow Tai and Wang in distinguishing CIP's and MP's. The semantic distinctions, when translated into the HPSG framework, are captured by agreement features. For CIP's, the MOD feature will ensure that the CIP values matches the head noun values. For MP's, on the other hand, the MOD feature is unspecific; thus they are free to modify any head noun as long as the expressions are pragmatically interpretable. In what follows, I will provide more data and discuss in detail the syntactic differences between CIP's and MP's.

It has sometimes been suggested that one of the syntactic properties of MP's is the optional insertion of *de* after the numeral-measure word sequence (e.g., Tai 1993). Thus *sān-tiáo* in (49) is a CIP while *sān-jīn* in (50) is an MP.

(49) *sān-tiáo* (**de*) *yú*
 three-CL DE fish
 'three fish'

(50) *sān-jīn* (*de*) *yú*
 three-jīn DE fish

It should be noted that *sān-jīn yú* and *sān-jīn de yú* have different interpretations: *sān-jīn yú* means three *jīn* of fish, while *sān-jīn de yú* means a fish that weighs three *jīn* (or fish that weigh three *jīn* each). Likewise, Chao 1968 points out that *sān-jīān fángzi* has a different meaning than *sān-jīān de fángzi*. In some dialects of Chinese, *sān-jīān fángzi* denotes three rooms, which are not necessarily in the same house. (They may be in the same house, but that house does not necessarily have only three rooms.) In other dialects, it simply means three (single-room) houses. However, in almost all dialects, *sān-jīān de fángzi* refers only to a house with three rooms (or houses with three rooms each). Therefore I propose that an MP is a numeral-measure word sequence followed by *de*.

Recall that earlier in this subsection I discussed the acceptability of *sān-jīn tiě* 'three *jīn* of iron', *sān-jīn shāzi* 'three *jīn* of sand', *sān-jīn pīngguǒ* 'three *jīn* of apple', and *sān-jīn miánhuā* 'three *jīn* of cotton'. But we must also note that expressions like **sān-jīn zhuōzi* 'three *jīn* of table' and **sān-jīn chuáng* 'three *jīn* of bed' are unacceptable. This is simply because *sān-jīn* is a mass (as opposed to a count) CIP. However, if *de* is used with *sān-jīn*, an MP is formed. In accordance with the semantic criteria for MP proposed by Tai and Wang, *sān-jīn de* should be able to freely measure other nouns. This prediction is borne out.

- (51) sān-jīn de zhuōzi
 three-*jīn* DE table
 'a table that weighs three *jīn*' (or 'tables that weigh three *jīn* each')
- (52) wū-jīn de chuáng
 five-*jīn* DE bed
 'a bed that weighs five *jīn*' (or 'beds that weigh five *jīn* each')

Having delimited the form of MP's, I now turn to other syntactic differences between CIP's and MP's. We have noted that CIP's may take demonstratives.¹⁶ MP's, however, do not. This is shown in the following, where the (a) examples have CIP's while the (b) examples have MP's.

- (53)a. zhè sān-tiáo yú
 this three-CL fish
 'these three fish'
- b. *zhè sān-bàng de yú
 this three-pound DE fish
- (54)a. zhè sān-jīn yú
 this three-CL fish
 'these three *jīn* of fish'
- b. *zhè sān-jīn de yú
 this three-*jīn* DE fish

Third, it is always possible to use an adjective before or after an MP that specifies in which respect the head noun is measured by the MP. For instance, *sān-jīn de* measures weight, thus the adjective *zhòng* 'heavy' can be used with *sān-jīn*. *Sì-mǐ de* measures length, thus *cháng* 'long' can be used with it.

- (55)a. *sān-jīn zhòng yú or *zhòng sān-jīn yú
 three-CL heavy fish heavy three-CL fish
- b. sān-jīn zhòng de yú or zhòng sān-jīn de yú
 three-CL heavy DE fish heavy three-CL DE fish
 'a fish that weighs three *jīn*' ('fish that aweigh three *jīn* each')
- (56)a. *sì-mǐ cháng bù or *cháng sì-mǐ bù
 four-CL long cloth long four-CL cloth

¹⁶ During the presentation of this section in a Chinese Syntax Seminar at OSU, some colleagues gave the following example.

