

Adjectival modification in Mandarin Chinese and related issues^{*}

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Against the background of recent typological studies postulating crosslinguistically valid hierarchies for the modifiers within the DP (cf. Scott 1998; 2002(a,b), Chao et al. 2001, Laenzlinger 2000), the present article argues that both types of modification available in Mandarin Chinese have to be taken into account: that where the subordinator de intervenes between the adjective and the head noun, 'A de N', and the case of simple juxtaposition of the adjective and the noun 'A N'. Extensive evidence is provided against the widespread idea that attributive adjectives in Mandarin Chinese can be analysed as relative clauses and that 'A N' de-less modification structures are compounds (cf. Sproat & Shih 1988, 1991, Duanmu 1998, Simpson 2001). As a consequence, adjectives cannot be conflated with intransitive stative verbs, but have to be recognized as a separate part of speech in Mandarin Chinese.

1. Introduction

Adjectives are a notoriously difficult issue in Chinese linguistics and have been rather neglected during the last decades by more theoretically oriented studies. To elucidate the status of adjectives becomes necessary in order to guarantee the commensurability of the phenomena examined if Mandarin Chinese is to be included in typological studies of adjectival modification in the DP. This subject has regained theoretical importance due to the claim made by Cinque (1994) and elaborated by e.g. Scott (1998; 2002a,b), Chao et al. (2001), Laenzlinger (2000) that the functional hierarchies in the clause proposed for adverbs (cf. Cinque 1999 and Tenny 2000) might be observable in the DP as well.

The crucial problem for this kind of investigation when applied to Mandarin Chinese is to determine which type of modification, that with the subordinator *de*, 'adjective *de* N', or that without *de*, 'adjective N', is comparable to modification in languages like English, French, or German where adjectival modifiers are simply juxtaposed with the head noun. It is important to note from the outset that the SAME adjective can appear with or without *de* in a large number of cases, and that the choice between the *de*-less modification structure and the modification structure with *de* cuts across the classification in terms of individual-level and stage-level predicates.

Our answer will be that both types of modification have to be taken into account. In order to support this claim, we have to sort out some of the most important confusions and misconceptions prevalent in the current literature; their refutation will constitute the main task of this article. By taking into account a much more representative array of data than has been

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done in previous work, we intend to obtain a more accurate picture of modification in Chinese and to lay the ground for future more-in-depth studies of those aspects that can be addressed only briefly here.

The article is organized as follows. Based on the existence of a large class of non-predicative adjectives, section two provides evidence against the widespread analysis of 'Adj *de* N' as a relative clause and briefly discusses the issue of adjectives as a separate class. Section three draws a comparison between *de*-less modification structure and the modification structure with *de* and shows that in the *de*-less modification structure, the adjective is interpreted as a defining property. Furthermore, evidence is provided for the necessity to distinguish between 'A N' compounds [_{N°} A-N] and 'A N' phrases [NP A N]. In section four we discuss the semantic and syntactic constraints on the *de*-less modification structure and examine the function of *de* in the light of the distinction it operates between defining and accessory properties. We argue against *de* as a realization of D and briefly consider the implications of Rubin's (2002) proposal to analyse *de* as an instantiation of the new functional category *Modifier*. We conclude in section five.

2. Against a relative clause analysis of attributive adjectives

In the same way that in Chinese linguistics prepositions are often claimed to be a type of verb (or to still show some verbal properties) and postpositions to be a kind of noun,¹ adjectives are in general conflated with (intransitive) stative verbs (for example by Mc Cawley 1992). This latter point of view is largely based on a superficial analysis of the syntax of attributive adjectives.

It is a well-known fact that a noun in Mandarin Chinese can in general be modified either by simple juxtaposition with an adjective (respecting the strict head-final order of the NP) or with the aid of the subordinator *de* following the adjective (for a discussion of the semantic differences between these two cases, cf. section 3.2 below):

- (1a) yi-ge congming ren²
1 -CL intelligent person
- (1b) yi-ge congming de ren
1 -CL intelligent SUB person
'an intelligent person'

Since the same subordinator *de* also appears between a relative clause and the head noun (cf. (2)), it has been suggested that a prenominal adjective followed by *de* should be analysed as a relative clause (cf. among others Sproat & Shih 1988, 1991; Duanmu San 1998), while the *de*-less modification structure 'A N' should be analysed as a compound i.e., as a word (for evidence against this latter view, cf. below, section 3.1):

- (2) yi-ge xihuan xiao de ren
1-CL like laugh SUB person
'a person who likes laughing'

¹ For the different syntactic properties of prepositions vs. verbs, cf. Djamouri & Paul (1997); for the existence of postpositions as a class distinct from nouns, cf. Gasde & Paul (1996).

² The following abbreviations are used in glossing examples: CL classifier; EXP 'experiential aspect'; NEG negation; PART sentence-final particle; PL plural (e.g. 3PL = 3rd personplural); SG singular; SUB subordinator.

This suggestion crucially relies on the fact that an adjective like *congming* can function as a predicate (i.e. without the copula *shi*):³

- (3) Zhangsan zhen congming
 Zhangsan really intelligent
 'Zhangsan is really intelligent.'

According to this scenario, *yi-ge congming de ren* (1b) would represent a head noun modified by a relative clause and hence should be translated as 'a person who is intelligent' rather than as 'an intelligent person'. This is precisely the view adopted by Sproat & Shih (1988, 1991) and Duanmu (1998), for whom all sequences 'adjective *de*' are equated with relative clauses and all sequences 'adjective N' with compounds.⁴ Their analysis, however, does not bear further scrutiny.

First of all, there exists a large class of so-called *non-predicative* adjectives which cannot function as predicates on their own, but only as modifiers (cf. Lü & Rao 1981).⁵ When in a predicative function, the copula *shi* and the particle *de* are obligatory (Paris 1979: 61). Crucially, however, *shi...de* is excluded from the modification structure in the DP, as illustrated in (4b) and (5b):⁶

³ Like the typological studies proposing a modifier hierarchy for the DP referred to in the introduction, which *de facto* presuppose the notion of adjective, I will not be concerned here with aiming at a crosslinguistically valid definition of the category *adjective*, either. Rather, I will content myself with providing different syntactic properties of adjectives vs. intransitive stative verbs as evidence internal to Chinese in favour of adjectives as a separate class.

⁴ Duanmu (1998: 184): "In English, there are three kinds of nominal structures, compound, phrase, and relative clause. In Chinese, however, there are just two nominal forms, [Modifier N] and [Modifier *de* N]. [...] This leads to the unexpected conclusion that Chinese nominals are either words or relative clauses, with no 'nominal phrases' in the traditional sense."

Sproat & Shih (1988: 476): "[...] *de* adjectives are [...] syntactically and semantically just like relative clauses." Note that except for the observation that an item like *congming* can function as a predicate on its own (cf. (3)) Sproat & Shih (1988, 1991) do not provide any evidence for their claim.

⁵ As Lü & Rao (1981: 85) note, a non-predicative adjective can over the course of time turn into a predicative one as has been the case for e.g. *chouxiang* 'abstract' and *juti* 'concrete' which can now function as a predicate without *shi...de*, be modified by adverbs and be put into the comparative degree:

(i) Zheyang de jiangfa tai chouxiang, bu haodong , neng bu neng jiang -de juti xie ?
 such SUB explanation too abstract NEG comprehensible can NEG can explain-DE concrete a:little
 'Such an explanation is too abstract, not very comprehensible, can you explain it in a more concrete way?'

Apparently, colour terms have also undergone such a change, because whereas e.g. Paris (1979: 60) still lists them under absolute adjectives, nowadays they can be modified by adverbs and appear in the comparative construction:

(ii) Ta jia de cao tebie lü
 3SG home SUB grass especially green
 'The grass of his yard is very green.'
 (iii) Ni -de cao bi wo-de lü
 2SG -SUB grass compared:to 1SG-SUB green
 'Your grass is greener than mine.'

Evidently, the fact that an item can change class membership does not challenge the existence of the two different classes themselves.

With respect to the attempt of deriving attributive adjectives from relatives, Bolinger (1967: 3) notes: "By itself, the fact that many more adjectives are restricted to attributive position than to predicative position is suspicious; if anything the reverse should be true if we want to base attribution on predication."

⁶ Note that *de* in the *shi...de* construction with non-predicative adjectives is different from the subordinator *de* in the NP (cf. Paris 1979: 60ss). Furthermore, the use of the label "non-predicative" in the Chinese classification here is more restrictive than its use in the general linguistics literature where non-predicative adjectives are defined as those that cannot appear in the copula construction (cf. Kamp 1975) i.e., they are precluded from any predicative function:

(i) my future students

- (4a) Zhei-ge panzi *(shi) fang *(de)
 this -CL plate be square DE
 'This plate is square/green/old.'
- (4b) Ta mai-le [DP yi-ge (*shi) fang de panzi]
 3SG buy-PERF 1 -CL be square SUB plate
 'He bought a square/green/old plate.'
- (5a) Zheixie wenjian *(shi) juemi *(de)
 these document be top-secret DE
 'These documents are top-secret.'
- (5b) Ta diu-le [DP yixie (*shi) juemi de wenjian]
 3SG lose-PERF some be top-secret SUB document
 'He lost some top-secret documents.'

