

Modifier Licensing and Chinese DP: A Feature Analysis^{*}

Chih-Chen Jane Tang

Academia Sinica

In Chinese languages like Mandarin, without overt determiners and articles, the presence of a pre-numeral, not post-numeral, modifier may obligatorily result in the specific reading of the noun phrase. These and other distributional and referential properties of Mandarin modifiers may be accounted for under an assumption that the features associated with non-specific indefiniteness and definiteness/specificity may be split into two distinct functional heads D and F, each of which may license different kinds of modifiers and may be checked at LF by an operation of covert movement of nominal expressions marked with the relevant feature. An account along this line of thought may not only capture the co-occurrence restrictions between various types of Chinese modifiers and demonstratives, numerals, classifiers, nouns; it may also explain the referential distinctions between Mandarin and Cantonese noun phrases. Three implications may be found with such an analysis: in Chinese, (a) only the lexical category N, which denotes the entity, and functional heads like D and F, which may be associated strictly with the reference interpretation of the entity denoted by N, may license modifiers of certain kinds; (b) the indefinite non-specific non-bare noun phrase may project to a higher functional projection than the definite/specific non-bare noun phrase; and (c) the licensing of an empty D may be more restrictive than the licensing of an empty F.

Key words: definite, specific, non-specific, modifier licensing, feature checking

1. Introduction

In Chinese languages, like in any other languages, the distribution of modifiers is not without restrictions. In Mandarin, for example, a modifier may appear between the

^{*} Parts of this paper were presented at the 2005 Taiwan-Japan Joint Workshop on Austronesian Languages at Taiwan University, the 2005 Linguistics Workshop at Academia Sinica, the 2003 Second Workshop on Formal Syntax and Semantics at Academia Sinica, the 2001 First Workshop on Formal Syntax and Semantics at Chiao Tung University and the 2000-2003 Syntax Seminars at Tsing Hua University. We are grateful to the participants there for their comments, in particular, Min-hua Chiang, Kuang Mei, Suying Hsiao, Jeong-Hyun Lim, Jowang Lin, Ying-chin Lin, Adlay K.-L. Liu, Jackson T.-S. Sun, Ting-chi Tang, Dylan W.-T. Tsai, Pei-chuan Wei, and Niina Zhang.

demonstrative and the numeral or between the classifier and the noun, but not between the numeral and the classifier. In addition to the hierarchical structure of demonstratives, numerals, and classifiers, the location of modifiers within a noun phrase may also interact with the referential interpretation of nouns. In Mandarin, to give an instance, a non-bare noun with a post-numeral modifier may be non-specific or specific in reference, while a non-bare noun with a pre-numeral modifier needs to be interpreted as specific.

To capture these and other relevant distributional and referential properties of Chinese modifiers, it is proposed in this paper that Chinese demonstratives, numerals, and classifiers may be licensed by different features and generated under distinct projections. These features, furthermore, may license the generation of various types of Chinese modifiers.

To determine the optimality of the phrase structure of Chinese nominals, §2 focuses first on the hierarchical structure of demonstratives, numerals, and classifiers. By examining rich-classifier languages like Chinese against non-classifier languages like English and poor-classifier languages like Paiwan, it is shown that, as discussed in Tang (2005a, 2005b, 2006a), in all these three types of languages the licensing of the functional projection of the demonstrative need not require the presence of the numeral and the classifier and that the demonstrative may overtly or covertly agree with the numeral or classifier in morphological, syntactic, or semantic feature. The demonstrative in Chinese thus may not be necessarily analyzed as Spec element of the quantifier or classifier phrase, the latter of which may in turn be located in the Spec of DP or NP (cf. J. Huang 1982, Lin 1997, Cheng & Sybesma 1998, Hsieh 2005).

As an alternative, it is posited in §2 that the demonstrative may be treated as being licensed by the [+referential] feature of the F head of a functional projection FP that is in turn dominated by DP and, depending on its morphological and syntactic behavior, the demonstrative may be generated as adjunct, Spec, or head of this FP projection. In the case of English and Chinese, for example, the demonstrative may be generated as Spec element of FP (cf. Tang 1990, Li 1998, Bernstein 1997, and Bruge 2002, among others). In the case of Paiwan, by comparison, demonstratives may be projected as adjuncts or heads of FP.

Under this hypothesis, in Mandarin the feature matching between the demonstrative and its licensing head may be done via a Spec-head agreement relation and the relevant feature checking among the demonstrative, quantifier, classifier, and noun may be done via a head-to-head or Spec-to-Spec covert movement at LF (see also the discussion in §5).

Similar asymmetrical distributions may also be found in languages like Chinese with the interaction between the quantifier and the classifier, a fact that also argues for a claim that neither the quantifier nor the classifier needs to license the other. By contrast, the quantifier and the classifier may be projected as adjunct, Spec or head of

their licensing heads Num and Cl, respectively, the maximal projections of which may be projected between FP and NP. In the case of Mandarin, for instance, numerals and classifiers may be generated as Spec of NumP and ClP, respectively.

Before turning to §4 and §5 for a discussion of the features and conditions relevant to the licensing of Chinese modifiers, however, one more question needs to be answered with respect to the functional projections of the nominal. That is, do Chinese modifier markers like Mandarin *de* need to be realized as D in the sense of Li (1985, 1990) or Simpson (1997, 2001)? By examining the diachronic and synchronic properties of the syntax and semantics of modification markers like *de* in Chinese, it is suggested in §3 that, as pointed out in Tang (2003), these markers need not be treated as genitive marker (as in Li 1985, 1990), nor as determiner (as in Simpson 1997, 2001).

Alternatively, as stated in Tang (1990, 1993), such markers may be analyzed as heading a functional projection that expresses the modification relation. In addition to the problems with a determiner analysis of Mandarin *de*, it is also pointed out in §3 that an anti-symmetric account of Mandarin relative clauses as in Simpson (1997, 2001), for instance, may face problems concerning the phrase structure of the demonstrative-numeral-classifier sequence, the distributional variation of the modifier and the attributive/predicative nature of the modifier.¹

With respect to the posited features [–definite], [+referential], [α plural], [α sortal], and [α count] in D, F, Num, Cl, and N, respectively, it is claimed in §4 that in Chinese-type languages [α plural] and [α sortal] may only license quantificational and sortal/mensural types of modifiers, which may capture the fact that in Chinese no modifier may intervene between the numeral phrase and the classifier phrase. In other words, in Chinese only the lexical category N, which denotes the entity, and functional heads like D and F, which may be associated strictly with the reference interpretation of the entity denoted by N, may license modifiers of other kinds.

It is also pointed out in §4 that while there appear Chinese modifiers licensed by D or N as well as F or N, there exist no Chinese modifiers licensed by D or F, due to the fact that a noun cannot be both indefinite non-specific and definite/specific in reference. A feature analysis of modifier licensing along the lines of Travis (1988) and Tang (1990, 2001) may not only account for the various kinds of the distribution of Chinese modifiers but also explain the different referential properties denoted by these modifiers.

Section 5 concludes this paper by suggesting for further research two typological variations in the functional projections of nominals. In languages like Chinese, without

¹ See Tang (2001) for a discussion of the problems with Alexiadou's (1997) and Cinque's (1999) specifier analyses of Mandarin adjuncts. For a discussion of the arguments against Kayne's (1994) anti-symmetric analysis of adjuncts in languages like English, see, for instance, Ernst (2002).

overt determiners and articles, the indefinite non-specific non-bare noun phrase may project to a higher functional projection than the definite/specific non-bare noun phrase (cf. Cheng & Sybesma 1999). In addition, the licensing of an empty D may be more restrictive than that of an empty F, though neither of them may be satisfied by an operation of overt movement in syntax (cf. Cheng & Sybesma 1999, Simpson 2001, Hsieh 2005). An account along this line of thought, together with a postulation of distinct morphological marking of the feature [+referential] with Mandarin and Cantonese classifiers and nouns, may capture in a principled way the similarity and difference in referential interpretation between Mandarin and Cantonese noun phrases (see also footnote 47 for a discussion of Southern Min and Hakka).

2. Demonstratives

2.1 Typology

Cross-linguistically while languages may vary with respect to the presence or absence of overt determiners and/or articles, all languages, according to Diessel (1999), exhibit demonstratives. Syntactically, demonstratives may occur in at least four different contexts as in (1a-d) below.

Diessel (1999)

- (1) a. They may be used as independent pronouns in argument positions of verbs and adpositions.
- b. They may appear with a noun in a noun phrase.
- c. They may act as verb modifiers.
- d. They may occur in copular and non-verbal clauses.

In Diessel (1999) demonstratives being used in one of (1a-d) are referred respectively to pronominal, adnominal, adverbial, and identificational demonstratives. It is also shown that different demonstratives may exhibit distinct functions.²

Morphologically, as stated in Diessel (1999), in addition to the bound-free distinction, demonstratives may be inflected or uninflected and they may be inflected for case, gender, or number. Furthermore, pronominal demonstratives are more likely to inflect

² For instance, as discussed in Tang (2005a, 2005b, 2006a), in Formosan languages like Paiwan while *icu* 'this' and *zua* 'that' may act as pronominal and adnominal demonstratives, *sa* may only function as adnominal demonstrative. In languages like Japanese, by contrast, while *ko-re* 'this', *so-re* 'that' and *a-re* 'that' may function as pronominal demonstratives, *ko-no* 'this', *so-no* 'that' and *a-no* 'that' may act as adnominal demonstratives.

than adnominal and identificational demonstratives, which in turn are more often inflected than adverbial demonstratives.

Guugu Yimidhirr sentences like (2a-b), for instance, are cases with demonstratives that may be inflected for case. Note that the demonstrative in (2a) is adnominal in use whereas that in (2b) is pronominal in use.

Guugu Yimidhirr (Diessel 1999)

- (2) a. nhayun nambal bada gada-y iii
 that.abs rock.abs down come-past ...
 ‘That rock dropped . . .’
 b. ngayu nhinaan yiimuun gunda-l.
 1sg.nom 2sg.acc this.instr hit-nonpast
 ‘I hit you with this.’

In Formosan languages like Bunun, to give another example, adnominal bound demonstratives themselves may also be inflected for case.

Bunun (Zeitoun 2000)

- (3) a. 'is'angat mas tina' 'uvaz-a' pandian.
 RF-cook-soup Obl mother kid-that.Nom vegetable
 ‘Mother cooks the soup for that kid.’
 b. 'isubu' tina' baial 'iskaan-tan.
 RF-wrap mother leaf fish-that.Obl
 ‘Mother wraps that fish with the leaf.’

A closer examination of Guugu Yimidhirr (2a) and Bunun (3a-b) seems to indicate that while the double case realization of both the adnominal demonstrative and the noun phrase is observed in Guugu Yimidhirr (2a), the same is not overtly found in Bunun (3a-b). However, according to Elizabeth Zeitoun (personal communication, 2006), case inflected bound demonstratives in Bunun may in fact optionally co-occur with agreeing case markers like nominative 'a' and oblique *mas*.

Bunun

- (4) a. 'is'angat mas tina' ('a') 'uvaz-a' pandian.
 RF-cook-soup Obl mother Nom kid-that.Nom vegetable
 ‘Mother cooks the soup for that kid.’
 b. 'isubu' tina' baial (mas) 'iskaan-tan.
 RF-wrap mother leaf Obl fish-that.Obl
 ‘Mother wraps that fish with the leaf.’

Unlike Bunun, with the possibility of variation in the case marking of adnominal demonstratives, in other Formosan languages like Puyuma they are always marked with oblique case and the whole noun phrases may in turn be inflected for distinct cases.

Puyuma (M. Huang 2000a)

- (5) a. tu-aLak-aw na tiliL kanDini.
 3sg.Gen-PF-take Nom book this.Obl
 ‘He took this book.’
 b. beray=ku Da tilil kanDini.
 AF-give-1sg.Nom Obl book this.Obl
 ‘I gave the man this book.’³

In English-type languages and Chinese-type languages like Mandarin, Southern Min, and Hakka, by comparison, the marking of case and gender is either very limited or covert (cf. Li 1985, 1990). The same may be said about the gender marking of demonstratives in Bunun, Puyuma, Paiwan, and other Formosan languages.

As for the number marking of demonstratives, as already discussed in Tang (2004, 2005a), various ways may be observed. For instance, languages like English may exhibit two different sets of demonstratives *this/that* and *these/those*, each of which is overtly marked for the feature [+/-plural]. The grammaticality contrasts in cases like (6a-b) exemplify this observation.

English

- (6) a. this/that book(*s)
 b. these/those book*(s)

By contrast, in languages like Mandarin, Southern Min, Hakka and Paiwan, for example, demonstratives themselves may not be overtly marked for plurality.⁴

³ By contrast, in other Formosan languages like Paiwan case may be assigned to the whole noun phrase rather than the demonstrative itself.

Paiwan (Tang et al. 1998)

- (i) a. na-v-en-eLi ti kai tua zua a kun.
 Perf-AF-buy Nom Kai Obl that A skirt
 ‘Kai bought that skirt.’
 b. v-in-eLi ni kai a zua a kun.
 PF-buy Gen Kai Nom that A skirt
 ‘That skirt was bought by Kai.’

See Tang (2005b, 2006a) for a discussion of the lexical and structural case properties of demonstratives in Formosan languages.

Mandarin (Tang 2004)

- (7) a. zhe/na (yi) zhi bi
 this/that one CL pen
 'this/that pen'
 b. zhe/na liang zhi bi
 this/that two CL pen
 'these/those two pens'

Southern Min (Tang 2005a)

- (8) a. chit/hit pun chu
 this that CL book
 'this/that book'
 b. chit/hit nng pun chu
 this that two CL book
 'these/those two books'

Hakka (Tang 2005a)

- (9) a. lia/ke tsak sengin
 this that CL kid
 'this/that kid'
 b. lia/ke sam tsak sengin
 this that three CL kid
 'these/those three kids'

Paiwan (Tang 2004)

- (10) a. icu/zua a kun
 this that A skirt
 'this/that skirt'
 b. icu/zua a telu a kun
 this that A three A skirt
 'these/those three skirts'

The singular/plural interpretation of the demonstratives in (7)-(10) may be attributed to the number interpretation of the numeral and the classifier involved in each phrase.

⁴ See Tang (2004, 2005c) for a discussion of the feature analysis of the co-occurrence restrictions among demonstratives, numerals, classifiers, plural markers, and nouns (cf. Cheng & Sybesma 1998, 1999, Li 1999, Chierchia 1998 and Kuraftuji 2004).

Some more similar examples may also be found in (11)-(14) below, in which the plural interpretation of the demonstrative may also be attributed to expressions other than the demonstrative itself.

