The insubordinate subordinator *de* in Mandarin Chinese: Second take

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May 25, 2015

The so-called subordinator *de* in the nominal projection is shown to be an instantiation of different heads on the D-spine, among them light n and D, thus accounting for the possibility of more than one *de*. An immediate consequence of this claim is that the feature make-up of *de* is not completely identical in all cases, but partly depends on its position in the hierarchy of the extended nominal projection as well as on the nature of the modifier XP in its specifier. Importantly, this analysis results in a mixed head directionality for the extended nominal projection in Chinese, viz. a head-initial D(e)P with a head-final NP complement: \[\text{DeP} \ [\text{De}' \ \text{de} \ \text{NP}]\].

1. Introduction

This article provides evidence for *de* in the nominal projection as a functional head, with the NP following *de* as its complement. Given *Bare Phrase Structure Theory* (cf. Chomsky 1995) where the label of a category is its head, this implies that the projection headed by *de* is a DeP: \([\text{DeP} \ [\text{De}' \ \text{de} \ \text{NP}]\]). The central claim of the present proposal is that *de* instantiates different heads within the extended nominal projection, among them light n and D, thus accounting for the possibility of more than one *de*. An immediate consequence of this claim is that the feature make-up of *de* is not completely identical in all cases, but partly depends on its position in the hierarchy of the extended nominal projection as well as on the nature of the XP in its specifier (cf. Adger & Svenonius (2011, sect. 2.3) for the variability of (second order) features). This approach incorporates basic insights of previous studies (Simpson 2001, 2003; Li 2007, Tang 2007, Cheng & Sybesma 2009, Larson 2009, Huang/Li/Li 2009, Zhang 1999, 2010 among others), but avoids their major shortcoming, which consists in extending to all cases of XPs an account working for a subset of XPs only.

Case assignment via *de* is a good example; while for nominal projections as XP in ‘XP *de* NP’, *de* plausibly acts as a case assigner (cf. Li 1985, Larson 2009 among others), this does not hold for adjectival phrases, PPs and clauses in *de*’s specifier position. In this respect, *de* resembles English *of*, assigning case to nominal, but not to verbal projections within DP, albeit being obligatory for both: *the possibility *(of)* still finding survivors*(of)* the earthquake*. In order to obtain a comprehensive analysis of *de* it is therefore indispensable to take into account the complete array of XPs in ‘XP *de* NP’.

The article is organized as follows. Section 2 identifies the set of possible XPs and demonstrates their heterogeneous nature with respect to dimensions such as case licensing and the possibility of functioning as a predicate. Against this background, the necessity to distinguish between *de* in the nominal projection and the *de* sometimes present on adverbs is established. This distinction in turn is important for the feature make-up of *de*, an issue taken up in section 3. The variability of *de*’s features is reflected in the different constraints applying to the various subprojections in DeP as well as the rigid order observed for these

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*This article is the result of research carried out over the past decade under the same or a similar title. I would like to express my gratitude to colleagues and friends who all along have faithfully provided me with data, comments and questions: Edith Aldridge, Lin Jo-wang, Audrey Li, Luther Liu, Victor Junnan Pan, Zhitang Yang-Drocourt, Yuan Hua Hong, and last, but certainly not least, John Whitman. I am also extremely grateful to the anonymous reviewer for her/his insightful remarks on this very last version.*
subprojections. Section 4 highlights the advantages of the analysis of *de* as instantiating different heads on the D-spine and compares it with Simpson’s (2001, 2003) earlier proposal for *de* as Determiner (D), i.e. the highest head in the extended nominal projection. The section concludes with an outlook on the consequences for typological studies of the mixed head directionality characterizing the extended nominal projection in Chinese.

2. *De as head in an extended nominal projection*

2.1. The heterogeneous nature of the phrases preceding *de*

One of the reasons why *de* has eluded a satisfactory analysis so far is the heterogeneity of XPs preceding *de*. As already alluded to in the introduction, possible XPs include elements requiring case, i.e. nominal projections, as well as a whole array of XPs not involving case licensing, such as clauses, Adpositional Phrases (i.e. PPs and PostPs), Adjectival Phrases etc.

(1a) [DP Méi lǐ / tā] de diànnǎo
    Mary/3 SG DE computer
    ‘Mary’s/her computer’

1b) [NP hēi tōufā] de nūhǎir
    black hair DE girl
    ‘the girl with black hair’

(1c) sān-ge [OP wǔ sui] de háizi
    3 -CL 5 year DE child
    ‘three five-year old children’

(2a) [PP guānyú tiānwénxué] de zhīshī
    about astronomy DE knowledge
    ‘knowledge about astronomy’

(2b) [PP duì wèntí ] de kàn fā
    towards problem DE opinion
    ‘an opinion about the problem’

(3a) [DP [PostP cāochāng shàng / wūzi lǐ] de rén ]
    sports.ground on / room in DE person
    ‘the people on the sports ground/in the room’

(3b) [DP [PostP luójī shàng] de guānxì]
    logic on DE relation
    ‘logical relations’

(4a) [DP [TP nǐ jíláí Øi ] de xìn ]
    2SG send DE letter
    ‘the letter you sent’

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1 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 person plural); SG singular. The subordinator *de* under investigation is simply glossed as DE.
Concerning clausal XPs in Spec,DeP, while they have in common not to involve case assignment, they must be divided into two different cases and thereby further illustrate the variability in de’s feature make-up. More precisely, as already noted by Ning (1993: 64), in combination with a relative clause (4a), de functions as an operator binding the empty category, whereas this is clearly not the case for clausal complements (4b). 2

Adjectives as XPs, finally, deserve some special attention, because they can help us to invalidate the widely held assumption (Simpson 2001, 2003; Den Dikken & Singhapreecha 2004 among others) that all XPs preceding de are to be derived from an underlying clausal source. (For a more detailed discussion, cf. Paul 2012.)

Note first that adjectives such as yuánlái ‘original’ - on a par with its counterparts in other languages - cannot function as predicates, due to their non-intersective meaning (cf. Aoun & Li 2003: 148ff; Paul 2005: 780ff):

(6a) *Zhèi-ge yìsi yuánlái
                      this-CL  meaning original

Accordingly, there simply is no clausal structure available with yuánlái as predicate from which the modifier yuánlái in (5a) could have been derived.

Second, adjectives of the type fāng (5b) belong to the group of absolute adjectives in Chinese. These adjectives, although intersective in meaning, cannot function as predicates on their own, but need the copula shì plus de (the latter not being the same as the de under discussion) (cf. Paul 2005, 2010 and references therein):

(7a) Zhèi-ge pánzi *(shì) fāng *(de)
                      this-CL  plate  be  square DE
   ‘This plate is square.’