Second, non-predicative adjectives are not limited to the *de*-less modification structure (as the relative clause analysis of the sequence 'Adjective *de* N' would lead us to expect, *de* being obligatory in relative clauses), but can equally occur in the modification structure with *de*. A larger sample of non-predicative adjectives both in modification structures with and without *de* is given below (for the constraints governing *de*-less modification, cf. sections 3.2 and 4.1 below).

- (6) yi-ge fang (de) panzi
 1 -CL square SUB plate
 'a square/green/old plate'
- (7) yi-ge jia gudong (Zhu 1984: 7)
 1 -CL fake antique
 'a fake antique'
- (8) tianran (de) zhenzhu
 natural SUB pearl
 'natural pearls'
- (9) juemi (de) wenjian
 top-secret SUB document
 'top-secret documents'
- (10) gongtong de yuyan
 common SUB language
 'a common language'

(ii) *my students are future

(iii) John is handsome/tall/white/French (cf. Laenzlinger (2000: 63))

Note that the copula construction in Chinese is used for nominal predicates only and is of the type 'DP *shi* DP'; it does not involve *de*.

- (11) benlai de yisi
 original SUB meaning
 the original meaning'

Non-predicative adjectives clearly invalidate the claim that every sequence 'adjective *de*' is to be analysed as a relative clause, the adjectives in question being defined precisely by their inability to constitute the predicate of a clause. (11) is a very clear case in point, because it is impossible for *benlai* 'original' to function as a predicate - even when *shi...de* is present - and it thus exactly parallels the behaviour of *original* in English.⁷

In any case, as soon as the entire range of modification structures is taken into account, it becomes evident that *de* is not limited to introducing relative clauses, but subordinates all kinds of phrases to the head noun. Also note that nominal modifiers - like adjectival modifiers - can appear both in *de*-less modification and modification with *de* (cf. (12) - (13)):

- (12) yi-zhang boli / mutou (de) zhuozi
 1 -CL glass/ wood SUB table
 'a glass/wooden table'
- (13) yi-ge ci / boli (de) chabei
 1 -CL porcelain/ glass SUB teacup
 'a porcelain/glass teacup'
- (14) Li laoshi he Zhang laoshi de xuesheng
 Li teacher and Zhang teacher SUB student
 'teacher Li and teacher Zhang's students'
- (15) wu-li de juli
 5 -mile SUB distance
 'a distance of 5 miles'
- (16) dui ziji de yaoqiu
 towards self SUB demand
 'the demands on oneself'

⁷ Note that Sproat & Shih's sole argument for the relative clause analysis of the modification structure with *de* is based on an incorrect analysis of their single example *qian-zongtong* 'former-president' = 'ex-president' (Sproat & Shih 1988: 476; (35)-(37); 1991: 574; (22)-(23)). They observe that *qian* 'former' cannot be used predicatively (**zhei-ge zongtong qian* 'this-CL president former') and that no *de* is allowed in the modification structure (*qian* (**de*) *zongtong*). Hence they conclude that non-predicative adjectives are unacceptable in the modification structure with *de*, which accordingly is (mis)analysed as involving a relative clause. If we now compare *qian* with its bisyllabic counterpart *yiqian* 'former' we see that the reason why *qian*- is unacceptable in the *de* modification structure simply reduces to its being a bound morpheme (the same holds for other pairs like *ben*- vs. *benlai* 'original', *yuan*- vs. *yuanlai* 'original, former' etc.):

- (i) Beijing daxue yiqian de xiaozhang
 Beijing university former SUB president
 'the former president of Beijing University'
- (ii) **zhei-ge xiaozhang shi yiqian de*
 this-CL president be former DE
 (*'This president is former.')

The unacceptability of *yiqian* as a *shi...de* predicate is due to its restrictive nature and therefore exactly parallels the case of *future, former* etc. in English (cf. footnote 5 above).

To summarize, the possibility of non-predicative adjectives appearing in both modification structures, with and without *de*, combined with the well-known fact that *de* is obligatory for relative clauses invalidate the relative clause analysis of the modification structure with *de*.⁸

This result is not surprising insofar as Bolinger (1967) already demonstrated the unfeasibility - both on syntactic and semantic grounds - of deriving attributive adjectives from predicative adjectives in English. Against this background, the general validity of Kayne's (1994) relative clause analysis of adjectival modification becomes questionable, where the adjective functions as a (copula-less) predicate to the head noun as its subject. (17) indicates the derivation of *lü de huaping* 'green vase' as proposed by Simpson (2001: 148) in the spirit of Kayne (1994):

- (17a) [DP de [CP [IP huaping lü]]]
DE vase green

- (17b) [DP de [CP huaping_i [IP t_i lü]]]
DE vase green

- (17c) [DP [IP t_i lü]_m [D de [CP huaping_i t_m]]]
green DE vase

As illustrated in (17a), *de* is analysed as the head D with a CP as its complement. In (17b), the subject *huaping vase* raises to the specifier of CP. Finally, in (17c) the remnant IP containing only the predicate *lü* 'green' raises to the specifier position of DP in order to produce the correct linear order *lü de huaping*.

Besides the analysis of *de* as D which in itself is very problematic (also cf. section 4 below), this scenario encounters all the difficulties discussed above. In other words, it cannot account for modification (both with and without *de*) involving non-predicative adjectives at all, nor can it derive the modification structure without *de* available for both predicative and non-predicative adjectives. Furthermore, it is completely unclear how this analysis should deal with nouns as modifiers (cf. (12) -(13)) or, for that matter, with the entire range of modifiers in modification structures with *de* displayed in (14) - (16) above.⁹ The analysis in (17) must therefore be rejected for Chinese (also cf. Aoun & Li 2003: 151ff. for the same point of view).

Non-predicative adjectives are not only the major evidence against the relative clause analysis of the modification structure with *de*, they also provide much ignored evidence in favour of treating adjectives as a class distinct from intransitive stative verbs, something which is still debated in Chinese linguistics (cf. e.g. McCawley 1992: 236 who concludes that "Mandarin Chinese simply does not have any such category as A[jective]s"; cf. Zhu

⁸ Aoun & Li (2003: 148ff.) independently arrive at the same conclusion, like us invoking non-predicate adjectives in attributive position as main evidence. Lim (2001) equally distinguishes between relative clauses and the modification structure with *de*, mainly based on interpretation differences. Also cf. Yamakido (2000) who challenges an overall relative clause analysis for attributive adjectives in Japanese.

⁹ Even if in the case of (14) one applied the analysis Simpson (2001: 151 - 152) proposes for a possessive structure like *wo-de shu* 'my book' (cf. (i) - (iii)), one would still be left with the problem of how to derive DPs like (12) *yi-zhang mutou de zhuozi* 'a wooden table', (15) *wu-li de juli* 'a distance of five miles' and (16) *dui ziji de yaoqiu* 'the demands on oneself' where the modifiers can neither be construed as a possessor nor as a relative clause.

(i) [DP de [CP [IP wo I° [VP e shu]]
(ii) [DP de [CP shu_i [IP wo I° [VP e t_i]]
(iii) [DP [IP wo I° [VP e t_i]]_k de [CP shu_i t_k]]

1956/80, Shen 1997, Zhang 2000, Huang Shi-Zhe 2003 for an opposite view). A similarly ignored piece of genuine morphological evidence against the conflation of adjectives with stative verbs is the difference in reduplication patterns: whereas the reduplication of bisyllabic predicative adjectives like e.g. *ganjing* 'clean' (AB) gives rise to *ganganjingjing* (AABB), bisyllabic stative verbs like e.g. *xihuan* 'to enjoy, be happy' follow the reduplication pattern for verbs in general and are simply repeated as such *xihuan xihuan* (AB AB) (cf. Chao 1968: 207).¹⁰

3. *de*-less modification vs. modification with *de*

The availability of two types of modification, with and without *de*, immediately raises the question concerning the semantic differences involved and whether these semantic differences correlate with syntactic differences i.e., word status for the *de*-less modification structure ('adjective/noun N') and phrasal status for the modification structure with *de* ('adjective/noun *de* N').

3.1. Syntactic status of the *de*-less modification structure : compound or phrase ?

Many scholars (ranging from the Chinese linguists back in the fifties and sixties¹¹ to Sproat & Shih (1988, 1991) and Duanmu (1998) in more recent times) subscribe to the view that every sequence 'adjective/noun N' is in fact a compound i.e., a word. The modification structure with *de*, 'adjective/noun *de* N', however, is unanimously assigned phrasal status, due to the presence of *de*.