Mandarin (Tang 2004)

- (11) zhe/na (yi) xie bi
this that one some pen
'these/those pens'

Southern Min (Tang 2005a)

- (12) chia-i/hia-i chu
here-i there-i book
'these/those books'

Hakka (Tang 2005a)

- (13) lia/ke-tio sengin
this that-TIO kid
'these/those kids'

Paiwan (Tang 2004)

- (14) icu/zua a mareka a kun
this that A some A skirt
'these/those skirts'

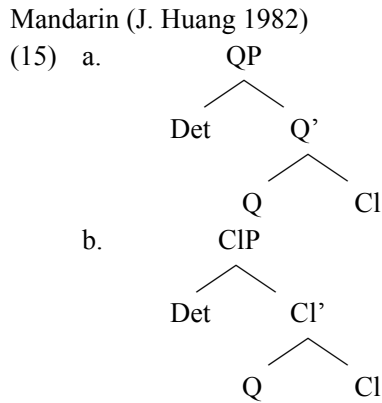
As shown in the glossaries presented above, the internal nominal structures of these plurally interpreted demonstratives seem to be rather different. For instance, in both Mandarin (11) and Paiwan (14) the demonstratives appear with expressions like *(yi) xie* 'some' and *mareka* 'some', which may be used to denote plurality and indefiniteness. In Hakka (13), the demonstratives are affixed with bound morphemes like *-tio*, which may also appear with the numeral *yid* 'one' and personal pronouns to denote plurality and in Southern Min (12) the demonstratives contain locative pronouns like *chia-* 'here' and *hia-* 'there'. By comparison, English *these* and *those* tend to be treated more like one unitary lexical item.

2.2 Generation

So far it is shown in §2.1 that cross-linguistically several kinds of agreement relation seem to appear between demonstratives and other elements within the noun phrase. In

Guugu Yimidhirr (2a) and Bunun (3a-b) the adnominal demonstrative may agree with the noun phrase in case; in English (6a-b) the adnominal demonstrative may agree with the noun in number; in (7)-(10) the Chinese and Formosan adnominal demonstratives may agree with the numeral in number; and in (11)-(14) the Chinese and Formosan adnominal demonstratives may agree with elements that may not be considered as numerals. As the demonstrative itself may not be overtly marked with a number distinction, for instance, the agreement requirement in question may be done in a covert way.

Within the framework of government and binding, the so-called agreement relation may be considered as Spec-head relation. Under this assumption, agreeing elements may appear in Spec position and non-agreeing elements may occur in non-Spec position. To provide an account along this line of thought, however, all kinds of agreement relations need to be treated as Spec-head, an approach not without problems (see also Chung 1998, among others). As pointed out in Tang (2005a), for example, J. Huang (1982) suggests two possible structures like (15a-b) for the Mandarin demonstrative-numeral-classifier sequence (cf. Tang 1990, Lin 1997, Cheng & Sybesma 1998, 1999 and Li 1998, 1999, among others).

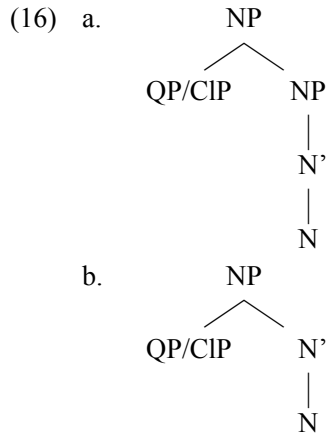


In (15a) above the demonstrative (Det) in languages like Mandarin may agree with the numeral (Q) under the Spec-head relation. In (15b), by contrast, the demonstrative may agree with the classifier (Cl) in head position.⁵

Note also that under J. Huang's analysis the whole QP or CIP in (15a-b) may in turn be projected in adjunction or Spec position of NP.

⁵ See Tang (2004) for a discussion of the typological variation in the co-occurrence requirement of the classifier with the numeral in the so-called non-classifier languages like English, rich-classifier languages like Chinese and poor-classifier languages like Paiwan.

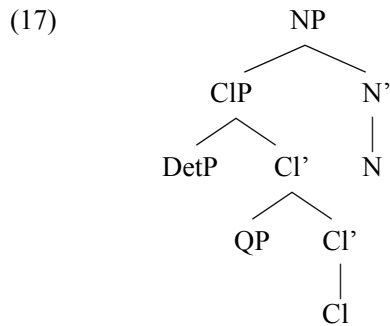
Mandarin (J. Huang 1982)



In a nominal structure like (16a), however, the QP and the CIP may be regarded as not agreeing with the noun.⁶ In (16b) while both the QP and the CIP may bear a Spec-head relation with the noun, only the projection of the demonstrative-numeral-classifier sequence as QP in (15a) may capture the above-mentioned fact that the demonstrative may agree with the numeral, the latter of which may in turn agree with the noun.

In a nominal structure like (17) below, to be compared with (15)-(16), the numeral may not bear any agreement relation with the demonstrative and the noun.

Mandarin (Lin 1997)



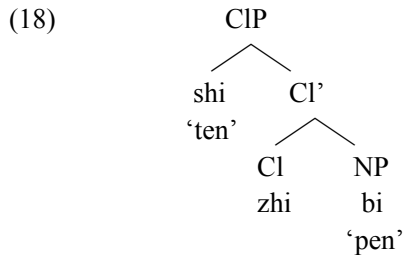
This is because the numeral (QP) is generated as adjunct, not complement, of CI and the demonstrative (DetP) may agree with the classifier rather than the numeral.

⁶ While many works may assume the projection of one Spec position per phrase, there are some works that may allow more than one Spec-like positions within a phrase.

However, the demonstrative-numeral-classifier sequence in the form of CIP in (16b) and (17), not that in the form of QP in (16b), may capture a fact about classifier languages. That is, the noun and classifier may agree in semantic feature under the Spec-head relation.

Unlike J. Huang or Lin's approach in which the CIP may be dominated by NP, Cheng & Sybesma (1998, 1999) claim that in Chinese the CIP may be the equivalent of the DP and thus dominate the NP (cf. Tang 1990 and Li 1998, 1999, among others).

Mandarin (Cheng & Sybesma 1998)



In (18) the numeral in Spec position may agree with the classifier in head position (cf. Cheng & Sybesma 1999, in which CIP is analyzed as being dominated by NumP).⁷ As Cheng & Sybesma (1999) suggest the lack of the Chinese (adnominal) demonstrative, it is unclear how the number agreement between the demonstrative and the numeral may be obtained in (18).⁸ Note, however, that with the NP projected as the complement of CI in (18), the semantic agreement between the classifier and the noun may be checked in a head-to-head, though not Spec-head, manner.⁹

⁷ Note, however, that, as shown in Mandarin cases like (7), repeated below as (i), classifiers like *zhi* are unmarked with the feature [plural] and may appear with singular or plural numerals.

Mandarin

- (i) a. zhe/na yi zhi bi
 this/that one CL pen
 'this/that pen'
 b. zhe/na liang zhi bi
 this/that two CL pen
 'these/those two pens'

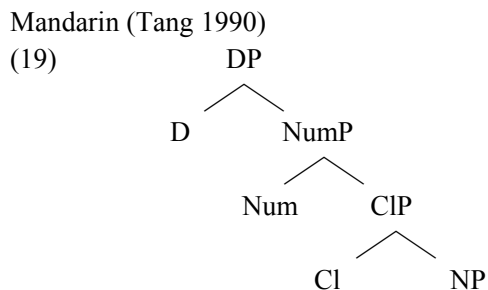
For a discussion of the co-occurrence restriction between the numeral and the classifier in Paiwan and other poor-classifier languages, see Tang (2004).

⁸ As opposed to Tang (1990) and Li (1998, 1999), among others, Lin (1997) argues that Chinese nominals, definite or indefinite, project to NP, but not to DP.

⁹ See Tang (2005c) for arguments against Cheng & Sybesma's (1998) overt N-to-CI movement analysis of [–sortal] classifiers in Chinese.

So far, the discussion above of the various kinds of Spec-head relation illustrated in (15)-(18) seems to indicate that all these four approaches may have pros and cons. In other words, two important questions may be raised for the projection of functional categories in nominals: what kinds of elements should be in Spec-head relation and what kinds of elements should be in head-complement relation? It seems that elements that may agree with the features of their own relevant functional heads may be more of Spec-head relation and those that may agree with the features of lexical and/or other functional heads may be more of head-complement relation. It is therefore posited in this paper that the Spec positions of DP, NumP, and CIP may take free or phrasal elements that may agree with their relevant head features, assuming that some of the features of D, Num, Cl, and N may be $[\alpha \text{ definite}]$, $[\alpha \text{ plural}]$, $[\alpha \text{ sortal}]$, and $[\alpha \text{ count}]$, respectively. Those non-free or non-phrasal elements with these relevant head features, by contrast, may head their respective functional projections. These overt lexical elements or covert grammatical features in head positions may in turn trigger overt or covert head-to-head or Spec-to-Spec movement to check agreement relation among different heads (cf. Longobardi 1994, Bernstein 1997, and Bruge 2002, among others).

If an account along this line of thought is on the right track, in Tang (1990), Li (1998, 1999), and Cheng & Sybesma (1999), among others, nominal projections like DP, NumP, CIP, and NP are more of head-complement relation rather than Spec-head relation (cf. Abney 1987). (19) below is a simplified version of such a kind of phrase structure (cf. Bernstein 1997 and Bruge 2002).



In (19), for instance, the matching of the features of [definite], [plural], [sortal], and [count] among demonstratives, numerals, classifiers, and nouns may be done in a head-to-head or Spec-to-Spec manner (cf. the discussion in §2.4). And the checking of the demonstrative with the feature [definite], the numeral with [plural] and the classifier with [sortal] may be all done in a Spec-head manner.¹⁰

¹⁰ A functional projection of FP between DP and NumP is assumed in §2.4 and the head feature [+referential] may license the generation of the Chinese demonstrative phrase.

With the proposal that the number agreement between the demonstrative and the numeral need not be checked under the Spec-head relation, does this mean that demonstrative structures like (15)-(17) may be more desirable than those like (19)? There are three kinds of observations that may indicate that the answer seems to be negative. First, as stated in Tang (2005a), in Chinese demonstratives need not appear with the presence of numerals and classifiers. Compare, for instance, non-classifier languages like English (6a) with rich-classifier languages like Mandarin (20), Hakka (21), and Southern Min (22) below.

Mandarin (Tang 2005a)

- (20) a. zhe haizi zenme le?
 this kid how LE
 ‘What is wrong with this kid?’
 b. ta gen na shi wuguan.
 he with that matter unrelated
 ‘He has nothing to do with that matter.’

Among others, see Yoon (1990) and Bernstein (1997) for arguments for the generation of demonstratives, not determiners and articles, as Spec elements in languages like Korean/Japanese and Romance/Germanic, respectively (cf. Abney 1987).

See also Tang (2005b, 2006a) for a discussion of the phrasal properties of numerals in Formosan languages and Tang (2005a) for that of numerals and classifiers in Chinese.

Mandarin (Tang 2005a)

- (i) a. [ji shi] ben shu/ [shi duo] ben shu
 several ten CL book ten many CL book
 b. yijing guo-le [yi-bai you er-shi] tian le.
 already pass-LE one-hundred and twenty day LE
 ‘It already passed one hundred and twenty days.’
 (ii) a. san [da wan] tang
 three big bowl soup
 ‘three big bowls of soup’
 b. [da ben]-de shu bi [xiao ben]-de shu gui.
 big CL-DE book than small CL-DE book expensive
 ‘The bigger book is more expensive than the smaller book.’
 c. zhe (yi) xie haizi, ge ge dou hen gao.
 this one some kid CL CL all very tall
 ‘(lit) These kids, each one is very tall.’

Hakka (Tang 2005a)

- (21) a. ke sengin chin kua.
 that kid very good
 ‘That kid is very good.’
 b. ki pun lia sengin pit.
 he give this kid pen
 ‘He gave this kid a pen.’

Southern Min (Tang 2005a)

- (22) a. *chit chu
 this book
 b. *hit chu
 that book

Like English (6a), as discussed in Tang (2005a), Mandarin (20) and Hakka (21) also permit their demonstratives to co-occur with the noun without the presence of the numeral and the classifier. The same, however, is not true with Southern Min (22).¹¹

¹¹ Similarly, as pointed out in Tang (2005a), while Mandarin and Hakka demonstratives may function as identificational and pronominal demonstratives, Southern Min demonstratives like (iia) and (iva) cannot.

Mandarin (Tang 2005a)

- (i) a. na shi wo-de shu.
 that be I-DE book
 ‘That is my book.’
 b. zhe gei ni.
 this give you
 ‘(I) give you this.’

Hakka (Tang 2005a)

- (ii) a. lia he fa.
 this be flower
 ‘This is a flower.’
 b. ke pun ni.
 that give you
 ‘(I) give you that.’

Southern Min (Tang 2005a)

- (iii) a. *chit si li-e.
 this be you-E
 b. che si li-e.
 this-CL be you-E
 ‘This is yours.’

As for other rich-classifier languages like Korean and Japanese and poor-classifier languages like Paiwan (10a), demonstratives may also appear without the presence of the numeral and the classifier.¹² It thus seems that the projection of the demonstrative may be independent of that of the numeral and the classifier.

-
- (iv) a. *hit ho li.
 that give you
 b. he ho li.
 that-CL give you
 ‘(I) give you that.’

These two kinds of dialectal contrasts may be attributed to a distinction in the internal morphological structures of the demonstratives involved. Further study will be done concerning the historical development and the dialectal variation of Chinese demonstratives.

Note that, as opposed to the ungrammatical *chit* in (22a) and (iiia) as well as *hit* in (22b) and (iva), *che* in (iiib) and (va) as well as *he* in (ivb) and (vb) are all well-formed.

Southern Min (Tang 2005a)

- (v) a. che chu
 this book
 ‘this book’
 b. he chu
 that book
 ‘that book’

Also, the grammaticality contrast between (via) and (vib) below seems to suggest further that *che* and *he* may not be treated as a syntactic fusion of *chit* and *hit* with the classifier *e*. Such being the case, in Southern Min demonstratives like *che/he*, not *chit/hit*, may take NPs as complements (see also Chung 1998).

Southern Min

- (vi) a. che/he (nng) pun chu
 this that two CL book
 ‘this/that book, these/those two books’
 b. *chit/hit e pun chu
 this that CL CL book

A possible morphological difference between these two kinds of Southern Min demonstratives may be that while *che* and *he* are phrasal elements located in Spec position, *chit* and *hit* are non-phrasal elements projected as heads. We shall leave this issue for further research.