2 Interestingly, this likewise holds for de’s “predecessor” zhē (cf. Aldridge 2009: 245 among others) which (besides NPs) can also be preceded by complete TPs as well as TPs containing a gap, i.e. relative clauses.
Importantly, the copula and *de* are precluded for *fāng* ‘square’ as modifier, again invalidating any derivation from a clausal source:

\[(7b) \text{yī-ge [DP (*shi) fāng \text{ de pánzi]}} \]
\[1 \text{-CL be square DE plate} \]
\[‘a square plate’ \]

Finally, “even” adjectives that can function as predicates on their own such as *cōngmíng* ‘intelligent’ (5c) nevertheless might not warrant a derivation from a relative clause when preceding *de*, either. Because in the predicative function, intersective adjectives are interpreted as indicating the comparative degree, with the standard of comparison either being implicit or mentioned in the preceding discourse (8a). As modifiers, however (8b), these same adjectives give rise to the positive degree interpretation.

\[(8a) \text{Zhèi-ge háizi cōngmíng} \]
\[this-CL child intelligent \]
\[‘This child is more intelligent [in comparison to somebody else].’ \]

\[(8b) \text{zhèi-ge cōngmíng de háizi} \]
\[this-CL intelligent DE child \]
\[‘this intelligent child’ [Not: a child more intelligent than somebody else] \]

It is therefore not excluded that this meaning difference reflects a difference in the syntactic structures involved, i.e. clausal vs. non-clausal.

Last, but not least, an underlying clausal source is also excluded for PPs and PostPs, because they cannot function as predicates on their own (cf. Djamouri and Paul 2009; Djamouri/Paul/Whitman 2013; Paul 2015, chapters 3 and 4):

\[(9a) *[\text{TP Tā de zhīshì [PP guānyú tiānwénxué]}] (cf. (2a)) \]
\[3SG DE knowledge about astronomy \]
\[[Intended: ‘Her knowledge is about astronomy.’] \]

\[(9b) *[\text{TP Xuéshēng [PostP cāochǎng shàng / wūzǐ lǐ]} (cf. (3a)) \]
\[student sports.ground on / room in \]
\[[Intended: ‘The students are on the sports ground/in the room.’] \]

As can be seen from the English translation, adpositional phrases in English likewise cannot function as predicates on their own, but require the presence of the copula. Accordingly, it is unfeasible to posit an underlying clausal source for all XPs.\(^3\)

\(^3\) Note that Simpson’s (2001, 2003) analysis of *de* as *Determiner* hinges precisely on postulating an underlying clause for every XP, a move necessary in order to transpose Kayne’s analysis (1994) of relative clauses (cf. (i)) to Chinese (cf. (ii)). Accordingly, a DeP such as *wǒ de shū* ‘my book’ (iii) is derived in the same way as *wǒ zuòtiān mǎi de shū* ‘the book I bought yesterday’ with a relative clause as XP (ii):

\[(iia) \text{[DP the} \text{[CP [Comp that] [IP Bill liked picture]]]} \]
\[(iib) \text{[DP the} \text{[CP picture] [C [Comp that] [IP Bill liked tị]]]} \]
\[(iic) \text{[DP de} \text{[CP [Comp Ø] [IP wǒ zuòtiān mǎi shū]} \]
\[(iicb) \text{[DP de} \text{[CP shū] [C [Comp Ø] [IP wǒ zuòtiān mǎi tị]}] \]
\[(iic) \text{[DP [IP wǒ zuòtiān mǎi tị] k [DP de} \text{[CP shū] [C [Comp Ø] tị]]]} \]
\[(iicb) \text{[DP de} \text{[CP shū] [C [Comp Ø] [IP wǒ 1º [VP e shū]]]} \]
\[(iic) \text{[DP de} \text{[CP shū] [C [Comp Ø] [IP wǒ 1º [VP e tị]]]} \]
The large variety of XPs preceding de illustrated in this section challenges any attempt that wants to reduce the general function of de to one of the subcases only, such as case licensor for nominal projections (cf. Y.-H. Audrey Li 1985, Larson 2009 among others), complementizer for relative clauses (cf. Cheng 1987) or a D selecting a CP complement (cf. Simpson 2001, 2003). The heterogeneous nature of XPs also presents a problem for any approach that first merges de with XP, and only in a second step combines ‘XP de’ with the NP (cf. among others Y.-H. Audrey Li 2007). For it is typically the specifier position that allows for a multitude of phrases of different categorial nature, whereas the selection of a complement (first merge) is much more constrained. In fact, the exclusive combination of ‘XP de’ with NPs precisely illustrates such a constraint, and it is far from evident how to rule out the undesired combination of ‘XP de’ with phrases other than NPs in the scenario above, where this is supposed to happen after merging of de with its complement XP. By contrast, the observed heterogeneity of XPs is straightforwardly accounted for by the analysis adopted here: XP occupies the specifier of DeP and de c-selects a nominal projection.

2.2. Nominal de vs adverbial de

In order to obtain a meaningful and coherent analysis of de, it is indispensable to address from the start the suggestion encountered in the literature (cf. among others Y.-H. Audrey Li 2006, Huang/Li/Li 2009: 36) that the de in the nominal projection discussed so far is the same as the de sometimes occurring with adverbs:

(10a) [Xiānrán(#-de) [TP ta bù néng lái ] le] obviously 3SG NEG can come PART ‘Obviously, he cannot come.’

(10b) [TP Ta xiānrán(#-de) [bù néng lái ]] 3SG obviously NEG can come ‘Obviously, he cannot come.’ (Li 2006: 14; (30a-b))

In other words, an adverb preceding a TP or a verbal projection is claimed to involve the same basic structure as a complex DP, ‘XP de NP’, modulo the difference that an adverbial XP would have a TP or VP as modifiee. However, there are numerous arguments challenging this view.

First, de is excluded for monosyllabic adverbs and optionally present with only a small subset of di- or polysyllabic adverbs, e.g. hūrán ‘suddenly’, jiànjìànjìàn ‘gradually, little by little’ (cf. Zhu Dexi 1956/1980: 161; Lü Shuxiang et al. 2000). No such phonotactic constraint applies to XP in the nominal projection ‘XP de NP’, as largely exemplified in (1) - (5) above, where XPs with any number of syllables (one, two or more) are acceptable preceding de. Also note in this context that the native speakers consulted differ in their judgements for the acceptability of de in (10a-b), some not accepting de at all for the adverb xiānrán in the sentence-initial topic position, but only for xiānrán in TP-internal position, and some showing the exact opposite judgements (hence my marking de as ‘#’). Besides, many adverbs,
Although disyllabic or polysyllabic, never allow de (cf. Lü Shuxiang et al. 2000), thus challenging the optionality of de as implied by enclosing it in parentheses.

