

On the Status of 'Modifying' DE and the Structure of the Chinese DP

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1. Introduction

This paper re-examines the status of so-called nominal 'modifying' *de* and the traditional head-final analysis of Chinese NPs/DPs and argues that NPs/DPs in Chinese are in fact uniformly head-initial with a fully regular underlying head-complement structure paralleling that in other languages. Surface distortion of this structure is suggested to be due to a property of *de* that it is an enclitic determiner of the type found in Romanian which attracts some XP element to its specifier position for phonological support, this triggering large-scale leftwards movement inside the DP. The paper also considers how definiteness may be encoded DP-internally both in Chinese and in other languages, and examines how determiners are used in a wide range languages to introduce modificational restrictions on nominal referents. Finally, it is shown that the analysis presented in combination with Fu's (1994) insights into the process/result distinction in Chinese

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nominals is able to provide a simple account of a number of puzzles concerning the relative positioning of complements and adjuncts internal to the DP in Chinese.

2. Modifying *de*, Relative Clauses and Kayne (1994)

A primary goal of this paper is to develop a better understanding of the syntactic status and properties of the particle *de* found occurring in relative clauses, as a marker of possession, and with pre-nominal Adjectival-Phrases and PPs as illustrated in examples (1-4) below:¹

- | | | | |
|-----|---|-----|---|
| (1) | wo mai de shu
I buy DE book
'the book I bought' | (2) | wo de shu
I DE book
'my book' |
| (3) | hao de shu
good DE book
'good books' | (4) | dui ta de xinren
to him DE trust
'trust in him' |

Referred to variously as a relativizer, a genitive case-marker and sometimes just vaguely as a modifying particle, little consensus has been reached on the actual syntactic category of the element *de* and its status in the NP/DP is often simply ignored. In order to probe this issue further, I would like to focus first on the occurrence of *de* in relative clause structures and examine an interesting result which ensues from analyzing Chinese relative clauses in terms of Kayne's (1994) Antisymmetry of Syntax theory.

One important consequence of Kayne's general theory of word-order (the Linear Correspondence Axiom/LCA) is that rightward adjunction is not permitted, forcing the re-analysis of a number of constructions including relative clauses which have commonly been taken to involve such rightward adjunction. In order to avoid the assumption that a relative clause is rightwardly adjoined to the head noun/NP in languages like English, Kayne suggests the analysis sketched out in (5) below. The head noun/NP originates in the IP clause and undergoes raising to the specifier of a CP constituent which is selected as the *complement* of a determiner:

- (5) [DP the [CP man_i [C] that [IP I met t_i]]]
- ↑

¹ Note that the paper does not consider the use of the morphologically-related sentence-final *de*. For a discussion of the syntax of this element see Simpson & Wu (1999).

Considering languages in which the relative clause precedes the head-noun/NP, a number of patterns are found. In order to avoid the possibility of rightward-adjunction again, all such languages are essentially suggested to follow the derivation schematized in (5) above and then take this derivation further in a number of different ways. In Yoruba-type languages it is suggested that forms such as (5) will be transformed into structures such as (6) via raising of the entire CP following the head-noun in (5) to SpecDP, whereas in Amharic-type languages it is the IP constituent following the head-noun/NP which is argued to raise to SpecDP, resulting in the order in (7). The abstract examples (6) and (7) use English words for ease of exposition:

(6) [DP [CP man_i [_C that [_{IP} I met t_i]]] [D the [t_k]]] 'Yoruba'

(7) [DP [_{IP} I met t_i]]_k [D the [CP man_i [t_k]]] 'Amharic'

Certain languages having similar patterns to Amharic also seem to display a 'relative particle' sandwiched between the 'raised' relative clause and the determiner or head-noun/NP, resulting in a sequence such as (8):

(8) I met REL (the) man

Kayne argues that such elements cannot in fact be relativizers in a C⁰ position as the analysis only allows that a C⁰/Comp position could hypothetically occur either preceding the raised relative clause or following the head noun/NP, in the positions indicated in (9):

(9) # I met REL (the) man #

Kayne consequently suggests that such elements are actually Infl elements attached to the verb. Such a proposal is indeed potentially plausible as all of the languages identified as having 'raised' relative clauses are verb-final O-V languages and the 'relativizer' appears adjacent to the verb which is final in the relative clause - the 'relativizer' could then quite possibly be taken to be a verbal suffix. Chinese however causes an interesting problem for such an analysis - Chinese is a language with pre-nominal relative clauses and an element which looks like a relativizer (*de*) occurring between the relative clause and the head-noun, but Chinese is a language which is atypically V-O in its word order; consequently the 'relativizer' *de* does not necessarily occur adjacent to the verb and so cannot be analyzed as an

inflectional suffix on the verb.² Consider the relative clause in (10) - for Kayne such a structure has to follow the lines of derivations already outlined - the head-noun/NP will be taken to raise to SpecCP from the underlying structure in (11) and then some IP-like clausal constituent following the head-noun will undergo further raising to an initial position, as in the schema in (12):