- (i) zhè sān-zhuō de kèrén
 this three-table DE guest

While I agree this is a well-formed phrase, I must point out that *zhè sān-zhuō de* in (i) does not denote measurement at all. Instead, it is used as a PossP meaning (the guests) that belong to/sit at these three tables.

- b. sì-mǐ cháng de bù or cháng sì-mǐ de bù
 four-meter long DE cloth long four-meter DE cloth
 'a piece of cloth that is four meters long' (pieces of cloth that are four meters long each')

Fourth, a CIP generally does not cooccur with another CIP within the same NP, but it is always possible for an MP to occur side by side with a CIP within a single NP.

- (57)a. *zhè tiáo sān-jīn yú
 this CL three-CL fish
- b. zhè tiáo sān-jīn de yú
 this CL three-*jīn* DE fish
 'this fish that weighs three *jīn*'
- c. zhè tiáo zhòng sān-jīn de yú
 this CL heavy three-*jīn* DE fish
 'this fish that weighs three *jīn*'
- d. zhè tiáo sān-jīn zhòng de yú
 this CL three-*jīn* heavy DE fish
 'this fish that weighs three *jīn*'
- (58)a. *zhè kuài sì-mǐ bù
 this CL four-CL cloth
- b. zhè kuài sì-mǐ de bù
 this CL three-meter DE cloth
 'this piece of cloth that is four meters long'
- c. zhè kuài cháng sì-mǐ de bù
 this CL long three-meter DE cloth
 'this piece of cloth that is four meters long'
- d. zhè kuài sì-mǐ cháng de bù
 this CL three-meter long DE cloth
 'this piece of cloth that is four meters long'

Finally, MP's can serve as predicates¹⁷ while this use is impossible for CIP's. Thus in (57) and (58) where we have CIP's as well as MP's, only the MP's can be put in a post-NP position¹⁸ to serve as predicates. This is shown in the following examples.

¹⁷ This claim is also supported by the fact that some predicate MP's can be followed by sentence final particle *-le* when change of state is involved. This particle is present even when these MP's are used pronominally.

- (i) Zhè jǐ-gè xiǎoháir yǐjīng sān-suì le.
 this several-CL kid already three-year LE
 'These few kids are already three years old.'
- (ii) Zhè jǐ-gè yǐjīng sān-suì le de xiǎoháir.
 this several-CL already three-year LE DE kid
 'These few kids who are already three years old.'

- (59)a. *Sān-jīn de yú zhè tiáo.
three-*jin* DE fish this CL
- b. Zhè tiáo yú sān-jīn.
this CL fish three-*jin*
'This fish weighs three *jin*.'
- c. Zhè tiáo yú sān-jīn zhòng.
this CL fish three-*jin* heavy
'This fish weighs three *jin*.'
- d. Zhè tiáo yú zhòng sān-jīn.
this CL fish heavy three-*jin*
'This fish weighs three *jin*.'
- (60)a. *Sì-mǐ de bù zhè kuài.
four-meter DE cloth this CL
- b. Zhè kuài bù sì-mǐ.
this CL cloth four-meter
'This piece of cloth is four meters long.'
- c. Zhè kuài bù cháng sì-mǐ.
this CL cloth long four-meter
'This piece of cloth is four meters long.'
- d. Zhè kuài bù sì-mǐ cháng.
this CL cloth four-meter long
'This piece of cloth is four meters long.'

The above discussion shows that it is not only necessary to distinguish MP's from CIP's, it is also possible to distinguish them syntactically. It is very interesting to note the use of MP's as predicates. As examples in (57)-(60) show, when MP's are used as predicates, no marker *de* is necessary. But when they appear in prenominal positions, *de* is always used. This shows that MP's behave just like AP's (see Subsection 3.5.1.). Therefore, it is reasonable that the marker *de* after prenominal MP's be treated as a relativizer that heads a RC which contains a predicate MP and a gap in the subject position.

To summarize, I have shown in this section that CIP's can be distinguished from MP's in that in a prenominal position, CIP's do not bear the marker *de* while MP's always do. In addition,

-
- (iii) Yǐjīng sān-suì le de zhè jǐ-gè xiǎoháir.
already three-year LE DE this several-CL kid
'These few kids who are already three years old.'