Second, there exists no choice for XP besides adverbs when the modifiee is a VP or a clause, in contrast to the large variety of XPs allowed in Spec, DeP when the modifiee is nominal. This is also acknowledged by Huang/Li/Li (2009: 36) who observe that “X is largely restricted to AP when Y = V, with de being optional even then”.

Third, even for a very small data sample, problems immediately arise of how to determine the exact categorial identity of the modifiee. Thus, while e.g. in the case of xiànrán(de) both an affirmative and a negated vP are acceptable as potential modifiee, in the case of rènzhèndé a negated vP is excluded, and only an affirmative vP is allowed:

(11) Tā rènzhèn-de (*bu) zuò shì
    3SG diligently NEG do work
    ‘He works diligently.’

Furthermore, an adverb such as rènzhèn-de, being a manner adverb, is excluded from the sentence-initial position to the left of the subject, another difference with the sentential adverb xiànrán(#-de). Again, this would have to be captured in terms of restriction on the possible modifiee, excluding TP in the case of rènzhèn-de ‘diligently’, but admitting it as a possible modifiee for xiànrán(de) ‘obviously’.

This dependency of the size and type of modifiee on the type of adverb in the XP position sharply contrasts with the straightforward c-selection of a nominal projection by the nominal de, irrespective of the category of XP occupying Spec, DeP. Furthermore, it is precisely the complement status of the NP to the right of de which allows this NP to remain covert, the resulting sequence always being analysed as a nominal projection, i.e. a DeP: [DeP XP de [vP Ø]] (cf. section 3.1 immediately below for further discussion). By contrast, for adverbial XPs, there exists no well-formed sequence ‘(S) adv de [vP Ø]’ on a par with [DeP XP de [NP Ø]], indicating that the vP modifiee is not a complement selected by the de attached to the adverb. An adverb on its own might at best serve as a one-word answer, but in that case does not imply the presence of a covert XP of a fixed categorial type corresponding to a modifiee.

The fundamental difference between the nominal de under investigation and the de sometimes occurring with adverbs is also backed up by dialectal and historical evidence, as demonstrated by Zhu Dexi (1961, 1980b). For Modern Mandarin Zhu Dexi (1961, 1980b) distinguishes three different de’s:

de1 - with certain di/polysyllabic adverbs: hūràn ‘suddenly’, jiànjìan ‘gradually’ etc.
de2 - with reduplicated adjectives (gāogāoxìngxing, hóngtōngtōng etc.)
de3 - with all kinds of XPs (NP, VP, adjectives etc.) and preceding NP

When examining this issue for Cantonese, Zhu (1980b: 162) obtains the following paradigm, where Mandarin adverbial de1, adjectival de2, and nominal de3 are each instantiated by a different item, and where accordingly the question of their eventual identity is not raised:

kem = Mandarin de1 = adverbial
tei = Mandarin de2 = with reduplicated adjectives
ke = Mandarin de3 = subordinator in NPs

4 The Cantonese data clearly show that tei (the equivalent of de2) is part of the reduplicated adjective itself, because the presence of ke (equivalent of Mandarin de3) is obligatory in modification structures: ‘AAtei *(ke) NP’. Accordingly, Mandarin gāogāoxìngxing de háizi (cf. (5d) above) involves the haplology of de2 and the nominal de3, comparable to the haplology of perfective -le with SFP le, a parallel explicitly drawn by Zhu (1980b: 165, footnote 3).
Importantly, earlier stages of Mandarin – like today’s Cantonese – also had three separate items. More precisely, in the Tang-Song period, dì exclusively occurred in nominal projections where it could be preceded by all kinds of XPs: XP dì NP, thus contrasting with the two different dí, one exclusively occurring with adverbs, the other with reduplicated adjectives (cf. Zhu Dexi 1980b based on Lü Shuxiang 1943).

To conclude, the historical evidence confirms the result obtained for the synchronic grammar of Modern Mandarin, i.e. the impossibility of extending the analysis of de in the nominal projection to adverbs when in combination with de.

3. The articulated structure of DP in Chinese

3.1. The head-initial nature of DeP

While so far emphasis has been laid on the heterogeneity of XPs and the corresponding variation in the feature make-up of de, there evidently is also a “hard core” of invariable features for de, irrespective of the properties of the XP in its specifier. First, being a functional head in the extended nominal projection, de must be nominal, i.e. have the the same categorial features [-V, +N] as the lexical nominal domain it dominates (cf. among others van Riemsdijk 1998 and references therein). Furthermore, de has an EPP feature requiring Spec,DeP to be filled, and a c-selecting feature indicating that the complement of de is a nominal projection (cf. Adger & Svenonius 2011: 40; Adger 2003 among others).

Importantly, this complement-NP can be overt or covert; when covert, it is licensed by de as head and refers to an antecedent either present in the preceding discourse or provided by the extralinguistic context. This captures the well-known fact that the empty category in the sequence ‘XP de Ø’ is always analysed as nominal:

(12a) Nǐ yào nǎ zhǒng shǒu jī? Wǒ yào fēnhóngsè de [NP Ø]
    2SG want which kind mobile.phone 1SG want pink  DE
    ‘What kind of mobile phone do you want? I want a pink one.’

The licensing relation between a head and its complement allowing the latter to remain covert also holds elsewhere in Chinese grammar, e.g. between a classifier and its NP complement:

(12b) Tā jǐntiān kàn -le liàng-bù diànyǐng, wǒ kàn -le sān-bù [NP Ø]
    3SG today watch-PERF 2 - CL film  1SG watch-PERF 3 - CL
    ‘He watched two films today, I watched three.’

Accordingly, the sequence ‘XP de Ø’ is not a headless NP as assumed so far, but rather a complementless DeP: [DeP XP [DeCe de] [NP Ø]]. It is analysed as a nominal projection due to de’s categorial [-V,+N] feature. Note that this is on a par with English ‘s as in This is Peter’s mobile phone, and that is John’s (mobile phone).

5 In the following, DeP refers to the projection containing one or several de, and DP is short for the highest DeP closing off the nominal projection. The term NP is used here as cover term for nominal projections in general, i.e. the lexical NP plus functional layers as well as DeP.

6 Van Riemsdijk (1998: 4) formulates this as the “Categorial Identity Thesis: In the unmarked case the lexical head and the corresponding functional head have the same categorial features.”