Chinese evidently displays a large number of 'A-N' and 'N-N' compounds as for example *xiao-fei* 'small-cost' = 'tip', *da-yi* 'big-coat' = 'overcoat', *hong-hua* 'red-flower' = 'safflower' (plant used in traditional Chinese medicine), *cha-hua* 'tea-flower' = 'camelia', *long-tou* 'dragon-head' = 'tap', and *huo-che* 'fire-vehicle' = 'train'. But it is not correct to automatically deduce compound i.e., word status from the simple absence of *de*. For besides the 'A-N' and 'N-N' compounds illustrated above, there exist numerous 'A N' and 'N N' sequences where the head noun is accessible and which accordingly have to be assigned phrasal status (cf. (18) - (20)). They thereby sharply contrast with compounds where this accessibility is precisely excluded (cf. (21), (23)), word-internal structure not being visible to phrase level rules (cf. the *Lexical Integrity Hypothesis* as e.g. formulated in Huang 1984):¹²

¹⁰ As noted by Paris (1979: 87, footnote 18), absolute adjectives cannot be reduplicated. Though the semantic properties of the adjectival reduplication AABB pattern i.e., the so-called *vivid reduplication* (cf. Chao 1968) are still poorly understood, it is important to point out that stative verbs like e.g. *zhidao* 'to know', *xihuan* 'to enjoy, be happy', *manyi* 'to be content' etc. never allow reduplication according to the adjectival AABB pattern, but have to follow the verbal 'AB AB' pattern:

- (i) Rang ta zhidao zhidao wo -de lihai (Meng et al. 1984: 918)
let 3SG know know 1SG-SUB (dis)advantages
'Let him know my advantages and disadvantages.'
- (ii) Ni chang ge ge jiao dajia xihuan xihuan (ibid., p. 802)
2SG sing CL song let everybody enjoy enjoy
'Sing a song so that everybody can enjoy him/herself.'

¹¹ For a collection containing the translations of the most influential articles of that period, cf. Paris (1980).

¹² Huang (1984 : 60ff.) gives the following examples to illustrate the effects of the Lexical Integrity Hypothesis. First, subparts of a word cannot be conjoined:

- (ia) [N° huo-che] gen [N° qi -che]
fire-vehicle and gas-vehicle
'train(s) and car(s)'
- (ia) *[huo gen qi] che
fire and gas vehicle

Second, subparts of a word are not visible to interpretation rules; accordingly, (ii) is acceptable:

- (18) Wo juede [NP huang chenshan] bi [NP hong -de Ø] haokan
 1SG think yellow shirt compared:to red -SUB pretty
 'I think that yellow shirts are prettier than red ones.'
- (19) Amei bu xihuan huang meigui, hong-de hai keyi
 Amei NEG like yellow rose red -SUB still acceptable
 'Amei doesn't like yellow roses, red ones are still ok.'
- (20) Bu mai da pangxie, mai xiao -de
 NEG buy big crab buy small-SUB
 'Don't buy a big crab, buy a small one.'
- (21) *Amei bu xiang chi [N° hong-hua] , [NP huang-de] hai keyi
 Amei NEG want eat red -flower=safflower yellow-SUB still acceptable
 ('Amei doesn't want to take safflower, yellow ones are still ok.')
- (22) Zhangsan bu xihuan yong mutou zhuozi, tie -de hai keyi (Fu 1987: 295, (74))
 Zhangsan NEG like use wood table iron-SUB still ok
 'Zhangsan doesn't like using wooden tables, iron ones are still ok.'
- (23) *Amei bu xihuan cha-hua , hong-de hai keyi
 Amei NEG like tea-flower=camelia red -SUB still ok
 ('Amei doesn't like camelias, red ones are still ok.')

Since in a noun phrase (cf. (18) - (20), (22)) the head noun is visible to phrase-level rules, an identity relation can be construed with the head noun in a subsequent NP, thus licensing an empty head in the latter. In a compound (cf. (21), (23)), however, the head noun is invisible beyond the word boundary, hence no identity with the head noun in the subsequent NP can be construed and no empty head is allowed in the latter.¹³ The contrast between the 'A N' and 'N N' sequences in (18) - (20) and (22), on the one hand, and those in (21), (23), on the other, clearly indicates the phrasal status of the former and the compound i.e., word status of the latter.¹⁴

- (ii) yi-kuai lüse -de [N° hei -ban]
 1 -CL green-SUB black-board
 'a green blackboard'

Third, anaphoric rules cannot refer to a subpart of a word (examples taken from Postal 1969):

- (iiia) Chomsky likes Chomsky-ites/*him-ites
 (iiib) All Bloomfieldians like Bloomfield/*him

¹³ As illustrated below, an NP with an empty head cannot serve as an answer for a question "out of the blue" i.e., an empty head noun requires the existence of an antecedent (be it in the linguistic or non-linguistic context):

- (ia) Ni yao shenme? (slightly changed example from Wang 1996: 651)
 2SG want what
 (ib) Zhi / hong-de zhi / *hong-de
 paper/ red -SUB paper/ red -de
 'What do yo want? Paper./ Red paper./ The/a red one.'

¹⁴ Wang Zhirong (1996) also argues for a phrasal status of the *de*-less modification structure, but uses as his exclusive argument the non-compositionality of meaning for compounds vs. the compositionality of meaning in *de*-less modification structures. For him, *da men* 'big door' e.g. is a compound when meaning 'main gate', but a noun phrase when meaning 'big door'. Though it is correct that the meaning of compounds may be non-compositional, while that of phrases (with the exception of idioms) must be compositional, there also exist compounds with (more or less) compositional meanings such as *xiao-shi* 'little-matter' = 'minor matter, petty thing', *hong-bao* 'red-envelope' = 'red envelope containing money offered as a gift' etc. Accordingly, (non-)

Feng Shengli (2001) has equally argued against the analysis of *de-less* modification structures as e.g. *da panzi* ‘big plate’ on a par with ‘A-N’ compounds as e.g. *da-guar* ‘unlined long gown’.¹⁵ He observes that when a modifier such as e.g. *bai* ‘white’ is added, different ordering patterns obtain:

- (24a) da bai panzi
big white plate
'a big white plate'

- (24b) *bai da panzi
white big plate

- (25a) bai da- guar
white big-gown
'a white unlined long gown'

- (25b) *da- bai guar
big- white gown

Given that the ordering restrictions for modifiers apply in syntax and that e.g. a modifier relating to colour must be nearer to the head noun as a modifier relating to size (also cf. section 3.3 below), he concludes that *da-guar* ‘unlined long gown’ is a compound. For its internal structure is invisible to the ordering restrictions and (25b) is ungrammatical due to a violation of the *Lexical Integrity Hypothesis*. *Da panzi* ‘big plate’ in (24), however, obeys the ordering restrictions and therefore must be distinguished from compounds like *da-guar*. His observation thus confirms the contrast between A-N compounds, on the one hand, and *de-less* A N modification structures, on the other.

However, contrary to our proposal, he does not take this contrast as evidence in favour of the phrasal status of the *de-less* modification structure. Instead, he introduces the distinction *lexical* vs. *syntactic compound* and postulates two different derivations in order to account for the differences observed in (24) - (25). Thus, *da-guar* is a compound formed in the lexicon and accordingly its internal structure cannot be affected by phrase level rules. *Da panzi*, by contrast, is formed in the syntax by head-to-head adjunction; ordering restrictions can apply in the case of two adjectives and give rise to the pattern in (24a), where the

compositionality of meaning is not a reliable criterion for phrase vs. compound status, but the (in-) accessibility of phrase-level rules must be examined.

An anonymous reviewer raises the question why despite the phrasal status of the *de-less* modification structures it is impossible to e.g. conjoin the adjectives here. This is probably due to the constraints on the size of the modifier in the *de-less* modification structure to be discussed in section 4.2 below.

¹⁵ An anonymous reviewer challenges the validity of the *Lexical Integrity Hypothesis* (LIH) by pointing out the awkwardness of (i) which s/he interprets as arising from the visibility of *da* ‘big’ in the compound *da-guar*:

- (i) ??yi-jian xiao de da-guar
1-CL small SUB big-gown

The informants consulted by us confirmed the judgement for (i). On the other hand, the same informants rejected the second clause of (ii) which clearly shows that the elements within the compound *da-guar* are NOT visible to the anaphoric rules operating on the phrase level:

- (ii) Wo mai-le yi-jian da-guar ,* ta mai-le yi-jian xiao -de
1SG buy-PERF 1-CL big-gown 3SG buy-PERF 1- CL small-DE

‘I bought an unlined long gown, (he bought a small one).’

More research is needed here to accommodate both types of judgement under the LIH.

adjective related to size precedes the colour term. Note that according to Feng (2001: 171) in each step the adjunction of the adjectival head to the noun results in an N° i.e., *bai panzi* ‘white plate’ and *da bai panzi* ‘big white plate’ are both analysed as compounds: $[N^\circ \text{ bai} [N^\circ \text{ panzi}]]$, $[N^\circ \text{ da} [N^\circ \text{ bai panzi}]]$.¹⁶

This analysis can, however, not be correct, given the pattern observed in (18) - (20) above, where the head noun of the 'A N' sequence is clearly visible to anaphoric rules operating on the phrase level. Accordingly, we cannot endorse Feng's (2001) analysis of the *de*-less modification structure as a (syntactic) compound, because it wrongly predicts that the head noun in such a structure is inaccessible.