¹² Below are some examples of this sort.

Korean (Yoon 1990)

- (i) i/ku/ce chayk
 this/that/that book
 ‘this/that/that book’

Japanese

- (ii) ko-no/so-no/a-no hon
 this-NO that-NO that-NO book
 ‘this book/that book/that book’

On the basis of (19), not (15)-(17), one might propose that in languages like English, Mandarin, Hakka, Korean, Japanese, and Paiwan, DP may c-select NumP-CIP-NP or NP.¹³ Alternatively, one might assume with Alexiadou (1997) and Cinque (1999) that functional categories are universal and claim that the overt/covert realization of the projections of NumP and CIP may be attributed to the m-features of demonstratives and the referential properties of nouns rather than the c-selection of demonstratives. We shall leave this issue for further study.

The second kind of observation in question has to do with the typology of classifiers. As shown in (23), Aikhenvald (2000) states that there exist three kinds of numeral classifier languages.

Aikhenvald (2000)

- (23) Numeral classifiers are
- a. classifiers that are independent lexemes, or
 - b. classifiers that are attached to numerals, or
 - c. classifiers that are attached to head nouns.

Assuming that classifiers of (23b-c) are bound forms, the attachment of them to the relevant numerals or nouns may be done in the lexicon or syntax, each of which may require a covert or an overt movement of the classifier or the noun for feature-checking or affix-attachment. Only in a structure like (19) may the heads of NumP, CIP, and NP bear head-complement relation with one another, which may allow an operation of head-to-head movement among these heads.

The third kind of observation under consideration has to do with the location of the numeral, which may be projected as QP. As will be discussed in §2.3, we assume with Tang (2005a, 2005b, 2006a) that in (19) non-adjunct phrasal QPs are generated in the Spec position of NumP, the head of which may take CIP-NP as its complement (cf. Li 1998). Note that, as indicated in footnote 7, Mandarin classifiers like *zhi* in (24) are unmarked with the feature [plural] and may appear with singular or plural numerals.

¹³ Two more facts are worthy of pointing out here. While the Mandarin and Hakka counterparts of English *one* may appear with the demonstratives, the Southern Min counterpart cannot. Also, while none of their counterparts of English *which* may c-select NPs, Mandarin *na* and Hakka *nai* may take NumP-CIP-NP or CIP-NP complements. And Southern Min *to* must take NumP-CIP-NP complements, in which the numeral must be *chit* ‘one’.

Mandarin

- (24) a. zhe/na yi zhi bi¹⁴
 this/that one CL pen
 ‘this/that pen’
 b. zhe/na liang zhi bi
 this/that two CL pen
 ‘these/those two pens’

By contrast, in (25) elements like *xie* must take the numeral 1, which is marked with the feature [–plural].

Mandarin

- (25) a. zhe/na yi xie bi
 this that one some pen
 ‘these/those pens’
 b. *zhe/na liang/san xie bi
 this that two three some pen

This contrast is rather unexpected if *xie* may be treated as a classifier with the feature [+plural]. In other words, the grammaticality distinction between (24) and (25) seems to suggest that *yi xie* may not be treated as the composite of a singular numeral and a plural classifier. Instead, *yi xie* altogether may be treated as a unitary QP marked with the feature [+plural] and located in the Spec of NumP, the head of which in turn

¹⁴ The grammaticality of the lack of the numeral in (24a) and cases like (i) below seems to suggest that in addition to NumP-CIP-NP and NP, Mandarin D may take CIP-NP as its complement (cf. Cheng & Sybesma 1999).

Mandarin

- (i) wo xiang mai ben shu.
 I want buy CL book.
 ‘I want to buy a book.’

Similar examples may, however, not be completely acceptable in Southern Min and Hakka (see also footnote 47).

Note, however, that in cases like (24a), with the demonstrative, while the presence/absence of the numeral *yi* may not affect the referential interpretation of (24a), the presence of *yi* may have the effect of emphasis. By contrast, in cases like (i), without the demonstrative, the presence/absence of *yi* may affect the interpretation of the noun phrase. That is, the one with *yi* may be specific or non-specific in reference whereas the one without *yi* must be interpreted as non-specific.

takes NP rather than CIP-NP as its complement, hence the ill-formedness of cases like (26).¹⁵

Mandarin

- (26) ta mai-le yi xie (*ben/xiang) shu.
 he buy-LE one some CL CL book
 'He bought some books.'

In languages like Chamorro, for example, Chung (1998) also indicates that certain determiners and quantifiers may take different nominal complements.¹⁶ So far it is already pointed out that in Mandarin numeral-type QPs may take CIP-NP complements,¹⁷ and [(yi) xie]-type QPs NP complements. Quantifiers like *xuduo* 'many' are the third kind, with which the classifier may or may not occur.

¹⁵ Under this analysis, then, it is the QP, not the classifier, which may determine the feature [+/-plural] for the number agreement requirement among different heads in nominals. It thus follows that while cases like (25b) are ungrammatical, those like (ib) are not.

Mandarin

- (i) a. zhe/na yi qun haizi
 this that one group kid
 'this/that group of kids'
 b. zhe/na liang/san qun haizi
 this that two three group kid
 'these/those two/three groups of kids'

¹⁶ In Chamorro, as stated in Chung (1998), the demonstratives and the quantifier *todu* 'all' can evidently select NP or a definite DP as complement. Among others, see also Aikhenvald (2000) for a discussion of the distinction between numeral classifiers and quantifiers.

¹⁷ In rich-classifier languages like Chinese numerals generally must take classifiers when appearing with nouns.

Mandarin

- (i) ta mai-le yi *(zhi) bi.
 he buy-LE one CL pen
 'He bought one pen.'

Exceptional cases are found with fixed expressions like those in (ii) below.

Mandarin

- (ii) a. wu cai yi tang
 five dish one soup
 '(lit) five dishes and one soup'
 b. qi qing liu yu
 seven feeling six desire
 '(lit) seven feelings and six desires'

Mandarin

- (27) a. ta mai-le xuduo ben shu.¹⁸
 he buy-LE many CL book
 ‘He bought many books.’
 b. ta mai-le xuduo shu.
 he buy-LE many book
 ‘He bought many books.’

Therefore, *xuduo*-type quantifiers may take either CIP-NP or NP complements.¹⁹

In view of these three different kinds of c-selection of quantifiers in Mandarin, nominal structures like (15b) and (17)-(18) may all be problematic, in which case the presence of quantifiers requires or presupposes the presence of classifiers. Those like (15a), by comparison, might capture these relevant facts by claiming that numeral-type quantifiers are transitive quantifiers, [(*yi*) *xie*]-type quantifiers are intransitive quantifiers, and *xuduo*-type quantifiers may be transitive or intransitive in use.²⁰

¹⁸ In addition to the head-complement relation, quantifiers like *xuduo* may also function as a modifier of the noun.

Mandarin

- (i) ta mai-le xuduo-de shu.
 he buy-LE many-DE book
 ‘He bought many books.’

And, like the numeral-classifier sequence, the *xuduo*-classifier sequence may also act as a modifier (cf. Cheng & Sybesma 1998).

Mandarin

- (ii) ta mai-le [xuduo ben]-de shu.
 he buy-LE many CL-DE book
 ‘He bought many books.’

¹⁹ Southern Min and Hakka seem to also exhibit these three kinds of c-selection for these three types of quantifiers. Similar variation, however, does not seem to be true with languages like English (cf. Abney 1987, among others). This typological distinction might be attributed to several factors. As discussed in Tang (2004, 2005c), for instance, English is a non-classifier language whereas Chinese is a rich-classifier language and the so-called measure words are Ns in English but CLs in Chinese. A third reason might be that while English quantifiers are more of one unitary lexical item, Chinese ones might exhibit internal morphological structures with different historical origins. As for poor-classifier languages like Paiwan, Tang (2004) points out that their classifiers may be lexically derived and thus exhibit a more restrictive distribution than those in languages like Chinese.

²⁰ In Abney’s (1987) DP hypothesis as in (i) below the determiner or the demonstrative may appear as the head of DP, and the quantifier phrase or the measure phrase the Spec of NP.

To summarize, it is shown in this section that two main problems seem to be raised for Chinese nominal structures like (15)-(18). Theoretically, elements that may be in Spec-head relation are not distinguished from those that may be in head-complement relation, hence the impossibility of capturing various kinds of agreement relation in a principled way. Empirically, nominal facts within and across Chinese-type languages suggest that the occurrence of the demonstrative need not require the presence of the quantifier and the classifier, and the occurrence of the quantifier the presence of the classifier.

2.3 Modifier-like demonstratives vs. non-modifier-like demonstratives

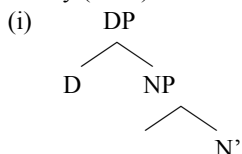
The cross-linguistic variation in the form and distribution of the demonstrative is in fact rather complicated; it may involve conditions other than those on inflection/non-inflection and Spec/non-Spec position. For example, as illustrated in (2a) and (6)-(10), in languages like Guugu Yimidhirr, English, Mandarin, Southern Min, Hakka, and Paiwan, the demonstrative may appear only before the noun, whereas, as in Bunun (2b), Puyuma (5a-b), and Squliq Atayal (28), it may occur only after the noun.

Squliq Atayal (M. Huang 1995)

- (28) a. kuzu qani
shoe this
'this shoe'
b. laqi' qasa
kid that
'that kid'

In other Formosan languages like Kavalan (29), by comparison, the demonstrative may appear before or after the noun.

Abney (1987)



While both (i) and (15a) have the quantifier/measure phrase located in the Spec of NP, they differ in the generation of the demonstrative. See Tang (1990), among others, for a discussion of the problems of (i) for rich-classifier languages like Chinese.

Kavalan (Chang 2000)

- (29) a. sunis zau
 kid this
 ‘this kid’
 b. zau ay razat
 this AY man
 ‘this man’

In addition, while some languages require the presence of a marker between the pre-nominal demonstrative and the noun, as in Paiwan (10), others do not, as in English (6), Mandarin (7), Southern Min (8), and Hakka (9). In languages like Kavalan (29), such a marker is allowed only in pre-nominal position. And, as discussed in Tang et al. (1998) and Chang (2000), such markers may be found in relative clauses.²¹

The markers in question, nevertheless, may also be distinct from those of relative clauses. Puyuma and Thao are of this sort.

Puyuma (M. Huang 2000a)

- (30) sagar=ku kanDini na buLabuLayan.
 AF-like=1sg.Nom this-Obl NA girl
 ‘I like this girl.’

Thao (M. Huang 2000b)

- (31) a. haya wa ’azazak mi-La-liLi’.
 that WA kid AF-Red-stand
 ‘That kid is standing.’
 b. ’izay ya ’azazk paLay yakin.
 that YA kid hit-AF I
 ‘That kid hit me.’

If, as assumed in Bernstein (1997), demonstratives are universally generated in Spec position or, as proposed in Abney (1987), they are located as head of DP, why is it that cross-linguistically they may vary greatly in form concerning the presence/absence

²¹ In Formosan languages like Paiwan, as shown in Tang (2005b, 2006a), attributive modification and predicative modification are syntactically distinguished among these modifier-like elements and thus they cannot be treated all as relative clauses (see also footnote 22). See also Tang (2003, 2005b, 2006a) for a discussion of arguments against an anti-symmetric account of the word order variation in Formosan nominals along the lines of Kayne (1994), Bernstein (1997), Bruge (2002), and Kahnemuyipour & Massam (2004), among others.

of a marker? It should be noted here that, as discussed in Tang (2005a, 2005b, 2006a), the marker in question may also be found with the quantifier and the possessive. Compare, for instance, Paiwan (32) with Paiwan (10) and Kavalan (33) with Kavalan (29).²²

Paiwan (Tang et al. 1998)

- (32) a. telu *(a) kun
 three A skirt
 'three skirts'
 b. kun (*a) ni kai
 skirt A Gen Kai
 'Kai's skirt'
 c. ni kai *(a) kun
 NI Kai A skirt
 'Kai's skirt'

Kavalan (Chang 2000)

- (33) a. kin-turu *(ay) razat
 KIN-three AY person
 'three persons'
 b. bawa' (*ay) zaku
 boat AY my
 'my boat'
 c. zaku *(ay) bawa'
 my AY boat
 'my boat'

In view of the aforementioned and other related cross-linguistic data, Tang (2005a, 2005b, 2006a) proposes that in addition to Spec and head positions, adjunction positions are also possible generation sites for modifier-like demonstratives, quantifiers and possessives. That is, in accordance with the phrasal/non-phrasal and modifier-like/non-modifier-like contrasts in their morphological and syntactic behavior, demonstratives, quantifiers and possessives may either head the functional projections of their licensing heads or agree with their licensing heads in a Spec or adjunction position (see also footnote 6). It will be shown in §4 and §5 that these feature specifications may be relevant

²² As pointed out in Tang (2005a, 2005b, 2006a), it is, however, not true that in Formosan languages the bare/non-modifier-like form always appears post-nominally, and the complex/modifier-like form pre-nominally (cf. Kahnemuyipour & Massam 2004). See Tang (2005b, 2006a) for a discussion of the word order constraints in Paiwan nominals.

for the licensing of modifiers other than demonstratives, numerals and possessives.

2.4 Determiners/articles vs. demonstratives

The discussions so far seem to suggest that within the projection of DP the adjunction, Spec and head positions are all possible location sites for the generation of the demonstrative, the choice of which needs to be empirically determined. Bernstein (1997), for instance, posits that demonstratives may be generated in the Spec of an FP dominated by DP on the basis of examples like (35)-(37), to be compared with (34), the former, not the latter, of which allows the determiner to co-occur with the demonstrative (cf. Bruge 2002 and Kahnemuyipour & Massam 2004, among others).

English

- (34) a. the book/this book
b. *the this book/*this the book

Spanish (Bernstein 1997)

- (35) el hombre este
the man this
'this man'

Hungarian (Bernstein 1997)

- (36) ez a ház
this the house
'this house'

Javanese (Bernstein 1997)

- (37) ika n anak
this the child
'this child'

Similar data are also found in Diessel (1999).

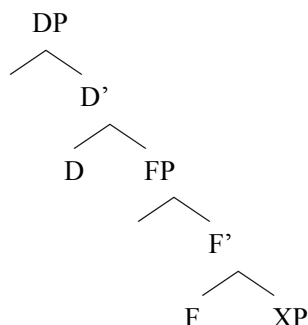
Ewondo (Diessel 1999)

- (38) e mod ngo
Art man Dem
'this man'

Thus, according to Bernstein, in a nominal structure like (39) while determiners remain located in D, demonstratives occupy the Spec of FP (cf. (19)).