(10) [_ qu Beijing] de ren
go Beijing DE person
'the person who went to Beijing'

(11) [de [CP ren_i [_{IP} t_i qu Beijing]]]

(12) [[_{IP} t_i qu Beijing]]_k [de [CP ren_i] t_k]]

The element *de* sandwiched between *qu Beijing* and *ren* cannot be analyzed as an inflectional suffix on the verb in the relative clause, nor can it be analyzed as a relativizer in a C⁰ position, because Kayne's analysis does not allow for a C⁰ node to occur in this position - the two potential C⁰ positions are those indicated in (9), hence those signalled in (13) and not the position occupied by *de*:

(13) # qu Beijing de ren #

The only possible analysis for *de* following Kayne would seem to be that *de* in fact is a *determiner* occupying D⁰, with the IP-RC raised to SpecDP

(14) [DP [_{IP} t_i qu Beijing]]_k [D de [CP ren_i] t_k]]

This clearly may be a rather unexpected result as *de* does not seem to display the behaviour and properties commonly associated with determiners. For example, *de* would first of all not seem to have any obvious *definiteness* value, which is generally taken to be a defining property of determiners. Secondly *de* may occur more than once in an NP/DP, as in (15), whereas DPs are regularly taken to be associated with a single D⁰ position and hence a single occurrence of a determiner:

² Relative clauses in Chinese are typologically extremely marked. In a study examining the word order patterns of 130 languages, Dryer (1992) reports that Chinese was the *only* language having both pre-nominal relative clauses and a basic verb-initial/V-O order; all other languages with the order relative clause - noun turned out to be uniformly O-V languages.

- (15) wo-de zhu zai Beijing de hao pengyou
 I DE live in Beijing DE good friend
 'my good friend who lives in Beijing'

Thirdly, *de* can clearly co-occur with demonstratives which are otherwise commonly taken to instantiate and occur in D^0 , suggesting that *de* itself is not in D^0 but is rather an element of a different type. The position occupied by the demonstrative in (16) might furthermore appear to be a quite regular determiner/ D^0 position initial in the DP whereas *de* is never found to be DP-initial and always follows some other constituent:

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

Instead, however, of immediately concluding that the Kaynean approach to relativization must necessarily be incorrect for Chinese because it leads one to what seems like an intuitively odd analysis of *de*, this paper will actually investigate the possibility that Chinese *de* may be a determiner, and will suggest that there is in fact much to be gained from understanding *de* as an instantiation of D^0 . In what follows, the paper will first argue in section (3) that the reasons for rejecting *de* as a determiner noted above are not in fact well-grounded and that determiners cross-linguistically show a behaviour which is much more varied than that in languages such as English which have tended to shape our initial conceptions of the nature of determiners. Section (4) then continues with a comparison of determiners, demonstratives and quantifiers and a consideration of the notion of definiteness in DPs, and argues for a rather different analysis of the functional role of determiners. Finally section (5) attempts to show that an analysis of *de* as a determiner-element potentially allows for a more general analysis of DPs in Chinese in which such constituents need not be taken to be head-final as often assumed in the past, but can instead be shown to be very similar to descriptively head-initial DPs in other languages.

3. Multiple Determiners, Definiteness and Demonstratives

One of the properties of *de* mentioned in section 2 which might go against its analysis as a determiner is that one frequently finds more than a single occurrence of *de* in a DP and it is commonly assumed that there should only be a single D^0 position in any DP. Such an assumption may perhaps be largely based on our understanding of English and other west European languages where this restriction does indeed seem to hold. However, there

are also a considerable number of languages where determiners do appear multiply within a single DP, as for example in Hebrew where (17) shows a determiner occurring both on the head noun and on the following adjective:³

- (17) ha-bayit ha-gadol
 the-house the-big
 'the big house'

Albanian and Greek also show the same phenomena, in (18) and (19) respectively:

- | | | | | | | |
|------|----------------|----------|------|------------------|----------|-----------|
| (18) | djal-i | i-mire | (19) | afto | to oreo | to vivlio |
| | boy-the | the-good | | this | the good | the book |
| | 'the good boy' | | | 'this good book' | | |

Consequently the fact that *de* may occur multiply within the NP/DP in Chinese is not necessarily a good reason for rejecting *de*'s status as a determiner - the multiple occurrence of determiners in a single DP is cross-linguistically not unusual and the additional occurrence of determiners marking *adjectival modification* relations is actually well-attested.