Last, but not least, it is not correct that *de-less* modification is restricted to monosyllabic "light" adjectives as suggested by Sproat & Shih (1988: 466, 474; 1991: 566) who consider this constraint as an additional argument for the word status of 'A/N N' sequences. On the contrary, both bisyllabic adjectives as e.g. *qiguai* 'strange', *piaoliang* 'pretty' etc. (cf. (26) - (29)) as well as complex modifiers i.e., modifiers consisting themselves of a 'modifier-modifiee' structure (cf. (30) - (31)) are allowed in the *de-less* modification structure:

- (26) yi-ge qiguai xianxiang
1 -CL strange phenomenon
'a strange phenomenon'

(27) putong shenghuo
ordinary life
'an ordinary life'

(28) yi-jian piaoliang/ ganjing yifu
1 -CL pretty / clean dress
'a pretty/clean dress'

(29) yi-ge laoshi / congming ren
1 -CL honest/ intelligent person
'an honest/intelligent person'

(30) yi-ba [ying suliao] yizi
1 -CL hard plastic chair
'a chair of hard plastic' (Fu 1987: 286, (55))

(31) yi-ge [hei qi] yigui
1 -CL black lacquer wardrobe
'a black-lacquered wardrobe' (Fan 1985: 215)

The preceding discussion shows that the *de-less* modification structure is NOT on a par with the English cases like *cold cream*, *narrow miss*, *maritime law*, *military base* etc. discussed in detail by Bolinger (1967). They are analysed as compounds because - among

¹⁶ As far as we can see, the word status assigned to the compounds created in syntax in fact prevents the ordering restrictions from applying here, contrary to Feng's claim (which is not spelt out any further). For after the adjective has adjoined to the nominal head, we obtain a compound and the adjective within this compound is not accessible anymore to the ordering restrictions applying on the phrase level. This internal contradiction strongly suggests that Feng's conception of *syntactic compound* is not viable.

other criteria - the adjective is inseparable from the noun and cannot be put into the comparative degree.¹⁷

To summarize, Chinese makes use of two modification structures on the phrasal level, one with and one without *de* (the latter to be distinguished from the superficially identical A N compounds).¹⁸ The phrasal status of the *de-less* modification structure constitutes an additional argument against the relative clause analysis of the modification structure with *de*, because the latter crucially depends on the erroneous automatic correlation between absence of *de* and wordhood. We will now turn to the interpretation differences observed for *de-less* modification vs. modification with *de*.

3.2. The semantics of modification with and without *de*

The interpretation differences associated with the presence or absence of *de* as a matter of fact are a rather old preoccupation, as shown by the lively debate it provoked in China during the fifties and sixties (cf. the collection containing translations of the most influential articles of that period edited by Paris (1980)). This debate was mostly concerned with describing the semantic differences between the two modification types and trying to find contexts where only one of the two modification structures is allowed.¹⁹ It was generally agreed upon that a *de-less* modification structure gives rise to an interpretation of the NP as a newly created designation.²⁰ In other words the interpretation of 'adjective noun' is more than a simple intersective one here. For example, *mutou zhuozi* 'wood table' is not meant to describe a table which happens to be wooden, but rather presents *mutou* 'wood(en)' as a defining property of this type of table. In *mutou de zhuozi*, however, the interpretation is

¹⁷ "There is a question whether any examples of the type *medical student*, *industrial machinery*, *maritime law*, etc. are freely associated adjectives and nouns rather than compounds created in this way instead of by drawing on some other resources such as noun + noun. If we assume that a given phrase is a compound, then it follows that the adjective is inseparable and no predication will necessarily relate to it." (Bolinger 1967: 31ff)

"A good case could be made for recognizing most instances of exclusively attributive adjectives as raw material for compounding. They share with obvious compounds the inability to take the comparison. [...]

*That was a narrower miss. That was a wider miss.

[...]. So it appears that *narrow miss* is a compound by this reckoning, while *wide miss* is not. (ibid., p. 32)
The argument is the weakest with certain standardly classifying adjectives which rather freely take predicative position. Adjectives of nationality are the most noteworthy subclass.

These writers are American. The most famous paintings are Italian. This product is Canadian." (ibid., p. 33)

¹⁸ Note that in the remainder of this article, the term *de-less modification structure* refers exclusively to a noun phrase [NP A N] and does not include A-N compounds [N° A-N].

¹⁹ The following passage from Chen (1955), in the French translation given by Paris (1980: 22-23), illustrates the kind of discussion arising around the contrast between *de-less* modification and modification with *de*:

"Si vous avez chez vous deux enciers, un grand et un petit, et que vous demandiez à quelqu'un de votre famille d'en apporter un grand, vous avez deux possibilités. Vous pouvez dire:

ba da moher na -lai

BA grand encier prendre-venir

'Apporte le grand encier.'

[Si] vous considérez que *da moher* est l'appellation d'une chose, vous n'avez pas mis l'accent sur sa caractéristique. Mais, si vous pensez que l'on puisse se tromper, vous voulez être clair, et pouvez dire emphatiquement:

ba da de moher na -lai

BA grand SUB encier prendre-venir

'Apporte le grand encier.'

da sera marqué dans l'intonation."

²⁰ The term employed here by the Chinese linguists as e.g. Chen (1955: 25) is *ming2cheng1* 'name, designation', translated into French as *appellation* by Paris (1980: 22).

purely intersective and *mutou* 'wood(en)' suggests a contrast with other modifiers as for example *tie* 'iron' in *tie de zhuozi* 'an iron table'. This difference is admittedly a very subtle one and accordingly, most contexts allow both types of modification structures (cf. (32)). But as Fu (1987) has shown, there also exist a few diagnostic contexts where only the *de*-less modification structure is allowed, as for example the identification context in (33):

- (32) Ta ba mutou (de) zhuozi / hei (de) toujin song ren le (Fu 1987: 302)
3SG BA wood SUB table / black SUB scarf give people PART
'He gave wooden tables/black scarfs to people.'
- (33) Zhe shi mutou (*de) zhuozi / hei (*de) toujin
This be wood SUB table / black SUB scarf
'This is a wooden table/ a black scarf.'
- (34) Zhangsan yigeren yi-tian keyi zuo san-zhang mutou (*-de) zhuozi
Zhangsan alone 1 -day can make 3 -CL wood -SUB table
'Zhangsan on his own can make three wooden tables a day.' (Fu 1987: 292)

The examples by Tang (1979) and Zhu (1984) illustrate the same contrast (where the presence of *de* in e.g. (35b) implies the contrast with a stupid person, who would be expected to act in a muddle-headed way):

- (35a) Ni shi ge congming ren , wo bu bi duo jieshi (Tang 1979: 147)
2SG be CL intelligent person 1SG NEG must much explain
'You are somebody intelligent, I don't need to explain a lot.'
- (35b) Yi-ge congming de ren bu hui zuo zheyang hutu de shiqing
1 -CL intelligent SUB person NEG will do such muddle-headed SUB matter
'An intelligent person would not do such a muddle-headed thing.'
- (36a) Xuexiao you yange guiding Zhu Dexi (1984: 11, (15, 16))
school have strict rule
'The school has strict regulations.'
- (36b) Xuexiao you ji -xiang yange de guiding
school have several-CL strict SUB rule
'The school has several strict regulations.'

According to Fu (1987: 303) the modifier in the *de*-less modification structure is conceived of as expressing a permanent property, and that in the modification structure with *de* as a transient property. However, since the preceding examples illustrate that both individual-level predicates (as e.g. *congming* 'intelligent') and stage-level predicates (as e.g. *ganjing* 'clean' cf. (28)) can appear in the *de*-less modification structure, it is in fact not appropriate to talk in terms of the opposition *permanent* vs. *transient* properties here. Instead, we propose a slightly different approach along the following lines. The *de*-less modification structure allows the speaker to encode a property as a defining characteristic of the entity

referred to by the resulting NP.²¹ In the modification structure with *de*, by contrast, the speaker presents a property as an accessory one, in the sense that this property is presented as not instrumental in establishing a new (sub) type of N. Note that this is not to imply that an accessory property cannot be stable through time (e.g. it would not make sense to state that to be made of wood is a transient property of a table); it is just meant to capture the fact that this property is not chosen as the one singling out a subtype.²² Again, both individual level and stage level predicates can occur in the modification structure with *de* (as to be illustrated by the examples given in the remainder of this article).

3.3. Sequential order of modifiers

Having so far discussed modification structures with one modifier only, we will now briefly examine the case of several modifiers in modification with and without *de*, in order to obtain a more complete picture for both modification structures.

As illustrated in (37) – (39), the ordering restrictions observed for other languages apply in Chinese as well, insofar as (adjectival and nominal) modifiers relating to material, colour, and shape have to be nearer to the head noun than those referring to e.g. size.²³

- | | |
|--|---|
| (37a) yi-tiao da hei gou
1 -CL big black dog
'a big black dog' | (37b) *yi-tiao hei da gou
1 -CL black big dog |
| (38a) yi-zhang xiao fang zhuor
1 -CL small square table
'a small square table' | (38b) *yi-zhang fang xiao zhuor
1 -CL square small table |
| (39a) yi-ge xiao boli chabei
1 -CL small glass teacup
'a small glass teacup' | (39b) *yi-ge boli xiao chabei
1 -CL glass small teacup |

The (b) examples of (37) - (39) are acceptable, however, if *de* is present (an observation going back to Xiao Fu 1956: 26):

²¹ This does, however, not mean that every modifier is allowed in *de*-less modification. We will elaborate on the semantic aspects in section 4 below.