Bernstein (1997)

(39)



We assume in this paper that a functional projection of FP may intervene between DP and NumP in Chinese nominal structures like (19), the head of which may license demonstratives.²³ More discussion will be given in §4 and §5 to show that both the projections of D and F are relevant for capturing the distributional and referential properties of Chinese modifiers.

In Bernstein's analysis the presence/absence of the co-occurrence of the determiner with the demonstrative may be attributed to the contrast in the presence/absence of a strong demonstrative feature [definite] that may trigger an overt movement of the demonstrative to the Spec of D (cf. Bruge 2002 and Kahnemuyipour & Massam 2004).²⁴ An important question then is how an empty D and F may be properly licensed and interpreted in Chinese-type and Formosan-type languages in which no overt determiners/articles are observed, a discussion that will be tuned to in §4 and §5.

In the case of Chinese, as pointed out in §2.2, both Lin (1997) and Cheng & Sybesma (1999) argue against the DP hypothesis in the sense of Abney (1987), for instance. Under Lin's analysis, on the one hand, Mandarin noun phrases, definite or indefinite, may be projected only as NPs though demonstratives themselves may project

²³ In addition to the deictic interpretation, Mandarin demonstratives have been claimed in S. Huang (1999), Xu (2002) and Fang (2002) to be able to function as determiners (cf. Chen 1964, Lü & Jiang 1985 and Mei 1986). Also, Bernstein (1997) suggests that demonstratives may be interpreted as indefinite specific. We shall leave for future research the various kinds of the uses and meanings of Chinese demonstratives.

²⁴ By contrast, Bruge (2002) claims that the relevant feature in F is [referential]. We assume in this paper that the relevant licensing features of determiners and demonstratives are [definite] and [referential] in D and F, respectively (see also footnote 48). See §4 and §5 for more discussion of the features of D and F.

to DPs. Cheng & Sybesma (1999), on the other hand, propose that Mandarin definite noun phrases are CIPs and indefinite ones are NumPs (cf. Cheng & Sybesma 1998). And they assume that Mandarin does not have demonstratives. By contrast, Li (1998) argues for the DP projection of the Mandarin definite and non-quantity indefinite noun phrases, and Kim (2004) for that of the Mandarin specific noun phrases. For Li the quantity indefinite Mandarin noun phrases are NumPs; for Kim the non-specific Mandarin noun phrases are NPs.

For the licensing and interpretation of an empty nominal head that may exhibit a subject-object asymmetry, both Cheng & Sybesma (1999) and Li (1999) seem to assume Longobardi's (1994) lexical government condition on an empty D (cf. Kim 2004). However, while Cheng & Sybesma argue for a covert N-to-Cl movement of definite bare nouns in Mandarin, Li postulates that definite bare nouns are base-generated as D (cf. Kim 2004). And Mandarin indefinite bare nouns are analyzed as NPs in Li (1998) and NumP-CIP-NPs in Cheng & Sybesma (1999) (cf. Kim 2004).

It should be clear from the just-given discussion that many questions remain unanswered concerning the functional projections of Chinese definite and indefinite nominals. By examining in detail Chinese nominals with the various kinds of the distribution of modifiers, in §4 and §5 the issue will be dealt with about the licensing and interpretation of an empty D and F.

3. Modification markers as non-determiners

With our claims about the posited five-level representation of DP-FP-NumP-Cl-NP in Chinese nominals, it is demonstrated in this section that, as discussed in Tang (2003, 2005a), Chinese modification markers like Mandarin *de*, Southern Min *e* and Hakka *nge* in (non-derived) nominals may not be analyzed as determiner in the sense of either Kayne (1994) or Simpson (1997, 2001).²⁵ In other words, they do not head the projections of D and F in our analysis.

In Simpson's (1997, 2001) theory of *de* in Mandarin nominals, there are two main claims as given in (40).

Simpson (1997, 2001)

- (40) a. *de* in Mandarin noun phrases heads the projection of DP.
- b. Possessive constructions and relative clauses in Mandarin are derived in a revised version of Kayne's (1994) D-CP hypothesis.

²⁵ For a discussion of arguments against a determiner analysis of modification markers in Formosan languages, see Tang (2003, 2005a, 2005b, 2006a).

By possessive constructions and relative clauses, Simpson refers to cases like (41a) and (41b-d) below, respectively.

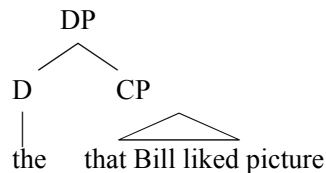
Mandarin (Simpson 1997, 2001)

- (41) a. wo de shu
I DE book
'my book'
- b. zai Beijing de ren
in Beijing DE people
'people in Beijing'
- c. hao de shu
good DE book
'good books'
- d. [ta mai] de nei-ben-shu
he buy DE that-CL-book
'that book he bought'

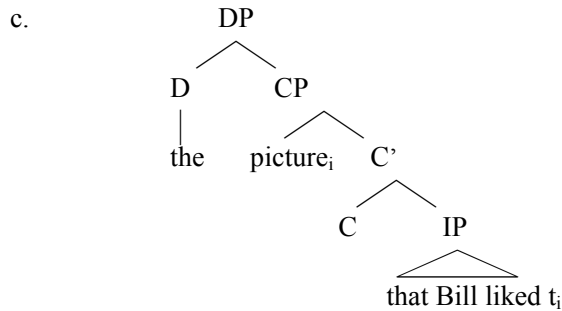
Kayne (1994) posits a restrictive, universal theory of phrase structure in which asymmetrical c-command invariably maps into linear precedence. One of its implications is that there are no right-adjunction structures, base-generated or derived. Among other things, traditional analyses of relative clauses are thus rejected by this theory and a so-called D-CP hypothesis of relative clauses is proposed.²⁶ Consider, for instance, Kayne's analysis of English restrictive non-wh-*that*-relative clauses as in (42).

English (Kayne 1994)

- (42) a. the picture that Bill liked
b.



²⁶ Traditionally, depending on the position of the head noun and the (non-)restrictiveness of the relative clause, right-adjunction to the recursive N', NP, D' or DP may be permitted for the generation of the relative clause.

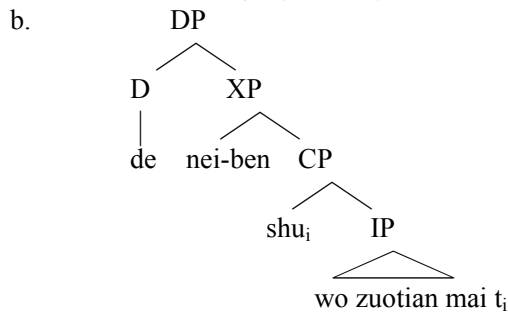


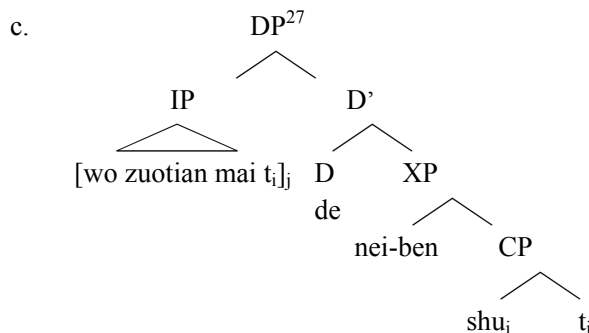
According to Kayne, nominals like *the picture that Bill liked* in (42a) are base-generated as (42b), in which the determiner *the* of the head noun *the picture* heads the projection of D and the remnant of the relative clause *that Bill liked* together with the in-situ object *picture* project as the complement of the determiner *the*. And the surface structure as in (42c) is derived by a syntactic operation of movement of the in-situ object *picture* to the Spec of CP.

Similarly, Simpson (2001) argues that Mandarin relative clauses like (43a) are derived via (43b), with the movement of the in-situ object *shu* ‘book’, and (43c), with the movement of the remnant *wo zuotian mai t_i* ‘I yesterday bought t’.

Mandarin (Simpson 2001)

- (43) a. [wo zuotian mai] de nei-ben-shu
 I yesterday buy DE that-CL-book
 ‘that book I bought yesterday’





Though both Kayne and Simpson adopt the so-called D-CP analysis of the relative clause, as pointed out in Tang (2003), they differ in several non-trivial ways. First, for instance, Kayne (1994) assigns distinct phrase structures to English relative clauses as classified in (44).

- (44) a. non-restrictive relative clauses
b. restrictive relative clauses:
a'. wh-relative clauses
b'. non-wh-relative clauses:
a'', *that*-relative clauses
b'', zero relative clauses

It is unclear, however, what kind of relative clause Mandarin (43a) and (41a-d) are, though they are all assigned similar phrase structures as in (43b-c). Second, while in English (42b-c) *the* projects as D without the dominated projection of XP, in Mandarin (43b-c) *nei-ben* 'that-one-CL' is located in the Spec of XP with the dominating projection of DP. Third, in English (42c) *that Bill bought* may remain in situ, whereas in Mandarin (43c) *wo zuotian mai* needs to be moved to the Spec of DP. Fourth,

²⁷ Note that, according to Simpson (2001), when the demonstrative-numeral-classifier sequence appears before the relative clause, as in (i) below, it is derived from movement of the demonstrative-numeral-classifier sequence to the Spec of a head higher than DP.

Mandarin

- (i) nei-ben [wo zuotian mai] de shu
that-CL I yesterday buy DE book

Note also that under a D-XP analysis of relative clauses as posited in (43c), *nei-ben* ‘that’ and *shu* ‘book’ alone no longer form a constituent, nor does *shu* c-command its trace.

By contrast, in Tang (1990, 2001) a theory of adjunct and modifier licensing is proposed in which the nominal modifiers are projected under the recursive XP and/or X' in accordance with their licensing heads and the scope of modification.

Mandarin *de*, not English *that*, may head the projection of DP. Fifth, English *that*, not Mandarin *de*, may head the projection of CP. Could these variations be attributed to some typological parameterization between Chinese, with obligatory N-final relative clauses and distributional freedom of modifiers, and English, with obligatory N-initial relative clauses and non-distributional freedom of modifiers, or are they simply arbitrarily determined (cf. Ouhalla 2004)?²⁸

Before going into a further examination of Simpson's approach to Mandarin *de*, the demonstrative-numeral-classifier sequence, and the relative clause, two things need to be pointed out here with respect to Tang's (1990, 1993) analysis of *de* in Mandarin nominals, which is also concerned with the issue under consideration whether in Mandarin *de* may be realized as D or F. First, based on the grammaticality contrasts in distribution between English 's and Mandarin *de* in (45)-(49), Tang (1990:421-431, 1993:734-735) posits that, unlike the opposite claim in Li (1985, 1990) and its English counterpart 's, *de* in Mandarin noun phrases is not a genitive marker.

Mandarin (Tang 1990:421-431, 1993:734-735)

- (45) a. John's wife/that chair of Bill's/*new's books/*the letter that John wrote's/*he heavi(ly)'s beat me
 b. Zhangsan-de taitai 'Zhangsan's wife'/Lisi-de na yi ba yizi '(lit) Lisi's that chair'/xin-de shu 'new books'/
 [Zhangsan xie]-de xin 'the letter that Zhangsan wrote'/ta henhen-de da-le wo 'he heavily beat me'
- (46) a. he *(-'s) wife
 b. ta (de) taitai 'his wife'
- (47) a. *John's that book/*that John's book
 b. Zhangsan-de na yi ben shu '(lit) Zhangsan's that book'/
 na yi ben Zhangsan-de shu '(lit) that Zhangsan's book'
- (48) a. John's three books/*three John's books
 b. Zhangsan-de san ben shu 'Zhangsan's three books'/
 san ben Zhangsan-de shu '(lit) three Zhangsan's books'
- (49) a. *John's yesterday's newspaper
 b. Zhangsan-de zuotian-de baozhi '(lit) Zhangsan's yesterday's newspaper'

²⁸ As pointed out in footnotes 21 and 22, see Tang (2003, 2005a, 2005b, 2006a) for a discussion of problems for an anti-symmetric analysis of Formosan modifiers and relative clauses, the distributional patterns of which are rather different from those of English and Chinese-type languages. See also Borsley (1997) and Bianchi (2000), among others, for a discussion of arguments against and for the D-CP analysis of the relative clause, respectively.

If our line of thought is on the right track, the *de* in question may not be treated like English 's, which is claimed in Abney (1987) to be a genitive marker assigned by AGR in D and realized in a nominal expression in the Spec of DP.²⁹

Second, Tang (1990:430-431) states that examples like (50) indicate that *de* must follow the modifier.

Mandarin (Tang 1990:430-431)

- (50) a. *ta de-feichang gao. / ta feichang-de gao.
 he DE-very tall he very-DE tall
 ‘He is very tall.’
 b. *ta de-mantuntun zou-le guolai. /
 he DE-slow walk-LE cross-come
 ta mantuntun-de zou-le guolai.
 he slow-DE walk-LE cross-come
 ‘He came slowly.’
 c. *de-[ta xie] shu / [ta xie]-de shu
 DE-he write book he write-DE book
 ‘the book that he wrote’
 d. *de-jintian baozhi / jintian-de baozhi
 DE-today newspaper today-DE newspaper
 ‘today’s newspaper’
 e. *de-ta gou / ta-de gou
 DE-he dog he-DE dog
 ‘his dog’

To capture this intuition, Tang (1990:431) suggests two possibilities. One possible way is to assume that the modifier projects as the complement and to the left of *de*. Another way is to assume that the modifier complement projects to the right of *de* and to derive the surface word order by obligatorily moving the complement of *de* to its Spec position. Such a movement, according to Tang, may be motivated by the clitic property of *de* and the adjunct status of the projection of *de* (cf. Ouhalla 2004).³⁰

Simpson (1997, 2001) also claims that, due to the enclitic nature of *de*, the remnant *wo zuotian mai* ‘I bought yesterday’ in (43c) needs to move to the Spec of DP,

²⁹ Tang (1990:66) suggests that in cases like (45)-(49) *de* projects to a functional category indicating modification relations and it is not realized as D, nor as C.

³⁰ Under Kayne’s (1994) anti-symmetric view of phrase structure, the modifier complement of *de* will be preferred to project to the right of *de* and then move to its Spec position (cf. Cheng & Sybesma 1998).

hence the head-final requirement of Mandarin relative clauses. Simpson's (1997, 2001) approach, nevertheless, is very different from Tang's (1990). To give an example, as stated in footnote 29, the modifying *de* is not claimed to be a determiner and realized as D in Tang (1990:66).