A second potential argument against a determiner analysis of *de* noted in section 2 was that *de* would not seem to have any inherent definiteness value, and such a property is often taken to be a crucial identifying property of determiners. However, here again it can be shown that there are many cases of determiners occurring without any contribution to the definiteness of a DP and that an element need *not* necessarily mark (in-)definiteness on a DP in order to qualify as a determiner. There are, for example, clear uses of the so-called 'definite' determiner as an expletive place-holder element occurring with names in Italian, German and many other languages (as seen in (20/21) below). In such combinations it is critically the presence of the name in the DP which results in the DP being interpreted as definite, and the determiner itself has no strong contribution to the DP in terms of definiteness. Longobardi (1994) discusses the patterning in (21) and suggests that the definiteness of the DP is formally established by N-to-D movement of the name; this may take place overtly as in (21b), but if it does not do so, an expletive determiner must instead be inserted as a place-holder in D^0 , and the name is then suggested to raise to D^0 at LF. Noting that failure to insert the dummy determiner will result in ungrammaticality (as in 21c), the important contribution of the determiner is then not one of

³ Examples here are taken from Giusti (1997).

supplying definiteness but simply that of filling a position, similar to the occurrence of expletive subjects used to satisfy the EPP in clauses:

- (20) der Karl (21) a. il mio Gianni
 the Karl the my Gianni
 b. Gianni_i mio t_i
 c. *mio Gianni

Albanian (22) additionally shows that the necessary insertion of a 'definite' determiner with an adjective in fact has no relation to the ensuing definiteness of the DP, and is reported in Guasti (1997) to be triggered solely by properties of the adjectival stem - in (22) a 'definite' determiner occurs with the adjective but the whole DP is actually indefinite:

- (22) nje djale i mire
 a boy the good
 'a good boy'

It can also be noted that the 'definite' determiner in English may in certain cases be used without giving rise to any necessary interpretation of definiteness/familiarity as illustrated in examples (23) and (24):

- (23) I bet you'll never find the secretary of a deputy who's willing to testify against him.⁴
 (24) The Crow and the Fox (as a book/story title)⁵

The referents represented by the DPs marked with definite determiners in (23) and (24) may be fully novel to the hearer/reader and so need not necessarily be interpreted as definite.

Finally, French uses the 'definite' determiner in instances of inalienable possession where English would use an indefinite determiner, hence again an instance where the 'definiteness' specification of a determiner is far from clear:

- (25) Olga a le bras enflé.
 Olga has the arm swollen
 'Olga has a swollen arm.' (Tellier 1994)

⁴ This example again comes from Guasti (1997).

⁵ Interestingly, the Miao language of Weining as reported by Bisang (1997) has two different types of classifier which are associated with definiteness and indefiniteness and would here in (24) select the *indefinite* novel classifier for a similar story title.

Consequently it can be argued that it is not possible to suggest that determiners must always have necessary inherent definiteness properties and accordingly reject the analysis of *de* as a determiner because it appears to lack such a definiteness specification. Clear determiners in other languages frequently do not seem to make any contribution to the definiteness of a DP and may appear to have instead some other kind of purely expletive function.

The third initial reason given for possibly rejecting an analysis of *de* as a determiner was that *de* is found to co-occur with demonstratives which traditionally have been taken to instantiate D⁰. Such an assumption is in large part based on the observation that determiners and demonstratives may not co-occur in languages such as English, as in (26):

- (26) *the that book *that the book

However, here again there is now abundant cross-linguistic evidence that determiners frequently may co-occur with demonstratives and hence that they do not always compete for the same D⁰ position. Greek as already illustrated in (19), Spanish, Romanian, Hungarian and Irish are just a few of the many languages where determiners and demonstratives are found together in the same DP. Spanish and Irish in fact show that when the demonstrative occurs after the noun a determiner is actually forced to co-occur with the demonstrative, as seen in (27). In Spanish such an order alternates with one in which the demonstrative occurs initially and suggests that the determiner is simply an expletive place-holder for the demonstrative which is itself responsible for the definiteness specification of the DP:

- (27) a. el hombre este b. *hombre este
 the man this c. este_i hombre t_i
 'this man'
 d. *(an) fear seo (Irish)
 the man this
 'This man'