²² Our description of the semantics obtained in the *de*-less modification structure resembles Bouchard's (1998: 145) characterization of prenominal adjectives in French as defining properties (e.g. *tes lisses cheveux* 'your sleek hair', *ce plat pays* 'that flat country'). However, prenominal adjectives in Romance also encode the intrinsic value of the noun, as observed by Klein-Andreu (1983: 151): Italian *dulce miel* 'sweet honey', French '*la blanche neige* 'white snow'. The latter is precisely excluded in the Chinese *de*-less modification structure: cf. **tian fengmi* 'sweet honey' vs. (*feichang*) *tian de fengmi* '(extremely) sweet honey'; for it is not possible to use an intrinsic property of X to define a particular type of X. Also cf. footnote 33 below for the observation that across languages the semantics of the more constrained modification pattern overlap only partially.

²³ Ordering restrictions of this kind are in general interpreted as evidence for a hierarchy of functional categories within the DP. The following is the hierarchy given by Laenzlinger (2000: 59) where he conflates under larger semantic meta-classes several adjacent adjective classes proposed by Scott (1998):

[_{QUANTIF} ordinal > cardinal] > [_{SPEAK-ORIENT} subjective comment > evidential] >
[_{INTERNAL PHYSIC PROPERTY} size > length > height > speed > depth > width] >
[_{MEASURE} weight > temperature > ? wetness > age] >
[_{EXT. PHYSIC PROPERTY} shape > colour > nationality/origin > material]

This hierarchy is adopted with minor modifications by Scott (2002b: 33).

- (40) yi-tiao hei de da gou
 1 -CL black SUB big dog
 'a big black dog'
- (41) yi-zhang fang de xiao zhuor
 1 -CL square SUB small table
 'a small square table'
- (42) yi-ge boli de xiao chabei
 1 -CL glass SUB small teacup
 'a small glass teacup'

The contrast between (37) - (39) and (40) - (42) has led Sproat & Shih (1988, 1991) to claim that only *de*-less modification is comparable to adjectival modification in languages like English with simple juxtaposition of head noun and adjective, because ordering restrictions seem to be observable exclusively in *de*-less modification.²⁴ The modification structure with *de* where the opposite ordering is possible is therefore dismissed as an "avoidance strategy" (whose nature is not elaborated upon at all) where the speaker is exempt from the necessity of ordering.²⁵ Accordingly, *de*-less modification represents "direct" modification for Sproat & Shih (1988, 1991) and is thereby on a par with modification in languages like English, whereas the modification structure with *de* is qualified as "indirect" and has no counterpart in languages like English. In the light of the preceding discussion of the semantic differences between *de*-less modification and modification with *de*, it is quite evident that their conclusion does not at all do justice to the complexity of the data involved.

First of all, it is not correct that in a modification structure with *de* as in (40) – (42) no stand with respect to ordering is taken. On the contrary, the different orders of the adjectives correspond to different interpretations, because the presence of *de* after the first modifier gives rise to an interpretation where the adjectives are precisely not ranked alike. *Da* 'big' in (40) and *xiao* 'small' in (41) and (42) are conceived of as defining properties and as a result, *da gou* 'big dog', *xiao zhuor* 'small table' and *xiao chabei* 'small teacup' are interpreted as constituting particular types of dogs, tables and teacups, respectively. It is these newly created types as a whole that are subsequently modified. In the case of (41) and (42), it is possible to capture this in the translation by 'square mini-tables' and 'glass mini-teacups', respectively (where evidently one has to abstract away from the differences in syntactic status, compound status for the English examples *mini-N* and phrasal status for the corresponding Chinese examples *xiao N*).²⁶

Second, the same meaning difference obtains when *de* appears between two adjectives respecting the "correct" order illustrated in (37a) - (39a)): in (43) *da de hei gou* is interpreted

²⁴ Apparently, Sproat & Shih do not see any contradiction between assigning compound i.e., word status to *de*-less modification structures (cf. p. 474, 477) and their claim that ordering restrictions only apply to *de*-less modification structures. If Sproat & Shih were right and the *de*-less 'A (A) N°' sequences under investigation here really were words, the impossibility of inverting the order of the adjectives would simply be due to the fact that word-internal structure is inaccessible to phrase level rules, and accordingly would not reveal anything about the (non-) existence of ordering restrictions in Chinese.

²⁵ "Since Chinese adjectives can quite generally occur as *de* modifiers, making one of the two adjectives into a *de* modifier would effectively avoid a decision on ordering them. We suggest that this avoidance strategy has become grammaticalized in Mandarin and explains the data we have just seen. English, which has only direct adjectival modification, cannot adopt such an avoidance strategy." (Sproat & Shih 1988: 472)

²⁶ Why in the modification structure with *de* the modifiers can "violate" the hierarchy is a question which can only be answered once we have a satisfactory analysis of *de* (cf. section 4 below).

as a particular type of dog defined by its black colour and whose (big) size is presented as a accessory property:

- (43) yi-tiao da de hei gou
 1 -CL big SUB black dog
 'a big black dog'

Accordingly, it is more than evident that modification with *de* is not just an "avoidance strategy" as claimed by Sproat & Shih (1988, 1991), but - along with *de*-less modification - needs to be taken into account for a comprehensive analysis of modification in the Chinese DP.

4. The function of *de*

It is commonly agreed upon that *de* has the function of subordinating modifiers to the nominal head; its exact syntactic status, however, is still under debate and no satisfying analysis has been proposed so far.²⁷ We will not solve that very complex issue here either, but we suggest to approach it from a different angle, namely the meaning differences related to its presence/absence as observed above, an aspect of *de* largely neglected so far by the studies aiming at determining its syntactic nature.

4.1. *de* as a syntactico-semantic divide of the NP

The examples (40) - (43) above of the type 'A₁ de A₂ N' clearly illustrate that a modifier is interpreted differently depending on whether it is to the right of *de* and simply juxtaposed with the head noun (the case of A₂) or whether *de* intervenes (the case of A₁). Translated into hierarchical terms, this suggests that *de* serves to divide the NP into two different syntactico-semantic domains: a modifier in the domain below *de* is interpreted as a defining characteristic (the case of *de*-less modification), whereas a modifier in the domain above *de* is interpreted as an accessory property (the case of modification with *de*). The somewhat circumstantial formulation "is interpreted as" is necessary because, as observed above, the same property can in principle be presented by the speaker as either a defining or an accessory property.²⁸ Thus, *da* 'big' and *hei* 'black' e.g. can appear in both modification structures, with and without *de*, accompanied by the interpretation differences discussed in section 3.2 above:

²⁷ This view is shared by Aoun & Li (2003: 250, note 12) who likewise have to admit failure here, not being able to offer a new analysis of *de*, either (though they dismiss an analysis of *de* as a functional head). Instead, they insist on the well-known and generally accepted fact that a modification structure with *de* is a phrasal category (in contrast to a *de*-less modification structure which they wrongly analyse as a compound). Since *de* "associates" a phrasal category with the head noun, they fall back on Li & Thompson's (1981: 113) term of *associative marker* for *de*. Alternative analyses of *de* include that by for example Li (1985: 137-139) who considers *de* a case assigner on a par with English 's (D hosting the demonstrative pronouns *zhe/na* 'this/that' (Li 1998)). For Tang (1990, 1993: 737) *de* is a functional category different from D, but neither the exact features of this functional head nor its complement structure are discussed. Simpson (2001: 143) suggests that *de* is "a determiner whose existence in the language is no longer justified by any contribution of definiteness to the DP, but solely by a secondary function [...] of introducing a predication/modification on the NP [...]." Recall that for Simpson *de*-modifiers of any category are to be reduced to relative clauses analysed within Kayne's (1994) antisymmetry approach (cf. (17) above).

²⁸ This is reflected in the fact that the Chinese literature on *de* typically provides pairs with the same adjective-noun sequences where *de* can be present or absent: *hutu (de) hua* 'muddleheaded talk', *xingfu (de) shenghuo* 'happy life', *zhoumi (de) buzhi* 'careful arrangements' etc. (Fan Jiyan 1958: 214).

- (44) yi-tiao da (de) gou
1 -CL big SUB dog
'a big dog'

- (45) yi-tiao hei (de) gou
1 -CL black SUB dog
'a black dog'

The role of *de* as a divide is more readily discernible in the case of nominal modifiers :

- (46) meiguo liuxuesheng (Wen 1998: 37)
America student:studying:abroad
'American students abroad' (not: 'America's foreign students')

- (47) meiguo de liuxuesheng
America SUB student:studying:abroad
'American students abroad;
America's foreign students i.e., foreign students studying in America.'

In the *de*-less modification structure in (46), *meiguo* 'America' can only be interpreted as referring to the nationality/origin while in the structure with *de*, *meiguo* 'America' has as wide a range of interpretation as e.g. the genitive in English (including that of nationality/origin).