7 This might also be captured by a functional sequence of categorial features, in analogy with the sequence established for the clause: C over T over v over V. Cf. Adger & Svenonius (2011: 40) for these two alternatives.

8 As pointed out by the reviewer, head status is only a necessary, but not a sufficient condition for allowing a covert complement, given that e.g. demonstratives and numerals always require an overt complement. While both de and classifiers may license a covert complement, they cannot be conflated (contra Cheng & Sybesma 2009), but involve separate heads with distinct syntactic and semantic properties (cf. Niina Ning Zhang 2012).
In other words, Chinese is a language with a head-initial DeP and a head-final NP, the latter evidenced by cases of de-less modification such as [NP căôngming rén] ‘intelligent person’ where the modifier always precedes the head noun (cf. section 3.3 below). When examining the headedness of the nominal projection in Chinese it is therefore necessary to distinguish between the functional layer(s) headed by different instantiations of de, on the one hand, and the lexical domain NP, on the other (contra among others Simpson 2003: 74 who postulates a uniformly head-initial nature for NP/DP, thus incorrectly conflating these two domains). Note that the same situation obtains for Japanese where the lexical NP is head-final, but the (recursive) DP head-initial (cf. Whitman 2001).

The head-initial nature of DeP implies that de as head first merges with the NP-complement to its right, i.e. forms a constituent with this NP (overt or covert). This is the exact opposite of what is observed in phonology where the XP preceding de forms a phrase with de. This phonological dependency has often been mistaken as reflecting the underlying structural relationship and has led many researchers to postulate an analysis where XP and de form a constituent, which in turn is either adjoined to NP or assumed to occupy Spec, NP (cf. among others Y.-H. Audrey Li 2007). However, the situation observed for Chinese de where syntax and phonology do not match is not exceptional, because it also holds for English, as emphasized by Whitman (2001: 78): “[…] possessive ‘s in English […] provides probably the best-known model for a phrasal head qua phonological dependent on its specifier (Abney 1987, Chomsky 1995: 263).”

This issue is also addressed by Niina Ning Zhang (2010: 98) who explicitly points out that phonological phrases are not necessarily isomorphic with syntactic constituents. One of her main arguments for de plus NP as a constituent is precisely the acceptability of the sequence ‘XP de Ø’ as discussed above, which can be straightforwardly accounted for if the relationship between de and the empty category is that between a head and its complement, thus licensing Ø.9 This sharply contrasts with nominal projections without de, i.e. de-less modification where no empty category, more precisely no empty nominal head is allowed: *[NP Adjective [N° Ø]] (Niina Ning Zhang 1999: 102-3). It is not obvious how these facts can be accounted for in a scenario where ‘XP de’ is adjoined to NP or hosted by Spec, NP.

Last, but not least, the usual tests for constituenthood (such as movement etc.) cannot be applied to ‘de NP’, due to the EPP feature on de. In other words, ‘de NP’ on its own never constitutes a well-formed sequence, not because it does not represent a constituent, but because the EPP feature always requires Spec,DeP to be projected and filled.10 In this respect, ‘de NP’ again resembles English ‘s where the sequence ‘s NP (*’s book) is likewise ill-formed.

3.2. The different subprojections within DeP
So far I have provided evidence for the structure of the minimal nominal projection containing de, i.e. ‘XP de NP’ where NP is the complement c-selected by de as the head, and XP occupies its specifier position. Given Bare Phrase Structure Theory (cf. Chomsky 1995) where the label of a category is its head, this implies that the projection headed by de is a DeP: [DeP XP [De de NP]].

This section now turns to the properties of de itself. Since nominal projections with several de’s are very common in Mandarin Chinese (also cf. the data to be provided in this

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9 Note, however, that according to Niina Ning Zhang (2010: 105) de itself does not have any intrinsic categorial features, but obtains them from the nominal or verbal “kernel” element it combines with. Accordingly, in her analysis it is an intrinsically feature-less head de that c-selects a complement and licenses its remaining covert, a not unproblematic assumption.

10 Thanks to Lin Jo-wang for raising this issue.
section), the main claim put forward here is to a certain extent self-evident, viz that these instances of *de* cannot be completely identical, because they head different projection in the hierarchy of the nominal projection. This is reflected in the constraints on XP and the observed rigid order of the subprojections involved.

Let us first turn to NPs having an argument structure and assigning theta-roles. The well-known interpretational facts observed here, namely the rigid hierarchical order ‘XP[=possessor] de YP[=theme] de NP’ (cf. Fu Jingqi 1987, Tang Chih-Chen 1990 among others) can now be neatly captured by an articulated nominal projection:

(13) \[[DP Zhāngsān \[D de [nP Lìsī \[n de [XP zhàopiàn lǐsī]]]]\]^12
    
    Zhāngsān DE Lìsī DE photograph

‘Zhāngsān’s photograph(s) of Lìsī’ [not: ‘Lìsī’s photograph(s) of Zhāngsān’]

As indicated in (13), the argument of N bearing the theme role, Lìsī, is hosted within nP, while the possessor Zhāngsān occupies Spec,DP. The unavailability of the interpretation ‘Lìsī’s photograph(s) of Zhāngsān’ indicates that an argument of N must be realized within nP, where nP is the next higher projection above the lexical domain NP and below DP.\(^\text{13}\) Also note that n being realized by *de*, there is no N-to-n movement in Chinese, unlike English (cf. Adger 2003).\(^\text{14}\) Example (14) illustrates the same constraints, but this time for an agent instead of a theme role:

(14) \[[DP Zhāngsān \[D de [nP Lù Shúxiāng \[n de [NP shù zhāngsān]]]]\]^13
    
    Zhāngsān DE Lù Shúxiāng DE book

‘Zhāngsān’s books by Lù Shúxiāng’ [not: ‘Lù Shúxiāng’s books by Zhāngsān’]

As to be expected, when a noun such as *zhàopiàn* ‘photograph’ or *shù* ‘book’ is preceded by one XP only, this XP can be interpreted in several ways (theme or agent, possessor etc; cf. Fu 1987: 62), implying different parsing possibilities. More precisely, the

11 As will become obvious in the remainder of this article, the analysis presented here owes much to Fu Jingqi’s (1987) thesis. Since this thesis was written before the advent of the DP-hypothesis (cf. Abney 1987), the generalizations obtained are formulated in terms of X-bar theory, *modulo* the difference that Fu Jingqi adopts a three-layered NP, unlike Jackendoff’s (1977) two-layered NP. This framework had the disadvantage of obscuring the major borderline between the lexical domain NP, including *de*-less modification [\[np adjective/noun N]\] (a phenomenon limited to N-bar for Fu Jingqi), on the one hand, and the functional layer(s) headed by *de* above NP. Another distinction turning out to be crucial for an adequate analysis of *de*, i.e. the introduction of light n hosting arguments of N, was also introduced much later only.