¹⁸ Only under one circumstance can CIP's appear in post-NP positions. This is when items are read from a list by shop clerks (see Chao 1968 for discussion). However, this post-NP use does not necessarily make the CIP's predicates. For instance, in such cases, no sentence final particles are possible.

MP's behave like AP's in that they both can be used as predicates and need the marker *de* when appear in prenominal positions. Therefore, I will treat prenominal AP's and MP's as RC's with the marker *de* as the relativizer in both cases.

4. An Alternative Analysis

As we have seen in the previous section, the proposed analysis can solve the problems raised by Tang's KP analysis. However, difficulties still remain. Recall that the analysis in Section 3 limits the possible number of CIP's in a single Chinese noun phrase based on semantic considerations. One difficulty with this approach is that sometimes a single noun is compatible with more than one classifier. In cases like this, semantic considerations alone may not be able to rule out the possibility of more than one classifier modifying a single head noun. In most cases, however, these structures turn out to be ungrammatical. For instance, *xiǎoshuō* 'novel' may take either *bù* or *běn* as in *yī-bù xiǎoshuō* 'a novel' or *yī-běn xiǎoshuō* 'a novel'; *xuéshēng* 'student' may be modified by either *wèi*, *míng*, or *gè* as in *zhè-wèi xuéshēng* 'a student', *zhè-míng xuéshēng* 'a student', or *zhè-gè xuéshēng* 'a student'. But as (61) and (62) show, a single noun usually does not take more than one classifier.

(61) **yī-bù yī-běn xiǎoshuō*
 one-CL one-CL novel

(62) **zhè wèi zhè míng zhè gè xuéshēng*
 this CL this CL this CL student

The purpose of this section is to explore another alternative to solve the CIP problem.

In the proposal in Section 3.2, I did not make use of the Head-Specifier Schema in a Chinese noun phrase. In the alternative analysis in this section, I am going to treat CIP as the specifier of NP. Since each NP can have at most one specifier, we are guaranteed that no more than one CIP will be found in a single NP. Thus we can avoid the difficulties pointed out above with relying on semantic considerations to restrict the occurrence of CIP's in Chinese noun phrases. In this analysis, agreement can be mediated by the head feature SPEC on the head classifier. The example of *yī-tiáo* in (40) is then revised as (63) below.

(63) [PHON <yī-tiáo>
 [SYNSEMILOCALICATIHEAD_{CL}[SPEC N'[NUM sing, SHAPE tiáo]]]

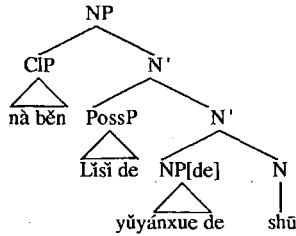
The difference between (41) and (63) is that the former is an agreement between modifier and head and the latter is between specifier and head. Both are commonly found in natural languages.

For this to work, a second Head-Adjunct Schema must be added to the Schemata in (20) in order to allow adjunction to XP, as shown in (64):

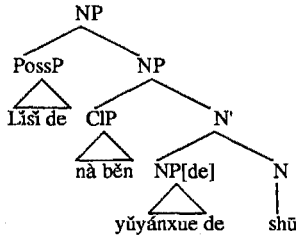
- (64) Head-Adjunct Schema 2: XP --> YP[MOD [1]], [1] XP
 ADJUNCT HEAD

Correspondingly, adjuncts such as RC's or PossP's must have the option of modifying either an N' or an NP, depending on whether the adjuncts appear after the CIP or before the CIP, as the following examples show.

- (65)a. *nà běn Lǐsǐ de yǔyánxue de shū*
 that CL Lisi DE linguistics DE book
 'the book on linguistics that belongs to Lisi.'



- b. *Lǐsǐ de nà běn yǔyánxue de shū*
 Lisi DE that CL linguistics DE book
 'the book on linguistics that belongs to Lisi.'