Evidently, we do not want to imply that every property can be presented as a defining characteristic via *de*-less modification, the more so as the semantic properties of the head noun likewise play a role, as observed by Zhu (1956: 9-10) and many others after him:

- (48a) zang yifu
dirty clothing'

- (48b) *zang tang
dirty candy

- (49a) bai zhi / toufa
white paper / hair

- (49b) *bai shou
white hand

- (50a) gui dongxi
expensive thing

- (50b) *gui dangao
expensive cake

- (51a) congming ren / haizi
intelligent person/ child

- (51b) *congming dongwu
intelligent animal

But for most dimensions ranging from e.g. material, colour, shape to size etc. there seems to exist a choice as to whether they can be encoded as defining or rather accessory properties.²⁹ Recall that *de*-less modification (cf. (33) - (36) above) gives rise to the interpretation of the 'A/N N' sequence as (a designation for) a newly created type, in other words, the 'A/N N' sequence has to result in a natural, plausible classification. In our opinion, it is this constraint which explains why *de*-less modification is not always possible.³⁰

This state of affairs is reminiscent of the restrictions governing the distribution in prenominal vs. postnominal position for adjectives in English investigated by Bolinger (1967). Provided that both positions are potentially available for a given adjective, the adjective is interpreted as a characteristic property in the prenominal position, and as an occasional, temporary property in the postnominal position:

- (52a) the only navigable river
- (52b) the only river navigable
- (53a) Who were the guilty people?
- (53b) Who were the people guilty? (Bolinger 1967: 4)

As Bolinger (1967: 4) states “[...] *the only river navigable* is unambiguously occasion, *the only navigable river* unambiguously characteristic. Similarly with *Who were the guilty people?*, which characterizes and classifies, vs. *Who were the people guilty?*, which relates the guilt to an occasion.”

Bolinger (1967) also comments extensively on the fact that the acceptability of an adjectival phrase in the prenominal position is difficult to predict, because it largely depends on pragmatic factors i.e., on whether the resulting NP is conceived of as a (culturally) relevant characterization. Discussing the reason why unlike *ill-behaved child* and *home-loving man*, **mistake-erasing secretary* and **husband-waking wife* are unacceptable, he says: “These must wait the day when we have some interest in characterizing secretaries as mistake-erasing and wives as husband-waking.” (Bolinger 1967: 7). Accordingly, there exist numerous “irregularities”: e.g. *your absent friend* is acceptable, while **your present friend* is not; the same holds for *deposited money* vs. **withdrawn money* (ibid., p. 9, 11). Conversely, it is not excluded that a former exclusively temporary modifier becomes acceptable in the prenominal position, “if the situation is such that nouns are distinguished by it” (ibid., p. 11): *the then president* vs. **the now president*, or *a nearby building* vs. **a nearby bus*.

The same unpredictability as to what counts as a natural, plausible classification observed for English by Bolinger equally holds for Chinese and explains the “gaps” in the paradigm for *de*-less modification: *bai toufa* ‘white hair’, but not **bai shou* ‘white hand’,

²⁹ There is one class of adjectives that is systematically excluded from *de*-less modification, namely reduplicated forms as e.g. *ganganjingjing* from *ganjing* 'clean' (mentioned in section 2 above; also cf. footnote 10). This fact is well-known in the Chinese traditional literature (Lü et al. 1980: 640), but unfortunately completely neglected in typologically-oriented studies on adjectival modification. The explanation for this restriction necessitates a detailed analysis of reduplication that goes beyond the scope of this article; cf. Paul (2004).

³⁰ Wang Zhirong (1996) tries to predict the (un-)acceptability of the *de*-less modification structure in terms of the semantic selection by the adjectives: an adjective that selects only one dimension as e.g. colour terms can occur without *de*, whereas an adjective such as *gao* 'tall, high' associated with two dimensions (height and talent) is excluded from the *de*-less modification structure, hence **gao ren* 'tall person'. Given the acceptability of *gao lou* 'high building', however, he has to resort to the stipulation that when only one of several selected dimensions is activated, *de*-less modification is nevertheless possible.

congming ren/haizi ‘intelligent person/child,’ but not **congming dongwu* ‘intelligent animal’ etc.³¹

4.2. Syntactic constraints governing the *de*-less modification structure

The preceding discussion indicates that both in English and Chinese, the NP is divided into two parts, which correspond - to a great extent - to two different semantic domains.

In English, it is the prenominal vs. the postnominal position which reflect the distinction characteristic vs. temporary properties (Sadler & Arnold 1994: 193).³² For Chinese, the two relevant domains are that below and above *de*: a modifier encoded below *de* is interpreted as a defining property (the case of *de*-less modification), whereas a modifier above *de* is interpreted as an accessory property.

The restriction "to a great extent" in the upper statement is necessary because both in English and Chinese, there are conditions under which the correlation between syntactic position and semantic interpretation does not hold anymore.

For English, it is adjectives with complements that have to appear postnominally, irrespective of the semantic nature of the property: *a girl clever with her hands, a man fond of children* (Sadler & Arnold 1994: 193).

For Chinese, it is a well-known fact that in general *de* is obligatory when the adjective is modified by an adverb (cf. Fan Jiyan 1958: 214; Xiao Fu 1956 among others):

- (54a) yi-tiao da (de) gou
1 -CL big SUB dog
'a big black dog'
- (54b) yi-tiao tebie da *(de) gou
1 -SUB especially big SUB dog
'an especially big dog'
- (55a) yi-ge congming (de) ren /haizi
1 CL intelligent SUB person/child
'an intelligent person/child'
- (55b) yi-ge feichang congming *(de) ren /haizi
1 CL extremely intelligent SUB person/child
'an extremely intelligent person/child'

³¹ It is therefore incorrect to interpret the unacceptability of certain *de*-less ‘A N’ combinations as an argument showing that adjectives in Chinese are members of a non-productive closed (functional) class, as claimed by Chao et al. (2001).

³² Sadler & Arnold (1994) recast Bolinger’s (1967) analysis in terms of the opposition between individual-level and stage-level predicates. They also show that individual-level predicates are excluded from the postnominal position (*ibid.*, p. 192, (16a-b)):

(i) ?? a man tall
(ii) ?? a person intelligent

There are some exceptions to the generalisation that only individual-level predicates may appear prenominally, which Sadler & Arnold (1994: 193) note themselves: "[...] stage-level readings are not totally excluded in prenominal position - one can speak of *currently navigable rivers*, for example, where *currently navigable* is presumably a stage-level predicate". Recall that in Chinese the availability of *de*-less modification cuts across the classes defined in terms of individual vs. stage-level properties; we have e.g. *congming ren* ‘intelligent child’ as well as *ganjing yifu* ‘clean clothes’ (cf. (26) -(29) above).

- (56a) yi-ge xiao (de) chabei
 1 -CL small SUB teacup
 'a small teacup'

(56b) yi-ge hen xiao *(de) chabei
 1 -CL very small SUB teacup
 'a very small teacup'

This shows that there are not only semantic constraints on the *de*-less modification structure (it must result in a natural, plausible classification), but also syntactic ones. Apparently, only heads are allowed as modifiers here (under the assumption that adverb plus adjective form a maximal projection AP).³³ In fact it is data of the type illustrated in (54) - (56) that Feng (2001: 170) adduces as evidence against the phrasal status of the *de*-less modification structure. If this structure were indeed a phrase, so his reasoning, adverbs should be acceptable here. In his (syntactic) compound analysis of the *de*-less modification structure (e.g. *da (bai) panzi* ‘a big (white) plate’), however, adverbs can be excluded, because after adjunction to the head noun, the adjective is part of the compound [_{N°} A [_{N°} A N°]] and accordingly is not accessible to modification by an adverb.

Although this approach seems attractive at first sight, I will argue in the following that it does not really solve the problem it was designed for, and that in the end it fares worse than the phrasal analysis of the *de*-less modification structure advocated here.

First of all, Feng's (2001) compound analysis is clearly invalidated by the accessibility of the head noun in *de*-less modification structures, as discussed in section 3.1 above.

Second, the situation with respect to the (un)acceptability of adverbs in *de*-less modification structures is more complex. While it is correct that adverbs as e. g. *hen* ‘very’, *tebie* ‘especially’, *feichang* ‘extremely’ etc. are excluded in *de*-less modification structures, the superlative adverb *zui* ‘most’ is sometimes allowed here:³⁴

- (57) zui di /gao qiwén
most low/high temperature
'the lowest/highest temperature'

(58) zui gao shuiping
most high level
'the highest level'

(59) zui xin chanpin/ chengjiú
most new product/ achievement
'the latest product/achievement'

³³ Though numerous studies have established the existence of "upper" functional projections like DP, Number Phrase and Classifier Phrase in Chinese (cf. among others Cheng & Sybesma 1999, Li 1998, Tang 1990, 1993) the architecture of the Chinese NP proper has not been mapped out clearly yet and we can therefore only offer a tentative explanation of why only heads seem to be allowed in *de-less* modification. Also cf. our discussion of crosslinguistically observed similar constraints on prenominal adjectives further below in this section.

³⁴ The observation that in general the modification of an adjective by an adverb is only allowed in the modification structure with *de* goes back to the fifties (cf. e.g. Xiao Fu 1956, Fan Jiyan 1958) where at the same time the exceptions of the type illustrated in (57) - (59) were noted. Accordingly, it is not correct to state as e.g. Sproat & Shih (1988, 1991) and Feng (2001) do, that adverbs are never acceptable in the *de*-less modification structure.

³⁵ The sample given here invalidates Huang's (2001: 2.6) claim that adverbs in the *de*-less modification structure are only acceptable with deverbal nominalizations of type <e,t> as e.g. *chengjiu* 'achievement' in (59).