12 Following current practice in the literature, for expository purposes I use the bar-level notation of X-bar theory in labelled bracketings. In a representation consistent with bare phrase structure, intermediate levels such as n-bar would also be noted as nP and then be identifiable as non-maximal projection by virtue of being dominated by another nP.

13 An analysis of *de* as n was already proposed by Niina Ning Zhang (1999):

(i) \[[np nà [NumP sān [ge [sān mài yǐnliào de]]] zōu-le]] (Zhang 1999: 38, (28))

‘Those three beverage sellers have left.’

However, given the interpretational differences observed in (13) for Spec,nP vs. Spec,DP and the different positional constraints for complement clauses vs. relative clauses (cf. (26a-b) below), Zhang’s overall analysis of *de* as n cannot be successfully implemented.

14 Also cf. Aldridge (2009) where Classical Chinese *zhē* - the “precursor” of *de* - realizes n and where accordingly there is no N-to-n raising, either.

15 As noted by the reviewer, the DP in (14) itself can be the complement of a classifier preceded by a demonstrative pronoun such as *zhē* ‘this’; in this case, it is *zhē* ‘this’ that instantiates the highest DP:

(i) \[[DP zhē \[C\ (sān) běn [DP Zhāngsān \[D de [np Lù Shúxiāng \[n de [NP shū zhāngsān]]]]]]\]

‘these (three) books of Zhāngsān by Lù Shúxiāng’
A multiple ambiguity observed for the sequence *Zhāngsān de zhàopiàn/shū* ‘Zhangsan’s photograph/book(s)’ in (15a) can be captured by assigning two different structures: (15b) with *Zhangsan* in Spec,nP corresponds to the readings where Zhangsan is assigned a theta-role (agent or patient) by the head noun, while (15c) with Zhangsan in Spec,DP accounts for the other possible readings (possessor etc.).

(15a) Zhāngsān de zhàopiàn / shū  
   Zhangsan DE photograph / book

(15b) [nP Zhāngsān [n' de [NP zhàopiàn / shū]]]  
   *Zhangsan* DE photograph / book  
   ‘the photograph(s) of Z [=patient]; Z’s [=agent] book(s)’

(15c) [DP Zhāngsān [D' de [NP zhàopiàn / shū]]]  
   *Zhangsan* DE photograph / book  
   ‘Z’s photograph(s)/book(s), i.e. the photograph(s)/book(s) he possesses, bought etc.’

The multiple interpretations possible in (15c) tie in nicely with the semantic “openness” of Spec,DP known from other languages. In fact, Zhu Dexi (1980a: 82) already made observations along these lines in providing paraphrases for the possible interpretations of the XP preceding *de*; in addition, the choice of his examples highlights the importance of the head noun for the readings assigned to XP; while *huàr* ‘painting’ can assign a theta-role (here *theme*) to XP, *bēizi* ‘cup’ cannot:

(16a) [DP xiaóxióngmāo [D' de [NP bēizi]]] (= Zhu Dexi 1980a: 82: (12), (13))  
   *panda bear* DE *cup*  
   (i) yǒu xiaóxióngmāo tú’ān de bēizi  
     have panda bear design DE cup  
     ‘a cup with a panda bear design’
   (ii) shùyú xiaóxióngmāo de bēizi  
     belong panda bear DE cup  
     ‘a cup which belongs to the panda bear’

(16b) dàocǎorén de huàr  
   scarecrow DE painting  
   (i) huà de shí dàocǎorén  = [nP dàocǎorén [n' de [NP huàr]]]  
     paint DE be scarecrow  
     ‘the painted one is the scarecrow’
   (ii) shùyú dàocǎorén de huàr  = [DP dàocǎorén [D' de [NP huàr]]]  
     belong scarecrow DE painting  
     ‘a painting belonging to the scarecrow’

Transposed into the terms of my analysis, *xiaóxióngmāo* ‘panda bear’ in (16a) occupies Spec,DP, a position giving rise to both readings in (i) and (ii). By contrast, (16b) is on a par with (15a) (where the head noun can likewise assign a theta-role to the XP), i.e. the two interpretations obtained for (16b) correspond to two different structures, an *nP* for (16bi) and a *DP* for (16bii).

Importantly, when a noun has more than one argument, they are hosted in the same *nP*.
The unacceptability of $de_1$ between the agent and the patient (i) requires to posit multiple specifiers within $nP$ (cf. Adger & Svenonius 2011, Georgi & Müller 2010) and (ii) indicates the lack of raising to Spec, DP for arguments of N. Chinese thus differs from English where the agent may further raise to Spec, DP (cf. Adger 2003): *the reaction of John towards that matter: John’s reaction towards that matter.*

The comparison of (17) with (18) indicates the need to distinguish between structures where $de$ is unacceptable precisely because no position is available (cf. (17)), on the one hand, and structures where the head position is present, but optionally not spelt out by $de$ (cf. (18)), on the other:

(17) $[nP\ Zhāngsān\ (*de_1)\ [PP\ dui\ zhè\ jiān\ shì]\ [nP\ de_2\ [NP\ fānyìng\ tPP]]]$

‘Zhangsan’s reaction towards this matter’ (Fu 1987: 262ff.)

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As indicated by the translation, the possessor of *shǒubiāo* ‘watch’ itself is a complex DP. It is within that complex DP, more precisely within the possessor DP occupying the specifier position of the highest D (selecting *gēgē* ‘brother’ as complement) that D can, but need not be spelt out by $de$. The internal hierarchy becomes more transparent when the optional instances of $de$ are omitted:

(18a) $tā\ (de)\ jiē\ jiē\ (de)\ yuánlái\ (de)\ zhàngfu\ de\ gēgē\ de\ shǒubiāo$

‘the watch of the brother of his sister’s former husband’ Fu 1987: 287, (58)

In other words, the heads that may remain covert are D heads and their covert or overt nature does not seem to have a semantic impact (cf. section 3.4 below for further discussion). This is important with respect to $de$-less modification discussed in the next section.