Note also that, among others, to derive the head-final property of relative clauses by obligatory movement of the remnant of the relative clause has been assumed in Aldridge (2004), for instance, for non-Formosan languages like Tagalog and Formosan languages like Seediq without the assumption that there appears an enclitic D like Mandarin *de* in Tagalog and Seediq (cf. Ouhalla 2004).³¹ In view of the difference between Simpson (1997, 2001) and Aldridge (2004) in the presence of a clitic trigger for remnant movement, again it is unclear whether this contrast could be derived from some typological variation between Chinese-type languages and Austronesian-type languages.³²

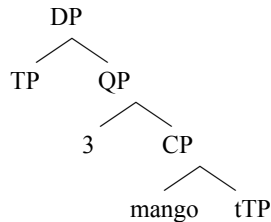
As for the distinction between Tang (1990, 1993) and Simpson (1997, 2001) in the categorization of the modifying *de*, according to Simpson (2001), though synchronically *de* does not denote any (in)definiteness, it still ought to be analyzed as D

³¹ Aldridge (2004), in fact, mentions nothing about how D may be realized in Tagalog and Seediq and what motivates the posited obligatory remnant movement.

³² Recall that, as pointed out in footnote 27, in Mandarin the (demonstrative-)numeral-classifier sequence may precede or follow the relative clause. In Tagalog, according to Aldridge (2004), the quantifier cannot precede the relative clause.

Tagalog (Aldridge 2004)

- (i) a. b-in-ili ni Maria-ng tatlo-ng mangga
 -Perf-buy Erg Maria-LK three-LK mango
 'three mangoes that Maria bought'
 b. ?*tatlo-ng b-in-ili ni Maria-ng mangga
 three-LK -Perf-buy Erg Maria-LK mango
 c.



Aldridge attributes the ill-formedness of sentences like (ib) to a D-CP structure as in (ic), in which QP projects between DP and CP.

If one compares Tagalog (ic) above with Mandarin (43c), it is also unclear whether QP in (ic) is the Tagalog counterpart of Mandarin XP in (43c), nor is it clear why a similar D-CP structure will yield two distinct conditions on the ordering of the quantifier phrase with the relative clause even though both languages exhibit N-final relative clauses.

on the basis of the classical Chinese data like (51) below.³³

Chinese (Zhuangzi 1.10)

- (51) zhi er chong you he zhi
these two worm again what know
'And what do these two worms know?'

That is, *zhi* in classical Chinese (51) carries the meaning of 'these' and it is diachronically related to *de*, hence the realization of *de* in D.³⁴

However, as pointed out in Tang (2003), one should note that diachronically *zhi* has another usage as shown in (52), in which it functions like modification marker rather than demonstrative and it does not denote the meaning of '(in)definiteness'.

Chinese (Zhuangzi)

- (52) (Xuwugui)
a. [zhao shi] zhi shi xing chao, [zhong ming] zhi shi rong guan.
(Dechongfu)
b. [you ren] zhi xing, [wu ren] zhi qing
have human ZHI appearance lack human ZHI feeling
'(lit) with the form of a human being and yet without the substance of a human being'

Pei-chuan Wei (personal communication, 2003) indicates that the non-demonstrative usage of *zhi* in (52) appears much later than the demonstrative usage of *zhi* in (51).³⁵

Simpson's D or determiner analysis of *de*, then, may face several problems. First, why is it that *de* must be diachronically linked to the demonstrative *zhi* rather than the non-demonstrative *zhi* even though the non-demonstrative *zhi* appears later than the demonstrative *zhi*? Second, why is it that *de* must be diachronically linked to the demonstrative *zhi* rather than the non-demonstrative *zhi* even though synchronically *de* only marks modification relation and does not denote the meaning of '(in)definiteness'? Third, if, as stated in Simpson (1997, 2001), *de* in D no longer denotes (in)definiteness

³³ In fact, in Simpson (2001) (51) is the only so-called supporting example from the classical Chinese; all other pieces of evidence are taken from other types of languages like Thai, Japanese, Burmese, French, etc. And, as pointed out in footnote 36, no synchronic evidence for Chinese is given in his paper.

³⁴ See Wei (1990), among others, for a discussion of the use and reference of *zhi* in classical Chinese.

³⁵ According to Pei-chuan Wei (personal communication, 2003), the demonstrative usage of *zhi* only appears in oracle bone inscription and cases of this sort are very few.

and marks modification, what are the elements in D after all and how should one parameterize between Chinese-type of D as in (43b-c), with *de*, and English-type of D as in (42b-c), with *the* (cf. Ouhalla 2004)?³⁶

In addition to the aforementioned problems with the analysis of *de* as D in (43b-c), as pointed out in Tang (2003), another kind of problem has to do with the projection of the demonstrative-numeral-classifier sequence in (43b-c). We have shown in §2.2 that in Chinese three distinct heads may license the generation of demonstratives, numerals, and classifiers; in (43b-c), however, they are all generated under one maximal projection. Cases like (53) will thus be incorrectly predicted to be ungrammatical, in which the modifier may appear between the demonstrative and the numeral-classifier sequence.

Mandarin

- (53) a. na [youqu]-de san ben shu
 that interesting-DE three CL book
 ‘(lit) those interesting three books’
 (Tang, personal communication in Lin 1997)
 b. zhe [lüyouyou]-de yi pian caodi
 this green-DE one CL grass
 ‘(lit) this green piece of grass’

Furthermore, as pointed out in footnotes 27 and 32, it is unclear how a structural analysis like (43b-c) may capture the fact that while Chinese-type languages may allow the modifier/relative clause to precede or follow the (demonstrative-)numeral-classifier

³⁶ In a footnote, Simpson (2001), however, states that Japanese *no* and Mandarin *de* may both retain some property of definiteness, but all the examples given there are taken from Japanese. Sentences like (ia) and (iia) below, by contrast, indicate that *de* itself does not seem to denote (in)definiteness (cf. Ouhalla 2004).

Mandarin (Tang 2003)

- (i) a. wuzi-li cang-le ji-shi bang-de /*ni-de dupin.
 house-inside hide-LE several-ten pound-DE you-DE drug
 ‘(lit) Inside the house several pounds of drug were hidden.’
 b. qian-mian lai-le san-ge / *ni-de xuesheng.
 front-face come-LE three-CL you-DE student
 ‘(lit) From the front came three students.’
 (ii) a. zhuo-shang you yi feng ni-de xin.
 table-top have one CL you-DE letter
 ‘(lit) Table-top has a letter of yours.’
 b. ni-de yi feng xin zai zhuo-shang.
 you-DE one CL letter on table-top
 ‘One of your letters was on the table.’

sequence, English and Tagalog-type languages may not. And, as discussed in Tang (2005a, 2005b, 2006a), languages like Paiwan may also be problematic for (43b-c), in which the relative clause may precede or follow the numeral, but it needs to follow the demonstrative.

Paiwan (Tang et al. 1998, Tang 2003, 2005b, 2006a)

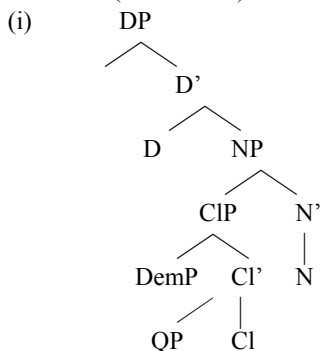
- (54) a. *[k-in-asengseng ni kai] a icu a telu a kun
 make-PV Gen Kai A this A three A skirt
 b. icu a [k-in-asengseng ni kai] a telu a kun
 this A make-PV Gen Kai A three A skirt
 ‘these three skirts that Kai made’
 c. icu a telu a [k-in-asengseng ni kai] a kun
 this A three A make-PV Gen Kai A skirt
 ‘these three skirts that Kai made’

To capture the distributional freedom of modifiers in Chinese, as already stated in footnote 27, Simpson resorts to an optional operation of the movement of the demonstrative-numeral-classifier sequence. In other words, the modifier itself remains located in the Spec of D in either ordering. It is, however, not true that all Chinese modifiers may precede or follow the (demonstrative-)numeral-classifier sequence.³⁷ As

³⁷ Similar problems may be found with Hsieh’s (2005) analysis of the distribution of modifiers in Mandarin, in which it is proposed that the modifier may be licensed by D or N and that the demonstrative, the numeral-classifier sequence or the demonstrative-numeral-classifier sequence needs to be obligatorily moved in syntax from the Spec of NP to that of DP. Although Hsieh and Simpson differ in the choice of the movement under consideration, none of them explain what triggers this obligatory or optional operation of movement.

Note also that in a nominal structure like Hsieh’s (i) below, as discussed in §2.2, the licensing of the demonstrative and the quantifier in Mandarin will be incorrectly predicted to be dependent on the presence of the classifier.

Mandarin (Hsieh 2005)



shown in cases like (55), for example, *qita*-type modifiers may not follow the (demonstrative-)numeral-classifier.

Mandarin

- (55) a. wo zhao-bu-dao qita-de liang ge xuesheng.
 I find-not-arrive the-other-DE two CL student
 'I cannot find the other two students.'
- b. *wo zhao-bu-dao liang ge qita-de xuesheng.
 I find-not-arrive two CL the-other-DE student

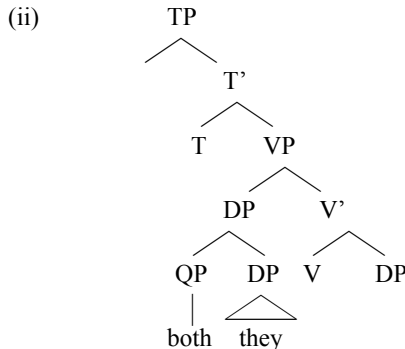
Another empirical problem is concerned with the fact that, as pointed out in footnote 14, the Chinese classifier in object position may appear without the demonstrative and numeral. However, as shown in (56) below, the modifier may not precede this kind of classifier.

Mandarin

- (56) a. *ta mai-le [wo qunian chuban]-de ben shu.
 he buy-LE I last-year publish-DE CL book
- b. ta mai-le ben [wo qunian chuban]-de shu.
 he buy-LE CL I last-year publish-DE book
 'He bought a book that I published last year.'

According to Hsieh, the nominal structure (i) parallels to the clausal structure (ii) in that the ClP and DP may be raised to the Spec of DP and TP, respectively.

Mandarin (Hsieh 2005)



It is, however, unclear whether the parallelism is indeed as Hsieh claimed. For instance, it may be controversial that DP is the nominal counterpart of TP. Also, in (ii) the raised element is the quantified DP, not the quantificational QP. In (i), by contrast, it is the non-quantificational demonstrative(-numeral-classifier sequence) or the quantificational numeral-classifier sequence, not the (non-)quantified N, that may undergo movement. And while the considered movement in (ii) is for the assignment/checking of the nominative case, that in (i) is not clearly motivated.

But the same ordering requirement does not hold for cases like (57)-(59), to be compared with the ungrammatical (56a).

Mandarin

- (57) a. [ni zuotian kandao]-de na haizi lai-le.
you yesterday see-DE that kid come-LE
‘That kid that you saw yesterday came.’
b. zhe [wo qunian chuban]-de shu mai-de hen hao.
this I last-year published-DE book sell-DE very well
‘This book that I published last year sells very well.’
- (58) a. ta mai-le [wo qunian chuban]-de xuduo shu.
he buy-LE I last-year publish-DE many book
‘He bought the many books that I published last year.’
b. ta mai-le xuduo [wo qunian chuban]-de shu.
he buy-LE many I last-year publish-DE book
‘He bought many of the books that I published last year.’
- (59) a. lüyouyou-de zhe yi pian tiandi dou shi ta-de.
green-DE this one CL field all be I-DE
‘(lit) Green this piece of field is all mine.’
b. zhe lüyouyou-de yi pian tiandi dou shi wo-de.
this green-DE one CL field all be I-DE
‘This green piece of field is all mine.’
c. zhe yi pian lüyouyou-de tiandi dou shi wo-de.
this one CL green-DE field all be I-DE
‘This piece of green field is all mine.’

Alternatively, a more plausible claim seems to be that, as proposed in Tang (1990, 2001, §4 and §5), different types of modifiers may be considered as being licensed by different heads and thus base-generated in different positions.

To summarize, so far we have shown that, based on the diachronic and synchronic evidence, in Mandarin non-derived nominals *de* may not be analyzed as genitive marker in the sense of Li (1985, 1990), nor may it be treated as determiner in the spirit of Simpson (1997, 2001), both of which have been claimed by Li and Simpson to be linked with D.³⁸ Instead, it may be treated as heading a different kind of functional projection, which may mark modification relation and be licensed by distinct nominal heads.³⁹ It is thus assumed in our analysis of Chinese modifiers and nominals that

³⁸ The same kinds of arguments may be said about Southern Min *e* and Hakka *nge*.

³⁹ Does this observation mean that in Mandarin *de* can never be associated with D, given that *de* may illustrate various kinds of functions? The answer seems to be negative. In her discussion

modification markers like Mandarin *de* may be realized neither as D, nor as F.

We have also demonstrated that a D-CP hypothesis of Chinese relative clauses does not seem to capture in a principled way the variation in the ordering of the relative clause and the head noun, on the one hand, and that between the relative clause and the (demonstrative-)numeral-classifier sequence, on the other hand. It therefore seems to remain a question whether a more restrictive condition on phrase structure coupled with a less restrictive condition on movement is indeed more desirable than the other way around.⁴⁰

of various usages of *de* in Mandarin, Tang (1993:751-752) points out that in Mandarin derived nominals *de* may act as genitive marker that marks the subject of the derived nominals. Cases like classical (i) and non-classical (ii) below are of this kind.

Mandarin (Tang 1993:751-752)

(i) (Zhuangzi Renjianshi)

a. qì zhì dài shì zhè gāi jiāng chéng jīng èr bù jì.

b. zì zhī ài qīn, míng yē.

children ZHI love parents nature YE

‘Children’s loving of parents is human nature.’

(ii) a. [tā de chōu yān] shì wǒmen hěn jīng yá.

he DE smoke make us very surprise

‘His smoking made us very surprised.’

b. [tā de bù lái] shì dàjiā hěn shī wàng.

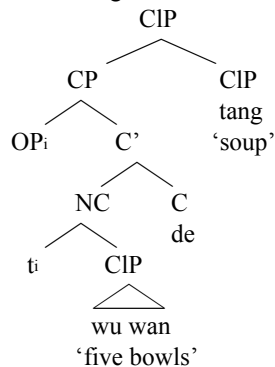
he DE not come make everyone very disappointed

‘His not coming made everyone very disappointed.’