From a semantic point of view, it is certainly no coincidence that the examples above involve *zui* 'most' rather than other degree adverbs as e.g. *tebie* 'especially', *feichang* 'extremely' etc.³⁶ Since the superlative locates the property at the endpoint of a scale, '*zui A N*' is more likely to result in a plausible, natural classification.³⁷

From a syntactic point of view, the unacceptability of other adverbs than the superlative one suggests that *zui* plus adjective forms a complex adjectival head, where the possibility of this complex head formation can be conceived of as an idiosyncratic (morphological) property of *zui* 'most', not shared with other adverbs. This seems to be on the right track, because another superlative adverb, *ding* 'utmost, extreme', an equivalent of *zui* used only in the spoken language, always requires the presence of *de* and is excluded from the *de*-less modification structure (cf. Lü et al. (1980: 703).³⁸

The complex head analysis of *zui* plus adjective can be integrated into our analysis of the *de*-less modification structure as an NP without any problems: whether the modifiers themselves are simple or complex heads does not affect the phrasal status of the *de*-less modification structure as a whole, required by the visibility of the head noun to anaphoric rules (cf. (18)-(20) above and (67) below).

Concerning Feng (2001), the cases of '*zui A N*' (not mentioned in his article) can be accommodated within his approach, provided they are given an account different from the remaining adverbs i.e., along the lines discussed in the preceding paragraph. For if his analysis for adverbs as e.g. *hen* (according to which the adjective inside the N° is inaccessible to adverbial modification) were applied to *zui* as well, '*zui A N*' would be wrongly excluded.

While with respect to the accommodation of adverbial modification by *zui*, the two proposals are equivalent, Feng's (2001) analysis cannot account for the accessibility of the head noun in the *de*-less modification structure and must therefore be rejected.

Let us briefly return to the observation that only heads (simple or complex) are allowed as modifiers in the *de*-less modification structure. In fact, similar constraints have been observed for other langages that show two modification patterns.

For English, the impossibility of putting a prenominal adjective into the comparative degree led Bolinger (1967) to analyse cases as e.g. *narrow miss* as compounds; at the same time, he had to acknowledge numerous A-N combinations for which the compound status is not appropriate: *wide miss*, *American writer*, *Italian painting* etc. (cf. footnote 13 above).

³⁶ English A-N combinations of the type *solar heat* likewise do not allow for degree adverbs: **very solar heat*. Cf. our discussion of Sadler & Arnold's concept of *small construction* below.

³⁷ Thanks to Wynn Chao and Marie-Claude Paris for discussion of this point.

³⁸ Contrary to the proposal by Chen (2002: 390), *zui* 'most' cannot in general be analysed as an affix on a par with English *-est*. Instead, *zui* must be assigned word status, more precisely adverb status, because it can also modify i.e., adjoin to VPs that are negated (by *bu* or *mei*, respectively):

- (i) Zui mei you daoli de ren shi Akiu
most NEG have reason SUB person be Akiu
'The most unreasonable person is Akiu.'
- (ii) zui bu rang ren fang xin le (Lü et al. 1980: 703)
most NEG make person put heart PART
'most not let people feel at ease'
- (iii) Wo zui bu hui dong naozi
1SG most NEG can move brain
'I am the worst at using my head.'

These data clearly invalidate an affixal analysis of *zui*. Note that the cases cited in (57) - (59) represent the exception to the general rule that *zui* 'most' - like other adverbs - requires the presence of *de*:

- (iv) Zhe shi shijie -shang zui gao *(de) shanfeng (Lü et al. 1980: 702)
this be world-on most high SUB mountain.peak
'This is the world's highest mountain.'

Building up on Bolinger (1967), Sadler & Arnold (1994) observed that only postnominal adjectives can occur with their complements (cf. section 4.2 above) and assigned the special status of *small constructions* to A-N combinations in order to capture the constraints bearing on prenominal adjectives i.e., the fact that “prenominal adjectival modification exhibits a range of properties, some of which are normally associated with morphological (lexical) constructions, and some with phrasal (syntactic) constructions” (Sadler & Arnold (1994: 188).³⁹

Scott (2002) extends Sadler & Arnold’s (1994) concept of *small construction* to Romance languages as well as to Celtic and Greek and integrates it into his *Universal Hierarchy of AP-related Functional Projections* inspired by Cinque (1994). Though like Sadler & Arnold (1994) he in principle equates *small constructions* with “weakly lexical compounds” (p. 99), he also demonstrates that quite a few examples of *small constructions* cannot be analysed as compounds:

- (60a) solar and nuclear power (Scott 2002: 74, (2-13a))
- 60b) I have seen a nuclear power station, but never a solar one (Scott 2002: 74, (2-13b))
- (61a) *mere clean table (Scott 2002: 74, (3-5a))
- (61b) mere little accident
- (62a) *un simple grand livre (Scott 2002: 74, (3-5b))
‘a mere big book’
- (62b) ?un simple petit accident
‘a mere little accident’

(60a,b) and (61b) show that cases originally analysed as compounds by Sadler & Arnold (1994) show properties invalidating the compound status; they are accessible to the syntactic rule of head noun deletion and the adjectives involved can be conjoined (60b) or separated from the head noun (61b), respectively. As Scott (2002: 101) notes himself these phrasal properties of alleged compounds and the way they are restricted are badly understood.

The data he provides for French (taken from Valois 1991) and for Welsh nicely illustrate the differences in the format allowed for prenominal vs. postnominal adjectives:

- (63) La fréquente complète invasion de Jupiter (Scott 2002: 103, (3-8b))
- (64a) L’invasion [_{AP} improbable aux yeux des Terriens] de Jupiter (Scott 2002: 104, (3-9a))

³⁹ In fact, Sadler & Arnold’s (1994) treatment is not consistent, as also pointed out by Scott (2002: 74, note 18). For example, they first (p. 201-211) distinguish between “lexical” A-N constructions as e.g. *lunar heat* and “normal” A-N constructions as e.g. *dry heat* where the adjective in the latter allows for modification by adverbs etc. and is accordingly analysed as a maximal projection AP. Two pages further down, however, Sadler & Arnold (1994: 214-215) emphasize the fact that “A-N constructions will have some sort of intermediate status, with some characteristics in common with strongly lexical constructions [e.g. *lunar heat*, *nuclear physicist*; WP] (they are zero level), and others in common with phrasal constructions. In particular, they are syntactic, having an internal structure which is transparent to syntax.” This is illustrated with the example [_{NP} *an*[_{N°} [_{A°} *extremely happy*] _{person}]] (their bracketing) where an adverb is present and which allows for deletion of the head noun. What seems to count here for Sadler & Arnold (1994: 214) is the contrast with *happy* in postnominal position, where it can take a complement and projects to a maximal projection: [_{NP} [a person] [_{AP} *happy* [_{NP} about her work]]].

- (64b) *[AP L'improbable aux yeux des Terriens] invasion de Jupiter (Scott 2002: 104, (3-9b))

(65a) hen wraig (Scott 2002: 90, 2-32(a-c))
old woman
'an old woman'

(65b) gwraig [go hen]
woman somewhat old
'an oldish woman'

(65c) gwraig [hen iawn]
woman old very
'a very old woman'

For Welsh he observes (p. 90) that adjectives modified by an adverb are strictly excluded from the prenominal position, even those that (with the relevant interpretation) are obligatorily prenominal.

The extensive critical review of the existing literature on adjectival modification given by Scott (2002) as well as the discussion of his own data demonstrate (for languages with two modification patterns) that adjectives in prenominal position are constrained in size i.e., in general can only be heads. No explanation WHY this is so has been proposed so far, but it appears to constitute a robust crosslinguistic fact. Furthermore, the modification pattern that is subject to syntactic constraints correlates with particular semantics, which though not identical across languages, show a common core.⁴⁰ Also, no coherent syntactic analysis for prenominal modification can be given; although most scholars (including Scott 2002) tend to assign a compound analysis to A-N constructions, cases as e.g. (60) - (62) mentioned above clearly invalidate an overall compound analysis. There is thus no neat syntax-semantics isomorphism with compound status for A-N constructions, on the one hand, and phrasal status for NPs with postnominal adjectives, on the other hand.⁴¹

Against this background, the syntactic and semantic properties of the *de*-less modification structure in Chinese pattern with what is known cross-linguistically about the more constrained type of modification: the adjectives must be heads, adverbs are in general disallowed, special semantics obtains. What seems to set Chinese apart, though, is that the *de*-less modification structure cannot be analysed as a compound, but must be assigned phrasal status, due to the accessibility of the head noun to phrase level rules. The following section further illustrates the difference between compounds and *de*-less modification structures.