### 3.3. De-less modification

The preceding discussion sheds a new light on $de$-less modification, where an adjective or a noun is directly juxtaposed with the head noun without $de$, as in *hēi tóufā* ‘black hair’, *yǎngé guǎng* ‘strict regulations’, *cōngmíng rěn* ‘intelligent person’. Since the “corresponding” structure with $de$: ‘A de N’ is semantically clearly different (Tang 1979, Zhu 1984 among others) this is not a case of optionally pronouncing $de$ in the same structure (as suggested by Cinque 2010: 97); on the contrary, two separate structures are involved, an NP $[nP\ A/N\ N]$ and a DeP $[DeP\ AP/NP\ de\ NP]$:

(19a) $Nǐ\ shí\ ge\ [nP\ cōngmíng\ rěn]\ ,\ wǒ\ bù\ bǐ\ duō\ jiè\ shì\ \ (Tang\ 1979:\ 147)$

‘You are somebody intelligent, I don’t need to explain much.’

(19b) $Yī\ -ge\ [DeP\ cōngmíng\ de\ rěn]\ \ bù\ huì\ zuò\ zhèyàng\ hútu\ \ de\ shìqíng$

‘An intelligent person would not do such a muddle-headed thing.’

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16 While for Fu Jingqi (1987) all instances of $de$ enclosed in parentheses are optional, the native speakers consulted by me require $de$ between $yuánlái$ and $zhàngfu$, whence the marking by ‘#’. 

Admittedly, the semantic difference associated with the absence or presence of *de* is rather subtle: with the *de*-less modification structure, a new subcategory is established, where the modifier is presented as a defining property of the resulting new subcategory, here *cōngmíng rén* (cf. Paul 2005, 2010 for further discussion and references). While most contexts allow both types of modification structures, Fu (1987: 302) has identified a few diagnostic contexts where only the *de*-less structure is allowed, such as the identification context:

(20a) Zhè shì mùtóu (*de) zhuōzi / hēi (*de) tóujīn (Fu 1987: 302)
    *This is a wooden table/ a black scarf*
    ‘This is a wooden table/ a black scarf.’

(20b) Zhāngsān yīgerén yī-tiān kěyī zuò sān-zhāng mùtóu (*de) zhuōzi
    Zhangsan alone 1-day can make 3-CL wood DE table
    ‘Zhangsan on his own can make three wooden tables a day.’ (Fu 1987: 292)

Furthermore, for some well-chosen examples, the meaning difference turns out to be very sharp, thus confirming the existence of two corresponding syntactic structures:

(21a) [NP zhōngguó liúxuéshēng]  
    China student.abroad
    ‘Chinese students (studying) abroad’

(21b) [DeP zhōngguó de [NP liúxuéshēng ]]  
    China DE student.abroad
    ‘foreign students (studying) in China’

In the *de*-less structure (21a), *zhōngguó* ‘China’ is merged within NP and can only be interpreted as referring to the nationality/origin (cf. Cinque 2010 for the low position of this projection in the nominal hierarchy). By contrast, in (21b), *zhōngguó* ‘China’ occupies Spec, DeP and can therefore be analysed as referential and definite, leading to the interpretation ‘foreign students (studying) in China’. (cf. among others Wen Zhenhui 1998: 37). It follows that both structures can be combined, as in (21c):

(21c) [DeP Zhōngguó de [NP rìběn liúxuéshēng ]] bù shǎo  
    China DE Japan student.abroad NEG few
    ‘The Japanese students in China are quite numerous.’

Within the extended nominal projection, (the lowermost) *de* thus indicates the boundary between the lexical domain NP (including *de*-less modification structures [NP A N], [NP N N]) and the extended functional projections above NP. The function of the lowermost *de* as “semantico-syntactic divide” (cf. Paul 2005) can account for the well-known unacceptability of the sequence *[A A de N] (cf. Zhu Dexi 1956/1980; Fu Jingqi 1987: 286) under both parsings: *[A [A de N]] and *[A A de N]. This is because *de*-less modification is limited to the NP (cf. (22a)) and excluded in the functional projection(s) above (cf. (22b)). By contrast, *[DeP A de [NP A (A) N]] is fine (cf. (22c-d)):

(22a) yī-tiáo [NP dà hēi gǒu]  
    1-CL big black dog
    ‘a big black dog’
To summarize, the structure involving de-less modification is not a DeP whose head remains unpronounced, but an NP, i.e. a projection where there is simply no position for the functional head de. This is confirmed by the meaning differences induced by the presence/absence of de in an otherwise identical nominal projection (cf. (21a) vs. (21b)) as well as the possibility for the de-less modification NP to be selected as complement by de (cf. (21c)).

3.4. The hierarchical constraints within DeP

The major importance of the boundary between the lexical domain NP itself and the projections above NP also reveals itself in the fact that in the case of several XPs, it is often sufficient to have one overt de signaling this boundary (cf. Fu 1987, ch. 4).

(23) zhōngguó (de) chéngshì (de) jūmín (de) zhùfáng (de) qíngkuàng de biànhuà
    China DE town DE resident DE housing DE situation DE change
    'changes in the housing situation for urban residents in China'

In (23) all instances of de except the one immediately preceding biànhuà ‘change’ are optional, modulo the subtle semantic differences resulting from construing different de-less modification structures within that DP. For example, without de between chéngshì ‘town’ and jūmín ‘resident’, we obtain the de-less modification chéngshì jūmín ‘urban citizen’, leading to zhōngguó de chéngshì jūmín ‘the urban residents in China’ (cf. (24a)). Another possible de-less modification NP is zhōngguó chéngshì ‘Chinese cities’ which then functions as possessor for jūmín ‘resident’ resulting in zhōngguó chéngshì de jūmín ‘the residents of Chinese cities’ (cf. (24b)):

(24a) zhōngguó de [NP chéngshì jūmín] (de) zhùfáng (de) qíngkuàng de biànhuà
    China DE town resident DE housing DE situation DE change
    ‘changes in the housing situation for urban residents in China’

(24b) [NP zhōngguó chéngshì] de jūmín (de) zhùfáng (de) qíngkuàng de biànhuà
    China town DE resident DE housing DE situation DE change
    ‘changes in the housing situation for residents of Chinese cities’

As soon as complementation (rather than modification) is involved, de is obligatory, i.e. complements are to be hosted in nP, not in NP, and thus behave on a par with NP and PP arguments of N (also cf. (14) - (17) above):
(25) [DP[rel.cl. Wōmen tīchūlái] de [NP [compl.clause mingtiān qù bù qù] *(de) [NP wèntí]]]
IPL mention DE tomorrow go NEG go DE question
‘the question we raised whether to go there tomorrow or not’ (Fu 1987)

(25) also illustrates the rigid order between clausal complements of N and relatives clauses (cf. Fu 1987: 167), a fact reinterpreted here as the requirement for clausal complements to be merged in nP, not in higher DePs:

(26a) Méi rén tīng [DeP [rel.cl. gāng tí] [De de [NP [compl.cl. xiān chī fān] [NP de jiànyì]]]]
NEG person listen just raise DE first eat food DE suggestion
‘Nobody listens to the suggestion just made to eat first.’ (cf. Fu 1987: 167)

(26b) *méi rén tīng [compl.cl. xiān chī fān] de [rel.cl. gāng tí] de jiànyì
NEG person listen first eat food DE just raise DE suggestion

Concerning the ordering restrictions among relative clauses themselves, observed by Hsieh (2005), Del Gobbo (2004) and Lin (2008) among others, individual-level relatives must occur closer to the head than stage-level relatives, whereas the order between relatives of the same type is free (cf. Lin 2008):

(27a) [Wǒ zuótiān kànjiàn] de [xīhuān qù yīnyuèhuì] de rén shì Zhāngsān
1SG yesterday see DE like go concert DE person be Zhangsan
‘The person I met yesterday who likes to go to concerts is Zhangsan.’

(27b) *[Xīhuān qù yīnyuèhuì] de [wǒ zuótiān kànjiàn] de rén shì Zhāngsān
like go concert DE 1SG yesterday see DE person be Zhangsan
(Lin 2008: 842)

Denoting individual-level vs stage-level properties is thus one of the various parameters determining the hierarchy of the different DePs within the nominal projection, where the hierarchy is likewise evidenced by the ordering restrictions observed for adjectival and nominal modifiers (cf. Cinque 2010 among others for a cartographic approach to these restrictions):

(28) [DP Zhāngsān de [DeP yuán de [NP mùtóu zhuōzi]]] (Fu 1987: 16)
Zhangsan DE round DE wood  table
‘Zhangsan’s round wooden table’

No permutation is permitted in (28), because the possessor DP must be higher than the DeP relating to shape, which in turn must dominate the lexical domain NP.

Further evidence for de instantiating different heads in the nominal projection with partially variable features is provided by differences in constraints observed for de instantiating e.g. n vs. the highest de, i.e. D:

(29a) [xiǎo bái tù] de shū (cf. Fu Jingqi 1987: 18; my bracketing)
small white rabbit DE book
‘the book about the small white rabbit’ [NP [xiǎo bái tù] de shū]
‘the book of the small white rabbit’ [DP [xiǎo bái tù] de shū]
(i.e. the book owned, bought etc. by the small white rabbit)
(29b) \[DP [nèi-zhī xiǎo bái tù ] de shū]\n    that-CL small white rabbit DE book
possessor interpretation = dominant: ‘the book of the small white rabbit’

In other words, a phrase-initial definite XP is liable to be analysed as occupying the specifier position of the highest DeP, i.e. DP.

Note that some of the native speakers consulted likewise allow an analysis of *nèi-zhī xiǎo bái tù* as theme argument of *shū* ‘book’ in (29b). However, the same native speakers observe that the theme reading is much stronger when *nèi-zhī xiǎo bái tù* is preceded by the demonstrative *nà* ‘that’ plus classifier *běn*:

(30) \[DP nà běn [nP [nèi-zhī xiǎo bái tù ] de shū]]\n    that CL that-CL small white rabbit DE book
‘that book about the small white rabbit’

This ties in with Fu’s observation for (29a-b) above insofar as *nèi-zhī xiǎo bái tù* in (30) is clearly not located in the highest projection of the DeP, the DP itself hosting the demonstrative *nà* plus classifier.

Another constraint applies to the DeP indicating material, associated with a rather low projection in Cinque’s (2010) cartography of nominal structure. This DeP cannot host referential DPs, a fact taken here as another argument for the differences between the *de’s* instantiating the heads of different subprojections:

(31a) *[nèi -kuài mùtóu] de zhuōzì
cf. Fu Jingqi 1987: 20
    that-CL wood DE table
(*’a table of that (piece of) wood’)

The meaning intended in (31a) must be rendered by a relative clause:

(31b) \[DeP [Rel.Cl. yòng nà kuài mùtóu zuò] de] zhuōzì\n    use that piece wood make DE table
‘a table made using that piece of wood’

As indicated by the translations, the same constraint also holds for English: *a table of that piece of wood* vs. *a table made using that piece of wood*.

By contrast, a non-referential XP such as *nà zhǒng mùtóu* ‘that kind of wood’ is acceptable when indicating material:17

(32) \[DeP [ nà zhǒng mùtóu] de zhuōzì]\n    that kind wood DE table
‘a table of that kind of wood’

Again note the parallel with English where the translation of (32) - though not perfect - is much better than that in (31a).

The existence of different constraints holding for the XPs in the specifier positions of the different subprojections in the DP reflects the differences in the properties of the respective *de* heads.

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17 Thanks to the audience of the workshop for providing this example.
4. Conclusion and typological outlook

4.1. De as instantiation of different heads on the D-spine vs. de as D

The existence of several instances of de within the same extended nominal projection has been one of the major obstacles for a satisfying analysis of de. In particular, it renders unfeasible the equation of de with D, i.e. the highest head in the extended nominal projection DP (cf. Simpson 2001, 2003)), as correctly pointed out by Y.-H. Audrey Li (2006). (Note, however, that Li 2006 does not provide any derivation for multiple de structures within her analysis of de as a conjunction, either). Also recall the semantic differences observed for minimal pairs distinguished by the presence vs. absence of de such as cōngmíng (de) rēn ‘intelligent person’ which cannot be captured in terms of definiteness and/or referentiality of the entire nominal projection, in contrast to the prediction of the Determiner-hypothesis à la Simpson.18

Simpson (2001: 43) dodges this problem by declaring 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 […]”. Simpson provides a rich sample of examples from typologically diverse languages other than Chinese in order to show the different degrees of definiteness determiners may display. By contrast, with respect to evidence internal to Chinese, the only argument for D-properties of de is the use of zhī as a demonstrative pronoun in Classical Chinese (cf. (33)), whence the relation of zhī’s successor de with the D head according to Simpson (2001, 2003).