⁴⁰ It may be noted here that various kinds of the phrase structure of Chinese relative clauses have been proposed in the literature. Cheng & Sybesma (1998), for instance, propose a nominal structure like (i) for the numeral-classifier-*de*-noun sequence in Mandarin, in which *wu wan* ‘five bowl’ is treated as nominal predicate of a relative clause (cf. Tang 1993, 1996, 2005c).

Mandarin (Cheng & Sybesma 1998)

(i) wu wan de tang ‘five bowl DE soup’



One point, however, that has not yet been touched upon so far may have to do with Simpson's predicative analysis of Chinese modifiers. Recall that for Mandarin relative clauses like those in (41b-d) and (43a), in which the predicate of the relative clause is not a nominal, D-XP structures like (43b-c) are posited in Simpson (2001). By contrast, for Mandarin possessive constructions like (41a), repeated below as (60a), D-XP structures as in (60b-d) are postulated.

Mandarin (Simpson 2001)

- (60) a. *wo de shu*
 I DE book
 ‘my book’
 b. $[_{DP} \text{ de } [_{CP} [_{IP} \text{ wo I } [_{VP} \text{ e shu}]]]]$
 c. $[_{DP} \text{ de } [_{CP} \text{ shu}_i [_{IP} \text{ wo I } [_{VP} \text{ e } t_i]]]]$
 d. $[_{DP} [_{IP} \text{ wo I } [_{VP} \text{ e } t_i]]_j \text{ de } [_{CP} \text{ shu}_i t_j]]$

In (60b-d) Simpson not only assumes the aforementioned claims about (40a-b) and (43b-c) but also adopts Kayne's (1994) (small-clause or) null-verb analysis of the possessive construction. That is, between the possessor *wo* ‘I’ and the possessee *shu* ‘book’ there exists an empty verb with the meaning of ‘have’.

Note that the modifying *de* in Mandarin may, however, appear with elements marked with various kinds of syntactic categories and semantic roles, as already shown in (45)-(49). In (49b), repeated below as (61a), for instance, the *de*-less *zuotian* ‘yesterday’ and the noun *baozhi* ‘newspaper’ do not bear a propositional meaning of ‘the newspaper is yesterday’ or ‘yesterday has the newspaper’ with a null verb.

Mandarin (Tang 2003)

- (61) a. *Zhangsan-de zuotian-de baozhi*
 Zhangsan-DE yesterday-DE newspaper
 ‘(lit) Zhangsan’s yesterday’s newspaper’
 b. $[\text{zhe ji tian}] \text{-de xinwen}$
 this several day-DE news
 ‘(lit) these several days’ news’
 c. $[\text{qian-mian}] \text{-de ren}$
 front-face-DE man
 ‘people in the front’

As shown in (i), *de* does not head the projection of DP and Kayne's (1994) complement and promotion analysis of relative clauses is not assumed. If Simpson's account of Chinese relative clauses should be on the right track, their posited relative structure like (i) will also be ruled out.

- d. benlai-de yisi
 original-DE meaning
 ‘the original meaning’

This non-predicative or non-possessive (null-verb) relation may be also found in (61b-d) and (55a). Consequently, examples like (62a-f), in which the *de*-less expressions in question occur alone as predicates of the sentences, and those like (63a-f), in which the *de*-less expressions act as subjects of the sentences, are all ungrammatical.

Mandarin (Tang 2003)

- (62) a. *baozhi e Zhangsan.
 newspaper e Zhangsan
 b. *baozhi e zuotian.
 newspaper e yesterday
 c. *xinwen e zhe ji tian.
 news e this several day
 d. *ren e qian-mian.
 man e front-face
 e. *yisi e benlai.
 meaning e original
 f. *xuesheng-men e qita
 student-MEN e the-other
 (63) a. *Zhangsan e baozhi.
 Zhangsan e newspaper
 b. *zuotian e baozhi.
 yesterday e newspaper
 c. *zhe ji tian e xinwen.
 this several day e news
 d. *qian-mian e ren.
 fornt-face e man
 e. *benlai e yisi.
 original e meaning
 f. *qita e xuesheng-men
 the-other e student-MEN

It thus seems that the non-predicative/attributive modification should be syntactically distinguished from the predicative modification, only the latter of which may be analyzed as relative clause (see also footnote 21).

Another relevant and important observation is that, as opposed to ill-formed (62a-f), in which the *de*-less expressions cannot act as predicates, sentences like (64a-b), not (64c-f), are well-formed, in which the *de*-marked expressions may function as predicates or comments.

Mandarin (Tang 2003)

- (64) a. *baozhi* (shi) *Zhangsan-de*.
 newspaper be Zhangsan-DE
 'The newspaper is Zhangsan's.'
 b. *baozhi* (shi) *zuotian-de*.
 newspaper be yesterday-DE
 '(lit) The newspaper is yesterday's.'
 c. **xinwen* (shi) [*zhe ji tian*]-de.
 news be this several day-DE
 d. **ren* (shi) *qian-mian-de*.
 man be front-face-DE
 e. **yisi* (shi) *benlai-de*.
 meaning be original-DE
 f. **xuesheng-men* (shi) *qita-de*.
 student-MEN be the-other

The grammaticality contrast between (62a-b) and (64a-b) may indicate that *de* is part of the whole predicative expression and thus it should not be treated as D. And the distinction in well-formedness between (64a-b) and (64c-f) may confirm our claim that various kinds of syntactic and semantic relation are involved between the modifying *de* and the noun.⁴¹

⁴¹ Note that nominals predicative in use are generally assumed to be non-referential, as English (i) illustrates.

English

- (i) He is a/*that teacher.

Cheng & Sybesma (1998), for instance, analyze *wu wan* 'five bowl' in [*wu wan*]-*de tang* 'five bowl DE soup' as nominal predicate of a relative clause in derivation, hence ungrammatical cases like **[zhe wu wan]-de tang* 'these five bowl DE soup', in which the nominal predicate *zhe wu wan* 'these five bowl' is definite in reference (see also footnote 40). Nevertheless, nominal expressions like *Zhangsan* 'Zhangsan' / *zuotian* 'yesterday' and *zhe ji tian* 'these several days' in (61a) and (61b), respectively, are definite in reference. If both Cheng & Sybesma's and Simpson's relative-clause analyses of the relevant nominal predicates are correct, it then remains unclear why while both *Zhangsan* in (61a) and *wu wan* in footnote 40 may act

Before turning to §4 and §5 for a discussion of the licensing of Chinese modifiers, it should also be noted that, as discussed in Tang (2003), Chinese modification markers like Mandarin *de*, Southern Min *e* and Hakka *nge* may also be found with the so-called noun-complement clauses as in (65) below, to be compared with (41b-d).

Mandarin

- (65) a. [ta shengbing]-de xiaoxi
 he sick-DE news
 ‘the news that he was sick’
 b. [ni ku-le]-de shishi
 you cry-LE-DE fact
 ‘the fact that you cried’

Examples like (65a-b) differ from relative clauses like (41b-d) in that in the former, not the latter, no overt relativized gap seems to be found that is co-indexed with the head noun. And noun-complement clauses may be regarded as complements rather than modifiers of nouns.

One question then arises with respect to the phrase structure of the noun complement clause in Chinese (and English). That is, should it be projected as D-XP in the sense of Simpson (2001)? Notice first that, as pointed out in Tang (2002:318), the so-called headless relative clauses in Chinese are not without restrictions. Compare, for instance, (66a-b) with (66c-e).

Mandarin (Tang 2002:318)

- (66) a. [mai dongxi]-de (ren) lai-le.
 buy thing-DE man come-LE
 ‘(lit) (The man) who bought things came.’
 b. wo taoyan [ta mai]-de (dongxi).
 I dislike he buy-DE thing
 ‘(lit) I dislike (the thing) what he bought.’
 c. [ni dui ta bu hao]-de *(ren) lai-le.
 you to he not good-DE man come-LE
 ‘The man to whom you are not nice came.’
 d. [ta mai dongxi]-de *(shijian)/*(didian)/*(fangshi) bu hao.
 he buy thing-DE time place manner not good
 ‘The time/place/manner that he bought things is not good.’

as nominal predicates, only the latter may be subject to the definiteness condition (cf. Tang 1993, 1996, 2005c).

- e. [ni bu lai]-de *(yuanyin) wei he?
 you not come-DE reason be what
 ‘What is the reason that you cannot come?’

A preliminary observation seems to be that when there appears no relativized gap, as in (66c), or an adjunct gap, as in (66d-e), the head noun needs to be overtly present. Interestingly, as shown in (67), noun complement clauses also seem to disallow the presence of a phonetically null head noun.

Mandarin (Tang 2003)

- (67) Dajia dou zhidao [ni shengbing]-de *(xiaoxi).
 everyone all know you sick-DE news
 ‘Everyone knew the news that you were sick.’

The issue, however, is not that simple about the (im)possibility of the occurrence of a null head noun with a modifier; many factors need to be taken into consideration. For one thing, for example, in view of grammatical cases like (68), one needs to see whether the gap under consideration may be an empty *pro*-from like English *one*-substitution, a trace via NP-deletion in the sense of Saito & Murasugi (1990),⁴² or something else (see Tang 1996).

Mandarin (Tang 2003)

- (68) [xin]-de bijiao gui.
 new-DE more expensive
 ‘The new ones are more expensive.’

For another, while some of the ungrammatical sentences like (66c-e) and (67) may be improved by the presence of the demonstrative-numeral-classifier sequence, it is not without constraints.

Mandarin (Tang 2003)

- (69) a. [ta mai dongxi]-de na yi ge *(didian) bu hao.
 he buy thing-DE that one CL place not good
 ‘That place that he bought things is not good.’

⁴² Saito & Murasugi (1990) claim that English examples like (i) should be analyzed as a case of NP-deletion, the gap of which is licensed by being the complement of *'s* in *D*.

English (Saito & Murasugi 1990)

(i) Lincoln's portrait didn't please me as much as Wilson's e.

- b. [ta mai dongxi]-de na yi jia (dian) bu hao.
 he buy thing-DE that one CL store not good
 ‘(lit) That (store) that he bought things is not good.’

In ungrammatical (69a), for instance, the classifier is the semantically less sortal *ge* and the head noun is the semantically more abstract *didian* ‘place’, whereas in grammatical (69b) the classifier is the semantically more sortal *jia* and the head noun is the semantically more concrete *dian* ‘store’ (cf. Saito & Murasugi 1990). However, as opposed to grammatical (69b) and ungrammatical (66c), respectively, (70a) below is ill-formed and (70b) is not.

Mandarin (Tang 2003)

- (70) a. na yi jia [ni mai dongxi]-de *(dian) bu hao.
 that one CL you buy thing-DE store not good
 ‘That store that you bought things is not good.’
 b. [ni dui ta bu hao]-de na yi ge (ren) lai-le.
 you to he not good-DE that one CL man come-LE.
 ‘(lit) That (man) to whom you are not nice came.’

As one last example, as discussed in Tang (1990, 1993, 1996, 2003), not only the ordering of the demonstrative-numeral-classifier sequence but also the absence of the demonstrative may affect the acceptability of the sentences in question. A similar kind of complexity may also be said about cases like (66a-b), with a relativized argument. Compare, for instance, sentences like (71a), with a relativized adjunct, and (71b), with a relativized argument, with those like (69b) and (66b).

Mandarin (Tang 2003)

- (71) a. [ta mai dongxi]-de yi jia *(dian) bu hao.
 he buy thing-DE one CL store not good
 ‘(lit) A store that he bought things is not good.’
 b. wo taoyan na san yang [ta mai]-de *(dongxi).
 I dislike that three CL he buy-DE thing
 ‘I dislike those three kinds of things that he bought.’

Taking all these different kinds of discussions into consideration, it seems that the issue remains unclear whether the grammaticality contrasts discussed so far should be attributed to a pure syntactic condition on the licensing of the trace as in Saito & Murasugi (1990) or to various kinds of syntactic and semantic conditions on the (non-)deictic property of the demonstrative, the (non-)sortal property of the classifier, the (non-)

restrictiveness of the relative clause, the scope of the modification of the modifier, the identification and interpretation of the empty category, etc. While we shall leave this issue for further research, it is still assumed in this paper that Chinese modification markers may not be treated as case marker or as demonstrative in the relevant sense. In other words, they do not head the projections of D and F in Chinese.

4. Feature marking and modifier licensing

So far we have shown in §2 that a functional projection of five-level DP-FP-NumP-CIP-NP representation of the Chinese nominal may be needed, in which the demonstrative, numeral, and classifier may be licensed by the distinct functional heads, and in §3 that Chinese modification markers may head their own functional projections, the distribution of which may be licensed by the distinct heads of the Chinese nominal structure. Now, let us see in this section and in §5 how the features of D, F, Num, Cl, and N may interact with the demonstrative, numeral, classifier, and noun to license different kinds of modifiers in Chinese.

Recall first that a claim is proposed in §2 that demonstratives, numerals, and classifiers may be licensed by the features [+referential], [α plural], and [α sortal], respectively, the generation of which may be adjunct, Spec, or head positions, depending on their morphological and syntactic behavior. In Travis (1988) and Tang (1990, 2001), among others, a theory of adjunct/modifier licensing is posited in which the adjunct/modifier may be licensed in accordance with the feature specification of the head and be projected under the recursive XP and/or X' (cf. Hsieh 2005).

A question then arises as to whether the grammatical features [+referential], [α plural] and [α sortal] may license modifiers other than those of demonstratives, numerals, and classifiers. To answer this question, consider first Mandarin cases like (56), repeated below as (72).

Mandarin

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

Two facts need to be noted about (72a-b). The pre-nominal modifier must follow the classifier and the object noun phrase must be interpreted as indefinite non-specific (see also footnote 14). Under a nominal structure like (19), the grammaticality contrast

between (72a) and (72b) seems to suggest that in Mandarin-type languages while the feature [α sortal] in CI does not license non-classifier-type modifiers, the noun with the feature [α count] may license modifiers, relative clauses or non-relative clauses.

Recall also that, as pointed out in §1, in Mandarin-type languages the modifier may precede or follow the numeral-classifier sequence. These two orderings, however, may contribute different readings to the referential interpretation of a noun phrase. That is, a non-bare noun with a post-numeral modifier may be non-specific or specific in reference, while a non-bare noun with a pre-numeral modifier needs to be interpreted as specific. Compare, for instance, the a and b sentences of (73)-(75) with the c and d sentences of (73)-(75).