⁴⁰ In Romance languages, a prenominal adjective is interpreted as an intrinsic value of the noun (Klein-Andreu 1983: 151): cf. Italian *DULCE miel* ‘SWEET honey’ vs. *vino DULCE* ‘sweet wine’ and French *la BLANCHE neige* ‘the WHITE snow’ vs. ??*la BLANCHE voiture* ‘the white car’ (without stress on *blanche* ‘white’) and it functions as a non-restrictive modifier (Bernstein 1993: 23): *une LARGE vallée* vs. *une vallée LARGE* ‘a large valley’. In English the prenominal position is reserved for individual-level predicates (cf. footnote 25 above). Last, but not least, in Irish and Welsh, the small handful of adjectives acceptable in prenominal position show a semantic asymmetry very similar to that observed in Romance languages (compare Welsh *hen*: ‘old, former’ in prenominal position vs. ‘old, ancient’ in postnominal position with French *vieux*: ‘old, long-standing, former’ in prenominal position vs. ‘old, aged’ in postnominal position). However, none of the other phenomena associated with the prenominal position in Romance languages (intrinsic value, non-restrictive modification) can be observed for the prenominal adjectives in Welsh (cf. Scott 2002: 89–90).

⁴¹ Cf. Laenzlinger (2000: 61, 67) who argues against an incorporation analysis of prenominal adjectives in French, in spite of the numerous constraints they are subject to.

4.3. More on the semantic constraint

We have already discussed examples of *de*-less modification structures with two adjectives. Let us now look at cases with three adjectives which - though rare - exist:

- (66) jia da kong hua (Xu & Liu 1999: 98)
 fake big empty word
 'fake bragging empty talk'

As evidenced by the acceptability of (67), (66) is indeed a phrase, and not a compound:

- (67) Wo zui taoyan jia da kong hua , hutu -de hai keyi
 1SG most dislike fake big empty word muddle-headedd-SUB still possible
 'I particularly dislike fake bragging empty talk, muddle-headed talk is still ok.'

The rarity of *de*-less modification structures with more than two modifiers probably has semantic reasons. Recall that a *de*-less modification structure has to result in a plausible, natural classification, which is the more difficult to obtain the more modifiers are present. This difficulty is reflected in the higher degree of variation in the acceptability judgements native speakers show for cases with three than for those with two adjectives (cf. (69) - (70)). Whereas (68), for example, is considered to be well-formed by Xu & Liu (1999), the native speakers consulted by us only accepted it without *hei* 'black':

- (68) xiao shou (??hei) gebo
 small skinny black arm
 'a small skinny black arm' (Xu & Liu 1999: 98)

In contrast, no such divergence of judgements is observed in the case of *de*-less modification structures with two adjectives. (69) and (70) furthermore illustrate the constraint on the semantic plausibility of the resulting NP: if e.g. *xiong* 'wild' replaces *da* 'big' and *gui* 'expensive' replaces *xiao* 'small', (69) and (70) are no longer acceptable

- (69) yi-tiao da /*xiong hei gou (cf. (37a) above)
 1 -CL big/ fierce black dog
 'a big/fierce black dog'

- (70) yi-ge xiao /*gui boli chabei (cf. (39a) above)
 1 -CL small/ expensive glass teacup
 'a small/expensive glass teacup'

It is important to point out that the constraint in terms of a plausible, natural classification applying to *de*-less modification structures does not hold for compounds; accordingly, no variation in acceptability judgements is observed for the numerous compounds containing three modifying elements. This furthermore consolidates our analysis of the *de*-less modification structure as a phrase to be distinguished from compounds (cf. section 3.1 above). The following examples from Xu & Liu (1999: 99) give a small sample of 'A-A(-A)-N' compounds:

- (71) da -zhong -xiao -xue
big-middle-small-school
'educational institutions (i.e., primary school, middle school and university)'
- (72) da -zhong - xiao -xing
big-middle -small -model
'large, medium and small model'
- (73) you -liang -zhong -chengji
excellent-good-average-result
'excellent, good and average results'
- (74) guan-ya -ji -jun
best -second-third-rank
'the first, second and third rank'
- (75) hei -bai -pian
black-white-film
'black-and-white film'
- (76) nan -nü -ganbu
male-female-cadre
'male and female cadres'
- (77) xin -lao-pengyou
new-old-friend
'new and old friends'

Also note that in these compounds we obtain a parallel rather than a stacking interpretation for the adjectives, another clear difference with respect to the phrasal *de*-less modification structure where the adjectives are interpreted as stacked.

The semantic constraint in terms of a natural, plausible classification can also be seen at work in cases like (79a) where an NP representing an 'implausible' classification as e.g. **congming dongwu* 'intelligent animal' cannot be "salvaged" and remains unacceptable when preceded by a modifier plus *de*:

- (78a) congming ren /haizi
intelligent person/child
- (78b) *congming dongwu
intelligent animal
- (79a) *yi-ge ke'ai de congming dongwu
1 -CL cute SUB intelligent animal
- (79b) yi-ge ke'ai de congming haizi
1 -CL cute SUB intelligent child
'a cute intelligent child'

Accordingly, to dismiss modification with *de* as an "avoidance strategy", as Sproat & Shih (1988, 1991) do, where the semantic constraints observed in *de*-less modification structure are said not to hold is simply wrong (also cf. section 3.3 above).

While it goes beyond the scope of this paper to determine the syntactic status of *de*, we might nevertheless make a first attempt and try to proceed by negative exclusion in order to decide what *de* cannot be.

As already observed above (cf. section 2 and 4) it appears highly implausible for *de* to be an instantiation of D (as claimed by Simpson 2001), because the semantic difference it induces in terms of accessory property (presence of *de*) vs. characteristic, defining property (without *de*) is not of a type usually associated with D°. Rather, it is demonstratives (*zhe* 'this', *na* 'that') that are claimed to be hosted by D° (cf. Li 1998, Simpson & Wu 2002: 70).

Furthermore, *de* is clearly different from Japanese *no*, which at first sight looks like the exact counterpart to *de*, the NP being head-final in Japanese as well. For in Japanese, adjectival modification crucially excludes *no* and it is only in headless NPs that *no* follows an adjectival modifier (cf. Saito & Murasugi 1990):⁴²

- (80) Erika no boosi
Erika NO hat
'Erika's hat'
- (81a) kuroi (*no) boosi
black NO hat
'a black hat'
- (81b) kuroi no
black NO
'a black one'

This data, which cannot be replicated in Chinese, strongly argues for Japanese *no* as D° (cf. Whitman 2001).

Chinese *de* not being analysable as D°, we might take up the suggestion made by Rubin (1994, 2002) that *de* instantiates a new functional category *Modifier*, where Mod forms a shell around the content of the modifier XP: [ModP Mod° [XP ...]]. The main motivation for Mod is to obtain a coherent syntactic status for all the elements having a modifying function and which so far have been assigned different category labels, as illustrated in : *three* [AP *very young men*], *a book* [PP *on the table*], *he did it* [NP *the usual way*] etc. Whereas in English, often no overt element occupies the head position of ModP, Rubin (2002, ch. 2) argues that the so-called "linker" elements in Tagalog (*na*), Roumanian (*de*) and Chinese (*de*) are precisely a realization of Mod°. The introduction of a new functional category is justified by the impossibility of analysing these elements as either Comp or a preposition. This approach looks attractive, because indeed none of the existing categories (D, C, Prep) seems appropriate for Chinese *de*. However, it is not immediately clear how in Rubin's approach the semantic differences linked to the absence/presence of *de* can be accounted for, because in both the *de*-less modification structure and the modification structure with *de* a ModP would

⁴² For other differences between Chinese *de* and Japanese *no*, cf. Kitagawa & Ross (1982). They consider *de* as a modification marker to be introduced between the modifying element and the head noun via an insertion rule.

probably need to be projected in order to account for the modification relation.⁴³ More research is needed here.

5. Conclusion

The present article has provided extensive evidence against the widespread idea that attributive adjectives in Chinese are to be analysed as relative clauses (cf. Sproat & Shih 1988, 1991; Duanmu 1998, Simpson 2001). As a result, adjectives have to be postulated as a separate part of speech in Chinese, distinct from (intransitive) stative verbs.

The subordinator *de* has been shown to divide the NP into two domains: a modifier in the domain below *de* is interpreted as a defining characteristic (the case of *de*-less modification), whereas a modifier in the domain above *de* is interpreted as an accessory property (the case of modification with *de*). Both individual and stage-level predicates may appear in the *de*-less modification structure, provided the resulting NP presents a plausible, natural classification. Crucially, the SAME adjective can appear with or without *de* in a large number of cases. The interpretation differences of the *de*-less modification structure vs. the modification structure with *de* have a syntactic correlate: only heads are allowed in the former, whereas maximal projections occur exclusively in the latter. In that respect, Chinese behaves like other languages with two modification patterns (pre- and postnominal modifiers) where the modifiers in the position associated with special semantics i.e., in the prenominal position, are equally constrained in size.

While numerous questions concerning the internal architecture of the DP in Chinese remain open for further research, it is obvious that both types of modification, with and without *de*, have to be taken into account and the associated semantics be controlled in order to obtain meaningful results for typological studies of adjectival modification.

⁴³ Aoun & Li (2003: 250) dismiss an analysis of *de* as a functional category on the basis of the following coordination data:

(i) zhuyao de erqie women yijing taolun -guo de shiqing (Aoun & Li 2003: 150, (48a))
 important SUB and 1PL already discuss-EXP SUB matter
 ‘the main matters that we have discussed’

Since (i) shows that *de* can form a constituent with the modifier, so their reasoning, it is excluded that *de* heads a projection of its own, hence *de* cannot be a functional head.

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