(33) Zhī èr chóng yòu hé zhī
these 2 worm again what know
‘And what do these two worms know?’ Zhuangzi 1.10
(Glosses, translation and source indication as in Simpson 2001:137, (37))

However, as is equally well-known and pointed out by Tang (2007), zhī in e.g. the same works by Zhuangzi also subordinated modifiers to a nominal modificie, as today’s de:19

(34) Yǒu rén zhī xíng , wú rén zhī qíng (Zhuangzi, Dechongfu)
have human zhī appearance lack human zhī feeling
‘(lit) with the form of a human being and yet without the substance of a human being’
(Glosses, translation and source indication as in Tang 2007:(52b))

Last, but not least, even if one adopted the more obvious choice of the subordinating rather than the demonstrative zhī as the precursor of de, one would still gloss over a crucial difference between zhī and today’s de, i.e. the impossibility of an empty category after zhī. This casts doubt on Simpson’s claim to gain insights into the nature of modern de from properties of Classical Chinese zhī. The non-existence of structures of the type ‘XP zhī O’ has in fact led scholars (Lü Shuxiang 1943/1990; Feng Chuntian 1990 among others ) to posit zhē as the precursor of de, and not zhī. (Also cf. Aldridge 2009 for extensive discussion of zhē and its analysis as n, i.e. a head on the D-spine.)

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18 Note that Simpson (2005) abandons the analysis of de as D and posits - without any further comments re his earlier works (Simpson 2001, 2003) - the demonstrative pronouns zhē ‘this’ and nà ‘that’ as heads of DP.
By contrast, the problems observed for Simpson’s equation of *de* with D do not exist in the analysis defended here, where *de* realizes different heads on the D-spine, not only the highest one, D.20 Starting from the bottom to the top, we obtain the following picture. *De* realizes *n*, i.e. the head of the projection hosting the argument(s) of a noun (including complement clauses) and as such can, but need not assign case (e.g. when the argument is a PP, cf. (2a-b) above). *De* also instantiates the (Chinese specific) projection DeP hosting XPs that are not arguments such as relative clauses, adjectival phrases, QPs, NPs, PPs. Last, but not least, *de* can also realize the highest head in the extended nominal projection, i.e. D; as in other languages, XPs occupying Spec,DP allow a wide range of interpretations in Chinese as well (cf. (14) – (16) above) and can contribute to the referentiality/definiteness of the entire nominal projection. Given these multiple functions of *de* it is self-evident that no particular semantic label such as “modifier” can be assigned to *de* (contra among others Rubin 2003), the modifying relation between XP and the NP being only one of the different possibilities, including e.g. the cases where XP is an argument of NP, a relation which cannot be subsumed under modification.21

Chinese *de* resembles Japanese *no* which likewise can show up several times within the same nominal projection: “Unlike DP-heads such as English *the* (but like English *s’), *no* is transparent with respect to definiteness or any other type of semantic content. It may be that this kind of semantic transparency is a prerequisite for phrasal recursion of this kind.” (Whitman 2001: 92) This statement by Whitman also implies that upon further reflection, the D-elements postulated for English are not homogeneous, either, thus lending further support to the partial variability in the feature make-up of *de* proposed here. This variability exists against the backdrop of a constant set of features characterizing all realizations of *de*, as argued for above: the nominal categorial feature [-V, +N], the EPP feature requiring Spec,DeP to be filled and the c-selecting feature requiring a nominal projection as complement. Beyond this “hard core”, the feature make-up of each instantiation of *de* depends on the hierarchical position of *de* in the extended nominal projection. Accordingly, it is impossible to assign a fixed interpretational value to *de* itself (contra Den Dikken & Singhapreecha 2004 among others).

4.2. Chinese *de* under a typological perspective
The result obtained here is not only important for Chinese syntax itself, but also for typological studies. First, it shows the need to distinguish between the functional layer(s) in the nominal projection (headed by different instantiations of *de* in Chinese) and the lexical domain NP. Second, against the background of this more articulate view, it confirms the parallel between nominal projections in Chinese and those in Japanese, where the NP is head-final (as witnessed by ‘adjectival head noun’ order) and the DP head-initial (cf. Whitman

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20 Simpson (2001, 2003) invokes “definiteness agreement” observed for other languages as a means to account for the presence of more than one *de*, but does not spell out at all how this is to be implemented for Chinese. Furthermore, in the light of the analysis presented here where *de* is the instantiation of different heads on the D-spine, there is precisely no “agreement” between the *de*’s, witness the existence of different constraints for the different subprojections within DeP (e.g. no referential XP for the low subprojection indicating material: *nà
kuaí miùtò de zhūòzi* vs *nà zhōng miùtò de zhūòzi*; cf. (31) and (32) above). Last, but not least, a closer look at the constraints at work for languages with “determiner spreading” such as Greek (cf. Panagiotidis & Marinis 2011) dispels any possibility of a parallel with the Chinese case.

21 This likewise challenges one of the two scenarios proposed for *de* in Huang/Li/Li (2009: 36), viz. that *de* is an “adjectival functional word which turns a phrase inside a larger NP into a modifier”. When evaluating the latter possibility, they - correctly - raise the question why *de* would then be needed at all for adjectival XPs and provide the following response: “A possible answer relates this to another property of A. Unlike their English counterparts, Chinese adjectives play the role of a predicate directly, without any copula (cf. 1.1.3.2). In this use, AP behaves just like VP. It follows that an AP modifier may in fact be a relative clause, which in turn is “adjectivized” by *de.*” (Huang/Li/Li 2009: 37).
Third, it forces us to reconsider crosscategorial generalizations insofar as up to now even theoretically more sophisticated analyses adopt - basically unchanged and unchallenged - the correlations established at the time of Greenberg (1966), before the advent of e.g. functional categories.

In order to obtain somewhat more meaningful correlations, it appears necessary to compare lexical projections with lexical projections and functional projections with functional projections and to pay attention to the dichotomy lexical vs. functional category within the same extended projection. In the case of Chinese, this results in correlations between the nominal projection and other categories which are quite different from the crosscategorial correlations generally cited. More precisely, DeP is now harmonic with the head-initial character of Chinese as exemplified by VO order, while the head-final NP is not. Furthermore, NP, but not DeP patterns with CP in being head-final (cf. Thomas Hun-tak Lee 1986, Paul 2014), notwithstanding the functional character of both DeP and CP. In other words, so-called “harmonic” relations seem to cut across the dichotomy between lexical and functional categories (cf. Paul 2015, ch. 8, for related discussion).

The extended nominal projection in Chinese itself turns out to be “mixed” in combining head-finality (NP) with head-initiality (DeP), as is the case for the extended nominal projection in Japanese, thus showing that Chinese is not an isolated case. Accordingly, contrary to the current practice in large scale crosslinguistic comparisons such as WALS (cf. Haspelmath et al. 2008), one cannot conflate NP and DP and invoke the head-final nature of NP/DP for Chinese. Quite on the contrary, in order to obtain meaningful results it is necessary to distinguish between the functional layer(s) and the lexical domain within the nominal projection.

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