Mandarin

- (73) a. *qianmian lai-le na (yi) ge nūhai.
front come-LE that one CL girl
b. *qianmian lai-le [hen piaoliang]-de (yi) ge nūhai.
front come-LE very pretty-DE one CL girl
c. qianmian lai-le (yi) ge [hen piaoliang]-de nūhai.
front come-LE one CL very pretty-DE girl
'From the front came a very pretty girl.'
d. qianmian lai-le (yi) ge nūhai.
front come-LE one CL girl
'From the front came a girl.'
- (74) a. *you zhe liang ben shu zai zuozi-shang.
have this two CL book on desk-top
b. *you [Zhangsan xie]-de liang ben shu zai zuozi-shang.
have Zhangsan write-DE two CL book on desk-top
c. you liang ben [Zhangsan xie]-de shu zai zuozi-shang.
have two CL Zhangsan write-DE book on desk-top
'There are two books that Zhansang wrote on the desk.'
d. you liang ben shu zai zuozi-shang.
have two CL book on desk-top
'There are two books on the desk.'
- (75) a. *ta mai-le na (yi) zhong yao hen youxiao.
he buy-LE that one CL medicine very effective
b. *ta mai-le [zui gui]-de yi zhong yao hen youxiao
he buy-LE most expensive-DE one CL medicine very effective
c. ta mai-le yi zhong [zui gui]-de yao hen youxiao.
he buy-LE one CL most expensive-DE medicine very effective
'(lit) He bought a most expensive kind of medicine that is very effective.'

- d. ta mai-le yi zhong yao hen youxiao.
 he buy-LE one zhong medicine very effective
 ‘(lit) He bought one kind of medicine that is very effective.’

Cases like (73), (74), and (75) are the so-called presentative sentences, existential sentences, and secondary-predicative sentences, respectively, in which certain syntactic and semantic conditions may be imposed on the reference of the nominals in question (see J. Huang 1987 and Tang 1990, among others). The grammaticality contrast between (73a), (74a), (75a) and (73d), (74d), (75d) suggests that the considered noun phrases may not be definite, on the one hand, and that between (73b), (74b), (75b) and (73c), (74c), (75c) indicates that the nouns with the modifier preceding the numeral-classifier sequence need to be interpreted as indefinite specific, on the other hand.⁴³ By contrast, in grammatical (73c) and (74c), with the presence of a post-numeral modifier, and (73d) and (74d), without the presence of any modifier, the noun phrases under consideration may receive the reading of indefinite non-specific.

The above-mentioned referential distinction via a different ordering of the modifier with the numeral-classifier sequence may be further evidenced by examples like (76) and (77), in which *you* ‘have’ may be allowed only with an indefinite non-specific subject.

⁴³ Similarly, as pointed out in Tang (2006b), in Formosan languages like Paiwan an ordering difference between the modifier phrase and the numeral phrase may result in a variation in the marking of oblique case.

Paiwan (Tang 2006b)

- (i) a. na-v-en-eLi ti kai tua/*tu [k-in-asengseng ni palang] a
 Perf-buy-AV Nom Kai Obl Obl make-PV Gen Palang A
 three A skirt
 ‘Kai bought the three skirts that were made by Palang.’
 b. na-v-en-eLi ti kai tua/ tu telu a [k-in-asengseng ni palang] a kun.
 Perf-buy-AV Nom Kai Obl Obl three A make-PV Gen Palang A skirt
 ‘Kai bought three of the skirts that were made by Palang.’

In (ia), with the relative clause preceding the numeral phrase, the oblique case marker *tu* is disallowed, which needs to be interpreted as indefinite. By contrast, in (ib), with the relative clause following the numeral phrase, both *tu* and *tua* may be permitted, the latter of which may carry the meaning of indefiniteness, in addition to that of definiteness in (ia). For more discussion of the relation between case marking and the reference of the noun phrase in Paiwan, see Tang et al. (1998) and Tang (2006b), among others.

Mandarin

- (76) a. (*you) [xin]-de yi zhong yao maiwan-le.
 have new-DE one CL medicine sell-LE
 ‘The new kind of medicine already sold out.’
 b. *(you) yi zhong [xin]-de yao maiwan-le.
 have one CL new-DE medicine sell-LE
 ‘(lit) A new kind of medicine already sold out.’
- (77) a. wo chi-le (*you) [ni chang tuijian]-de san dao cai.
 I eat-LE have you often recommend-DE three CL vegetable
 ‘I ate the three dishes that you often recommend.’
 b. wo chi-le (*you) san dao [ni chang tuijian]-de cai.
 I at-LE have three CL you often recommend-DE vegetable
 ‘I ate three dishes that you often recommend.’

And, as predicted by our analysis so far, the same impossibility of the occurrence of *you* may also be found with sentences like (55), repeated below as (78a-b), in which *qita-de*-type modifiers may only precede the numeral-classifier sequence.

Mandarin

- (78) a. wo zhao-bu-dao (*you) qita-de liang ge xuesheng.
 I find-not-arrive have the-other-DE two CL student
 ‘I cannot find the other two students.’
 b. *wo zhao-bu-dao (you) liang ge qita-de xuesheng.
 I find-not-arrive have two CL the-other-DE student
 c. (*you) qita-de liang ge xuesheng bu ken lai.
 have the-other-DE two CL student not willing come
 ‘The other two students are not willing to come.’

To summarize, it seems that of the features [+referential], [α plural], [α sortal], and [α count], only [+referential] in F and [α count] in N may license Mandarin modifiers that are not deictic, quantificational, sortal, or mensural in nature. In other words, Mandarin modifiers may be at least classified into three distinct types as in (79) (cf. (85)).

Mandarin

- (79) a. modifiers that may be licensed by [+referential], or
 b. modifiers that may be licensed by [+referential] or [α count], or
 c. modifiers that may be licensed by [α count].⁴⁴

⁴⁴ As discussed in Tang (1990, 2001), among others, different types of Chinese adjuncts and

An account along this line of thought then may capture the fact that in Mandarin no modifier may intervene between the numeral and the classifier. Instances like (80) are of this sort.

Mandarin

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

Typologically and theoretically speaking, two questions may be raised with respect to Mandarin (79). Why is it that only [+referential] in F and [α count] in N, but not the other two features in Num and CL, may license modifiers in Mandarin? Also, is there any Mandarin modifier that is licensed by the feature [–definite]? A plausible answer to the first question seems to be that in Mandarin-type languages only the lexical category N, which denotes the entity, and functional heads like F, not Num and CL, which may be associated strictly with the reference interpretation of the entity denoted by N, may license modifiers (see also the discussion in §5).

We have assumed in the aforementioned discussion that demonstratives deictic, anaphoric or indefinite specific in use are all licensed by the functional head F with the feature [+referential] (cf. Bernstein 1997 and Bruge 2002). By contrast, Mandarin expressions like *na* ‘which’ and *mei* ‘every’, for instance, that are quantificational and yet may appear with the numeral-classifier sequence may be posited to be licensed by the feature [–definite] in D. Furthermore, in view of cases like (81a-b)-(82a-b) below, in which *na* and *mei* may not be used alone and a modifier may not intervene between them and the numeral, expressions like *na* and *mei* may be generated as head, not Spec, of the projection of DP.

Mandarin

- (81) a. *na zui hao?
 which most good
 b. *na [Zhangsan xie]-de san ben shu
 which Zhangsan write-DE three CL book
 c. [Zhangsan xie]-de na san ben shu
 Zhangsan write-DE which three CL book

modifiers may be licensed by different verbal and nominal heads and they may be projected under the recursive XP and/or X'. In addition, some ordering requirements may be found with adjuncts and modifiers that are licensed by the same heads. Here we shall not go into the details of these ordering constraints.

- d. na san ben [Zhansan xie]-de shu
which three CL Zhangsan write-DE book
- (82) a. *wo kan-le mei.
I see-LE every
- b. *mei [wo xihuan]-de yi bu dianying
every I like-DE one CL movie
- c. [wo xihuan]-de mei yi bu dianying
I like-DE every one CL movie
- d. mei yi bu [wo xihuan]-de dianying
every one CL I like-DE movie

Note that, as also predicted by our analysis, these indefinite expressions with the overt realization of D do not exhibit the discussed subject-object asymmetry in distribution.

Mandarin

- (83) a. na (yi) ge ren zui gao?
which one CL man most tall
'Which man is the tallest?'
- b. mei (yi) ge haizi dou hen pang.
every one CL kid all very fat
'Every kid is very fat.'
- c. *(yi) ge beizi bei dapo le.
one CL cup by hit-break LE
'A cup was broken.'
- (84) a. ni da-le na (yi) ge haizi?
you hit-LE which one CL kid
'Which kid did you hit?'
- b. ta hen zhaogu mei (yi) ge xuesheng.
he very look-after every one CL student
'He took very good care of every student.'
- c. ta dapo le (yi) ge beizi.
he hit-break LE one CL cup
'He broke a cup.'

The licensing of Mandarin modifiers in (79) therefore may be revised as (85).

Mandarin

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

There, however, seems to be no Mandarin modifier that may be licensed by [–definite] in D or [+referential] in F, hence the ill-formedness of cases like (81b) and (82b). In other words, it seems that the features [–definite] and [+referential] in a nominal may never covertly or overtly agree with each other. That is, a noun cannot be both indefinite specific and definite/specific in reference.

5. Conclusion

If our discussion so far is on the right track, there are several interesting implications for the functional projections of modifiers and nominals in Chinese-type languages, which do not have the overt counterparts of English *the* and *a(n)*. First, for instance, the definite/specific non-bare noun phrase may have the internal hierarchical structure FP-NumP-CIP-NP, and the indefinite non-specific non-bare noun phrase may have the internal hierarchical structure DP-NumP-CIP-NP. In other words, the projections of DP and FP seem to be in complementary distribution and the indefinite non-specific noun phrase may project to a higher functional head than the definite/specific noun phrase.

Recall that it is pointed out in §2.4 that of Lin's (1997), Cheng & Sybesma's (1999), Li's (1998) and Kim's (2004) phrase structure analyses of Chinese nominals, only Cheng & Sybesma claim that in Chinese the indefinite non-bare noun phrase may project differently from the definite one, only the former of which may project to a higher functional head. Our findings in a way seem to support their postulation.

Second, while an empty F with the feature [+referential] may license non-demonstrative-type modifiers, an empty D with the feature [–definite] may not license non-quantifier-type modifiers, given the observation that in Chinese the noun with a pre-numeral modifier may not be indefinite non-specific in reference (cf. the grammaticality of cases like (81c) and (82c) in §4, in which the D head is overtly realized and a modifier may appear before the D). In other words, Longobardi's (1994) lexical government condition on an empty nominal head may be satisfied via a Spec-head agreement relation between an empty definite/specific F, not an empty indefinite non-specific D, and a modifier in adjunct position. This possibility seems to suggest that in Chinese an empty D head may be subject to a stricter licensing condition than an empty

F head, only the former of which needs to be subject to Longobardi's (1994) lexical government condition on empty categories.

While we shall leave for further research the typological parameterization of the licensing and realization of the empty D and F in Chinese languages, our findings so far seem to indicate that in Mandarin no overt head-to-head or Spec-to-Spec movement may take place to license the empty D and F heads or to check the respective [–definite] and [+referential] features of D and F (cf. Cheng & Sybesma 1999, Simpson 2001, and Hsieh 2005). For instance, in the case of Mandarin (77a), repeated below as (86a), the numeral *san*, with the feature of [+plural, +specific], may check at LF the relevant [+specific] feature in F.

Mandarin

- (86) a. wo chi-le [ni chang tuijian]-de san dao cai.
 I eat-LE you often recommend-DE three CL vegetable
 'I ate the three dishes that you often recommend.'

By contrast, in (86b) the numeral *san*, with the feature of [+plural, –specific], may check at LF the relevant [–specific] feature in D.⁴⁵

Mandarin

- (86) b. wo chi-le san dao [ni chang tuijian]-de cai.
 I eat-LE three CL you often recommend-DE vegetable
 'I ate three dishes that you often recommend.'

⁴⁵ In Mandarin, with an appropriate context, the Num-CL(-N) subject may be interpreted as specific, though not as definite, as shown in (i) and (ii) below.

Mandarin

- (i) A: haizi-men zai zuo sheme?
 child-MEN at do what
 'What are the kids doing?'
 B: yi ge (haizi) zai kan dianshi, liang ge (haizi) zai xie zuoye,
 one CL child at watch television two CL child at do homework
 qita-de (haizi) zai shuijiao.
 other-DE child at sleep
 '(lit) One (kid) is watching the television, two (kids) are doing the homework and the other (kids) are sleeping.'
 (ii) wo zuotian feichang nanguo, yi ge haopengyou bei sha-le.
 I yesterday extremely sad one CL good-friend by kill-LE
 'I was extremely sad yesterday; a good friend was killed.'

With the assumptions that in Mandarin both the specific and non-specific numerals do not move in syntax to the Spec positions of F and D and that in Mandarin only an empty [+referential] F, which may be invisible to Longobardi's (1994) lexical government condition, may license non-demonstrative-type modifiers, it is correctly predicted that the Mandarin noun with a pre-numeral modifier cannot be interpreted as indefinite non-specific.

In the case of Mandarin bare nouns, it is well known that they need to be interpreted as referential in subject position, though the same restriction does not hold for object position. Based on the assumption that Mandarin nouns, like numerals and classifiers, do not move in syntax to agree with D or F (cf. Cheng & Sybesma 1999), it follows that only in object position where lexical government of D by the verb may be available, may the bare noun be interpreted as referential or non-referential.⁴⁶ It also follows from the assumption that an empty F, not D, may license a modifier that in cases like (87) the Mandarin noun with a modifier needs to be interpreted as referential, regardless of whether it is located in subject or object position.

Mandarin

- (87) a. [ta xie]-de shu hen gui.
 he write-DE book very expensive
 'The books that he wrote are very expensive.'
 b. wo bu xihuan ni-de xuesheng.
 I not like you-DE student
 'I do not like your students.'

The impossible non-specific reading of the object noun phrase *ni-de xuesheng* 'your student' in (87b) seems to indicate further that in Mandarin lexical government itself does not enable an empty D to license the generation of non-quantifier-type modifiers.

While the considered D and F features seem to be morphologically marked in a similar way with the demonstrative, numeral, and noun in Chinese languages like Mandarin, Southern Min, and Hakka,⁴⁷ the same kind of marking, however, may not

⁴⁶ The requirement of lexical government of an empty D in Mandarin may also account for ungrammatical cases like (83c) in §4, repeated below as (i), in which the indefinite non-specific CL-N sequence appears in subject position.