Although Tang 1990 assumes that (65a) and (65b) have the same meaning, her observation, I believe, is correct only when we consider the truth conditions of the two expressions. As the structures show, the difference between (65a) and (65b) is one of scope: *Lǐsǐ de* 'Lisi's' in (65a) is inside the specifier (=CIP), thus it only has a narrow scope reading, which is equivalent to an English restrictive relative. Following Sproat and Shi 1990, I give the interpretation as (65a').

- (65)a'. [this x | linguistics-book(x) & possess'(lisi, x)]

On the other hand, (65b) shows that *Lìsì de* 'Lisi's' is outside the CIP and we get the interpretation that is parallel to an English nonrestrictive relative, as is shown in (65b').

(65)b'. [this x | linguistics-book'(x)] & possess'(lisi, x)

Therefore, (63a) is felicitous if the CIP picks out a book from a set of linguistics books which belong to Lisi; (63b) is felicitous if the CIP picks out a book from a set of linguistics books and that book belongs to Lisi.

From the discussion above, I conclude that the different structures in (65) are motivated because they capture the different felicity conditions associated with the different orders.

Although the alternative analysis, which resorts to syntactic means to limit the number of CIP occurrences in a single NP to one, can solve the problem raised at the beginning of this section, the following examples may appear to be problematic:

- (66) Mǎi mǎi-le wū-dǎ liùshí-zhī qiānbǐ sònggei tā de xuéshēng.
Mary buy-LE five-CL sixty-CL pencil send-give she DE student
'Mary bought five dozen, that is, sixty pencils to give to her students.'
- (67) Tāmen gòng jìngxíng-le sān-lún shíwǔ-chāng bǐsài cái fēngchū shèngfù.
they all undergo-LE three-CL fifteen-CL match then find-out win-lose
'The result came only after they had fifteen matches of competition in three rounds.'
- (68) Tāmen jiéhūn de nà tiān zhǐ qǐng-le sān-zhuō èrshísì-wei kèrén.
they marry DE that day only invite-LE three-CL twenty-four-CL guest
'On the day when they got married, they invited only twenty-four guests who filled three (dinner) tables.'

In these sentences we seem to find two classifier phrases within a single NP. If each of the two classifiers has its own maximal projection, that is, CIP, then this will pose a problem for a specifier CIP analysis, since a specifier position can host only one CIP. Thus the facts in (66)-(68) seem to suggest that the adjunct analysis of CIP's should be preferred.

This is not really a problem, however. In all the examples where two CIP's occur within a single NP, the two CIP's must be adjacent to each other, suggesting that the second CIP may be treated as appositive to the first one. This suggestion is supported by the fact that it is always possible to insert between the two CIP's expressions like *yě jiùshì* 'that is (to say)'. Thus (68) can also be paraphrased as (68').

- (68') Tāmen jiéhūn de nà tiān zhǐ qǐng-le sān-zhuō, yě jiùshì èrshísì-wei kèrén.
they marry DE that day only invite-LE three-CL also that-is twenty-four-CL guest
'On the day when they got married, they invited only twenty-four, that is, three tablefuls of, guests.'

5. Conclusion

We have discussed two possible solutions within the HPSG framework for the Chinese noun phrase structures. The difference between the two approaches is centered on the ways of dealing with CIP's. In Section 3, semantic considerations were utilized to limit the possible CIP occurrences within a single NP to one. However, as I later showed, these semantic considerations seem to be too weak. In Section 4, I suggested that CIP's be treated as specifiers. Since each NP only allows one specifier, the occurrences of CIP's in a single NP is limited to one through syntactic means. The specifier-CIP analysis has thus avoided the difficulties raised by the adjunct-CIP analysis.

Another advantage of the specifier-CIP analysis is that it simplifies the account of agreement in Chinese NP structures. Recall that Section 3 treats CIP's as adjuncts on a par with RC's and PossP's. Although agreement between adjuncts and the head nouns is not hard to find in the world's languages, it is still not clear why in Chinese only one kind of adjunct must agree with its head noun. On the specifier-CIP analysis, we need simply assure that Chinese has agreement only between specifiers and head nouns. This is clearly shown when we compare CIP's with MP's discussed in Section 3.5.2.

Therefore I conclude that the syntactic approach suggested in Section 4 is to be preferred in dealing with the CIP problem.

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