Mandarin

- (i) *ge beizi bei dapo le.
 CL cup by hit-break LE

⁴⁷ As already pointed out in footnote 14, the occurrence of the CL-N sequence in Southern Min and Hakka seems to be not as good as that in Mandarin and Cantonese. This difference in the degree of acceptance between Mandarin/Cantonese and Southern Min/Hakka seems to indicate

hold in Chinese languages like Cantonese. For example, as pointed out in Cheng & Sybesma (1999), in Cantonese the CL-N sequence may be definite in subject and object positions, as in (88a-b), but it can be interpreted as indefinite non-specific only in object position, as in (89).

Cantonese (Cheng & Sybesma 1999)

(88) a. Zek gau gamjat dakbit tengwaa.
CL dog today special obedient
'The dog is specially obedient today.'

b. Wufei jam-jyun wun tong la.
Wufei drink-finish CL soup SFP
'Wufei finished drinking the soup.'

(89) Ngo soeng maai bun syu (lei taai).
I want buy CL book come read
'I want to buy a book (to read).'

In addition, according to Cheng & Sybesma (1999), in Cantonese bare nouns can be interpreted as indefinite non-specific, but not as specific, nor as definite.

These dialectal contrasts in reference interpretation between Mandarin and Cantonese, then, seem to suggest two things for the relevant feature marking of the demonstrative, numeral, classifier, and noun in these two languages. First, in both Mandarin and Cantonese the feature [–definite] may be relevant for the head D, numeral, classifier and noun. Second, in Mandarin the feature [+referential] may hold for the head F, demonstrative, numeral, and noun, whereas in Cantonese it may hold for the head F, demonstrative, numeral, and classifier, a difference that may be attributed to a variation between Mandarin and Cantonese in the diachronic development of classifiers (cf. Cheng & Sybesma 1999).⁴⁸

It is well known that, typologically speaking, rich-classifier languages like Chinese differ from non-classifier languages like English in that while English has overt articles and determiners, Chinese does not. Note, however, that Chinese does have overt quantifiers and demonstratives. Consequently, in Chinese the function of

that in Southern Min and Hakka the classifier is not yet fully relevant for the feature marking of [–definite] and [+referential].

⁴⁸ With the limited set of Cantonese data accessible, it is not clear to us that the discussed distinction in the [+referential] marking of the classifier between Mandarin and Cantonese needs to be derived from a postulation that in Cantonese, not Mandarin, the [+referential] feature in F is strong and thus may trigger overt movement. Here we shall leave this issue open.

[α definite] may be split so that D may mark the meaning of non-specific indefiniteness, and F the interpretation of definiteness and specificity.⁴⁹

References

- Abney, Steven P. 1987. *The English Noun Phrase in its Sentential Aspect*. Cambridge: MIT dissertation.
- Aikhenvald, Alexandra Y. 2000. *Classifiers: A Typology of Noun Categorization Devices*. Oxford: Oxford University Press.
- Aldridge, Edith. 2004. Internally headed relative clauses in Austronesian languages. *Language and Linguistics* 5.1:99-130.
- Alexiadou, Artemis. 1997. *Adverb Placement: A Case Study in Antisymmetric Syntax*. Amsterdam & Philadelphia: John Benjamins.
- Bernstein, Judy B. 1997. Demonstratives and reinforcers in Romance and Germanic languages. *Lingua* 102.2-3:87-113.

⁴⁹ As it may be assumed that the referents of specific and definite noun phrases already exist in the discourse, the features [+specific] and [+definite] are thus posited in our analysis to be both covered under the [+referential] feature of F. It, however, goes without saying that these two types of noun phrases differ in the degree of referential force. Tang (1993:739), for example, points out that the Mandarin modification marker *de* may be absent before a demonstrative, but not before a noun and a numeral.

Mandarin (Tang 1993:739)

- (i) a. wo xihuan ta *(de) shu.
I like he DE book
'I like his books.'
- b. wo xihuan ta *(de) san ben shu.
I like he DE three CL book
'I like his three books.'
- c. wo xihuan san ben ta *(de) shu.
I like three CL he DE book
'I like three of his books.'
- d. wo xihuan ta (de) na san ben shu.
I like he DE that three CL book
'(lit) I like his those three books.'
- e. wo xihuan na san ben ta *(de) shu.
I like those three CL he DE book
'I like those three books of his.'

An issue will be left for future study whether in Chinese-type nominals referential marking of specificity and definiteness should be split into two different heads.

- Bianchi, Valentina. 2000. The raising analysis of relative clauses: a reply to Borsley. *Linguistic Inquiry* 31.1:123-140.
- Borsley, Robert D. 1997. Relative clauses and the theory of phrase structure. *Linguistic Inquiry* 28.4:629-647.
- Bruge, Laura. 2002. The positions of demonstratives in the extended nominal projection. *Functional Structure in DP and IP: The Cartography of Syntactic Structures*, Vol. 1, ed. by Guglielmo Cinque, 15-53. Oxford & New York: Oxford University Press.
- Chang, Yung-li. 2000. *Gemalan Cankao Yufa*. Taipei: Yuanliu.
- Chen, Zhiwen. 1964. Jinzhi zhishici zhe de laiyan. *Zhongguo Yuwen* 1964.6:442-444.
- Cheng, Lisa L.-S., and Rint Sybesma. 1998. *Yiwan tang, yige tang*: classifiers and massifiers. *Tsing Hua Journal of Chinese Studies*, New Series 28.3:385-412.
- Cheng, Lisa L.-S., and Rint Sybesma. 1999. Bare and not-so-bare nouns and the structure of NP. *Linguistic Inquiry* 30.4:509-542.
- Chierchia, Gennaro. 1998. Plurality of mass nouns and the notion of semantic parameter. *Events and Grammar*, ed. by Susan Rothstein, 53-103. Dordrecht: Kluwer.
- Chung, Sandra. 1998. *The Design of Agreement: Evidence from Chamorro*. Chicago: University of Chicago Press.
- Cinque, Guglielmo. 1999. *Adverbs and Functional Heads*. New York: Oxford University Press.
- Diessel, Holger. 1999. *Demonstratives: Form, Function and Grammaticalization*. Amsterdam & Philadelphia: John Benjamins.
- Ernst, Thomas. 2002. *The Syntax of Adjuncts*. Cambridge: Cambridge University Press.
- Fang, Mei. 2002. Zhishici zhe han na zai Beijinghua zhong de yufahua. *Zhongguo Yuwen* 2002.4:343-356.
- Hsieh, Miao-Ling. 2005. Two types of modifiers and parallelisms between DPs and TPs in Chinese. *Language and Linguistics* 6.3:397-430.
- Huang, C.-T. James. 1982. *Logical Relations in Chinese and the Theory of Grammar*. Cambridge: MIT dissertation.
- Huang, C.-T. James. 1987. Existential sentences in Chinese and (in)definiteness. *The Representation of (In)definiteness*, ed. by Eric J. Reuland and Alice G. B. ter Meulen, 226-253. Cambridge: MIT Press.
- Huang, Lillian M. 1995. *A Study of Mayrinax Syntax*. Taipei: Crane.
- Huang, Lillian M. 2000a. *Beinanyu Cankao Yufa*. Taipei: Yuanliu.
- Huang, Lillian M. 2000b. *Shaoyu Cankao Yufa*. Taipei: Yuanliu.
- Huang, Shuanfan. 1999. The emergence of a grammatical category definite article in spoken Chinese. *Journal of Pragmatics* 31.1:77-94.
- Kahnemuyipour, Arsalan, and Diane Massam. 2004. Deriving the order of heads and adjuncts: the case of Niuean nouns. *Proceedings of AFLA-11*, 135-147. Berlin: ZAS.
- Kayne, Richard. 1994. *The Antisymmetry of Syntax*. Cambridge: MIT Press.

- Kim, Ji-yung. 2004. Specific nominals in Chinese and Korean. *Language and Linguistics* 5.1:243-270.
- Kurafuji, Takeo. 2004. Plural morphemes, definiteness and the notion of semantic parameter. *Language and Linguistics* 5.1:211-242.
- Li, Y.-H. Audrey. 1985. *Abstract Case in Chinese*. Los Angeles: University of Southern California dissertation.
- Li, Y.-H. Audrey. 1990. *Order and Constituency in Mandarin Chinese*. Dordrecht: Kluwer.
- Li, Y.-H. Audrey. 1998. Argument determiner phrases and number phrases. *Linguistic Inquiry* 29.4:693-702.
- Li, Y.-H. Audrey. 1999. Plurality in a classifier language. *Journal of East Asian Linguistics* 8.1:75-99.
- Lin, Jo-wang. 1997. Noun phrase structure in Mandarin Chinese: DP or NP. *Chinese Language and Linguistics*, Vol. 3: *Morphology and Lexicon*, ed. by Feng-fu Tsao and H. Samuel Wang, 401-434. Taipei: Institute of History and Philology, Academia Sinica.
- Longobardi, Giuseppe. 1994. Reference and proper names. *Linguistic Inquiry* 25.4:609-666.
- Lü, Shuxiang, and Lansheng Jiang. 1985. *Jindai Hanyu Zhidaici*. Shanghai: Xuelin.
- Mei, Tsu-Lin. 1986. Guanyu jindai Hanyu zhidaici. *Zhongguo Yuwen* 1986.6:401-412.
- Ouhalla, Jamal. 2004. Semitic relatives. *Linguistic Inquiry* 35.2:288-300.
- Saito, Mamoru, and Keiko Murasugi. 1990. N'-deletion in Japanese: a preliminary study. *Japanese/Korean Syntax*, Vol. 1, ed. by Hajime Hoji, 285-301. Stanford: CSLI.
- Simpson, Andrew. 1997. On the status of 'modifying' *de* in the Chinese DP. Paper presented at the conference "On the Formal Way to Chinese Languages". Irvine: University of California.
- Simpson, Andrew. 2001. Definiteness agreement and the Chinese DP. *Language and Linguistics* 2.1:125-156.
- Tang, Chih-Chen Jane. 1990. *Chinese Phrase Structure and the Extended X-bar Theory*. Ithaca: Cornell University dissertation.
- Tang, Chih-Chen Jane. 1993. Chinese *de* and English 's. *Bulletin of the Institute of History and Philology* 63.4:733-757.
- Tang, Chih-Chen Jane. 1996. *Ta maile bi shizhi* and Chinese phrase structure. *Bulletin of the Institute of History and Philology* 67.3:445-502.
- Tang, Chih-Chen Jane. 2001. Functional projections and adverbial expressions in Chinese. *Language and Linguistics* 2.2:203-241.
- Tang, Chih-Chen Jane. 2002. On nominalization in Paiwan. *Language and Linguistics* 3.2:283-333.

- Tang, Chih-Chen Jane. 2003. On functional projections of nominals and modifiers in Chinese. Paper presented at the Second Workshop on Formal Syntax and Semantics. Taipei: Academia Sinica.
- Tang, Chih-Chen Jane. 2004. Two types of classifier languages: a typological study of classification markers in Paiwan noun phrases. *Language and Linguistics* 5.2: 377-407.
- Tang, Chih-Chen Jane. 2005a. Typological study and linguistic theories—with special references to Chinese and Formosan languages. Paper presented at the Linguistics Workshop. Taipei: Academia Sinica.
- Tang, Chih-Chen Jane. 2005b. The syntax and semantics of demonstratives in Paiwan. Paper presented at the Taiwan-Japan Joint Workshop on Austronesian Languages. Taipei: National Taiwan University.
- Tang, Chih-Chen Jane. 2005c. Nouns or classifiers: a non-movement analysis of classifiers in Chinese. *Language and Linguistics* 6.3:431-472.
- Tang, Chih-Chen Jane. 2006a. Demonstratives and DP structure in Formosan languages. *Language and Linguistics* 7.4:935-990.
- Tang, Chih-Chen Jane. 2006b. Case marking, reference and DP structure: a comparative study of Paiwan, Atayal and Chamorro. *Streams Converging Into An Ocean*, ed. by Henry Y. Chang, Lillian M. Huang, and Dah-an Ho, 143-183. Taipei: Institute of Linguistics, Academia Sinica.
- Tang, Chih-Chen Jane, Yung-li Chang, and Dah-an Ho. 1998. On noun phrase structures in Paiwan. *Tsing Hua Journal of Chinese Studies*, New Series 28.3:335-384.
- Travis, Lisa. 1988. The syntax of adverbs. *McGill Working Papers in Linguistics (Special Issue on Germanic Syntax)*, 280-310.
- Wei, Pei-chuan. 1990. *Hanwei Liuchao Chengdaici Yanjiu*. Taipei: National Taiwan University dissertation.
- Xu, Mo-Fan. 2002. *Zhe, na yanjiu pingshu*. *Yuyan Wenzixue* 2002.2:77-84.
- Yang, Hsiu-Fang. 1991. *Taiwan Minnanyu Yufa Gao*. Taipei: Da'an.
- Yoon, Jong-Yurl. 1990. *Korean Syntax and Generalized X-Bar Theory*. Austin: University of Texas dissertation.
- Zeitoun, Elizabeth. 2000. *Bunongyu Cankao Yufa*. Taipei: Yuanliu.

[Received 29 November 2005; revised 24 August 2007; accepted 3 September 2007]

Institute of Linguistics
Academia Sinica
130, Sec. 2, Academia Road
Nankang, Taipei 115, Taiwan
hsjatang@gate.sinica.edu.tw

修飾語認可及漢語定冠詞詞組結構： 以屬性檢驗爲架構的分析

湯志真

中央研究院

在北京話這類沒有顯形定冠詞和不定冠詞的漢語中，數詞前的修飾語會造成一個名詞組得被詮釋爲殊指，數詞後的修飾語則不會有相同的效應。這些及其他有關修飾語分布和指涉方面的特性得以妥善說明，如果能將表示無指和定指/殊指這兩種不同的屬性分置於 D 和 F 這兩種不同的中心語。D 和 F 的屬性設定將認可不同類型的修飾語，而且相關設定將在 LF 結構經由相關成分的隱形移位來檢驗。這樣的分析方式除了可以說明漢語修飾語及指示詞、數詞、量詞、名詞之間的共存限制，也可以說明北京話和廣東話名詞組之間的指涉異同。這樣的分析還同時對漢語有下列三個意涵：(A) 只有如名詞類的代表體物的實詞及如 D 和 F 類的純粹表達名詞指涉的虛詞中心語能認可特定類型的修飾語，(B) 無指名詞組的功能範疇投射比定指/殊指名詞組的功能範疇投射還要更高一個層面，以及 (C) 空號 D 中心語的認可條件比空號 F 中心語的還要更嚴格。

關鍵詞：定指，殊指，無指，修飾語認可，屬性檢驗