Grosu (1988) also convincingly suggests that a wide variety of complex patterns found in Romanian DPs may be neatly explained if one assumes that demonstratives are in fact inserted as XPs in lower DP-internal *specifier* positions rather than head positions. In (28a) it can be seen that N-to-D head movement licitly takes place over a demonstrative; here it is argued that this movement is not blocked by the Head Movement Constraint/HMC precisely because the demonstrative is not in an intervening head-position. Movement of an AdjP to SpecDP is however blocked when a demonstrative

is present below the determiner, as in (28b), because the latter is (suggested to be) an XP closer to SpecDP and so the demonstrative should itself raise to this position due to Relativized Minimality/the Shortest Move Condition, as indeed in (28c):⁶

- (28) a. $\text{baiat}_i\text{-ul acesta frumos } t_i$
 boy - the this nice
 'this nice boy'
- b. * $\text{frumos}_i\text{-ul acesta } t_i \text{ baiat}$
 nice - the this boy
- c. $\text{acest}_i t_i \text{ frumos baiat}$
 this nice boy

Giusti (1997) furthermore shows that Spanish, Greek and Irish all provide evidence that demonstratives may be base-generated in low positions inside DPs. For example, it is noted that the demonstrative in Spanish appears to occur as the lowest modifier of N, preceding all PPs but following all adjectives including thematic ones, as in (29):

- (29) $\text{la reaccion (*esa) alemana (esa) a las criticas}$
 the reaction that German that to the criticisms
 'that/the German reaction to the criticisms.'

The order reported for Irish is schematically as indicated in (30) below, with demonstratives similarly occurring in a low position following determiners, numerals and adjectives:

- (30) Det NumP N AP* Dem RC

Giusti (1997) suggests that one should therefore assume that demonstratives are perhaps universally base-generated in relatively low Spec positions rather than directly in D^0 and that when they do occur initially, this should be taken to be the result of movement from the lower base-generated position.

Turning to Chinese, it is found that demonstratives can occur both in an initial position in a DP and also in a lower position as in Irish, Spanish and Greek, as shown in (31). Following Giusti's analysis of the latter languages, it can therefore be suggested that the variability in positioning of

⁶ Note that movement of the AdjP to SpecDP is otherwise well-formed and satisfies the enclitic requirements of the determiner if the demonstrative is not present, as presently illustrated in example (34).

demonstratives in Chinese may be due to such elements being base-generated either in a lower DP-internal position or in a second higher/DP-initial position:

- (31) $(\text{nei-suo}) \text{ zai da-shan } \text{de} (\text{nei-suo}) \text{ xin fangzi}$
 Dem-CL in big-mountain DE Dem-CL new house
 'that new house in the mountains'

Consequently, given the wider patterning of demonstratives and determiners observed above, it can be argued that *de*'s potential to co-occur with a demonstrative is in fact not a strong reason for rejecting an analysis of *de* as a determiner – cross-linguistically it is found that determiners do indeed very frequently co-occur with demonstratives, and Chinese may well be similar to Spanish, Romanian and other languages in simply allowing for demonstratives to be base-generated either low in the DP or in a more canonical DP-initial position.⁷

3.1 Further objections

By considering a wider range of determiner behaviour in slightly less familiar languages it is consequently possible to provide good counter-arguments to all of the initial objections raised against analyzing *de* as a determiner. There are however various other obvious questions which any analysis of *de* as a determiner also needs to answer – first of all, importantly if *de* is in D^0 , why is it that it never appears in an initial position in the DP? Here the relevant generalization would seem to be that *de* is always closely associated with some XP to its immediate left, this being clearly evidenced by the pause intonation patterns which can be made *after* but never directly *before de*. Pursuing the hypothesis that *de* is a determiner element, it can now be suggested that this tight linking of *de* with the XP which immediately precedes it may be explained if one takes *de* to be a determiner of the same basic type as found in Romanian and argued by Grosu (1988) to be an enclitic requiring leftward phonological support. This property of the definite determiner in Romanian clearly triggers raising of some other element to a position immediately preceding the determiner – a noun in (33), an adjective in (34) or a demonstrative as in (28c) above – and shows a clear contrast with DPs headed by the *indefinite* determiner which is not an enclitic and so does not cause any parallel raising to take place (35). Example (32) shows that DPs headed by the definite determiner –*ul* are ill-

⁷ It may of course also be possible to assume that the demonstrative-classifier unit is regularly base-generated in the lower position and then sometimes optionally raised to the higher DP-initial position.

formed if no raising of another DP-internal element takes place to the left of *-ul*:

- (32) **-ul* potret unei fete
the portrait a.Gen girl
- (33) potret_i-ul t_i unei fete
portrait-the a.Gen.girl
'the portrait of a girl'
- (34) frumos_i-ul t_i baiat
nice - the boy
'the nice boy'
- (35) un portet al unei fete
a portrait of-the one girl
'a portrait of the girl'

In Chinese DPs headed by *de* I would therefore like to suggest that an XP-element is attracted to SpecDP by *de* in D⁰ for entirely parallel reasons, to support *de* as an enclitic.⁸ Such an assumption, supported by the clear phonological phrasing of *de* with the XP to its left, will quite simply account for the regular non-initial positioning of *de*, as illustrated again in (36) and (37) below:

- (36) [_{IP} wo zuotian mai]_i-de nei-ben [_{CP} shu [t_i]]
I yesterday buy DE that-CL book
'the book I bought yesterday'
- (37) [_{wo}]_i de t_i nei-ben-shu
I DE that-CL book
'that book of mine'

Such an analysis also has the advantage that it accounts for the unexpected pre-nominal positioning of relative clauses in Chinese in terms of the special properties of a single lexical item, i.e. the enclitic requirements of the D⁰ element *de*, rather attributing it to a general parameter of the language. As pointed out in footnote 2, Dryer (1992) observes that Chinese is essentially unique in being the only language attested anywhere with a basic V-O word order and also *pre-nominal* relative clauses, RC-N structures elsewhere being found to occur only in very regular O-V, (descriptively) head-final languages. This exceptional

⁸ Note, incidentally, that the homophonous potential and adverbial markers *de* have also frequently been analyzed as clitics.

fact about Chinese clearly must have some explanation, and it would seem most appropriate to assume that it relates to the exceptional properties of a single lexical element rather than being the outcome of the general typological nature of Chinese, whose overall V-O head-initial character would clearly lead one to expect only post-nominal relative clauses to occur.

An analysis along such lines however also raises a question about certain other elements which can potentially precede relative clauses in fully DP-initial positions, as shown in (38). If relative clauses do indeed occur (raised) in SpecDP, one needs to ask what positions these other DP-initial elements might be occurring in:

- (38) hen-duo/liang-ben/mei-ben [_{DP} [_{IP} wo zuotian mai]_i-de [_{CP} shu [t_i]]
very-many/2-CL/every-CL I yesterday buy DE book
'very many books/two books/every book that I bought yesterday'
- (39) nei-ben [_{DP} [_{IP} wo zuotian mai]_i-de [_{CP} shu [t_i]]
Dem-CL I yesterday buy DE book
'that book I bought yesterday'

Concerning the DP-initial pre-relative clause elements in (38), it is often assumed that certain quantifiers and quantificational elements may actually select DP as their complement, as in English (40) and other languages:

- (40) [_{QP} [_Q all [_{DP} the books]]]

Giusti (1997) shows that certain of these quantifiers may also be positionally quite ambiguous in various languages and occur either high in a Q⁰ position or lower down in some adjectival specifier. Romanian in particular has the interesting example of an element meaning 'both' which takes on morphologically different shapes when used initially in Q⁰ and when occurring as a pure adjective lower down in the DP:

- (41) [_{QP} amindoi [_{DP} baieti_i -i t_i]] (amindoi=Q⁰)
both children-the
'both the children'
- (42) [_{DP} ambi_i-i t_i baieti (ambi=Adj raised from regular
both-the children lower Adj position)
'the two/both children'

I would consequently like to suggest that the DP-initial, pre-relative clause quantifiers in Chinese examples such as (38) are occupying a pre-DP Q⁰ or SpecQP position parallel to that in other languages (and like quantifiers in Romanian may also alternatively occur in a lower DP-internal position).

Regarding the pre-relative clause position of the demonstrative in (39), I would like to suggest that this element may occur positioned in the specifier of a functional projection dominating DP which specifically encodes the deictic location/orientation of a DP. In his thorough investigation of the internal functional structure of clauses, Cinque (1999) notes that the highest functional projections of a clause would seem to relate the clause directly to the speaker in terms of his/her attitude to its truth, and the origin of a piece of information with respect to the speaker (evidential marking). Interpreting this as a semi-deictic/metaphorical siting of the proposition relative to the speaker, and making the common assumption that DPs and clauses have essentially similar structures, it can be suggested that DPs may also have an equivalent origin-focused deictic functional projection high in their structure relating the reference of the DP to the speaker/hearer in a way which parallels the origin-related high functional structure present in clausal constituents. Assuming this tentatively to be so, pre-relative clause demonstratives such as that in (39) can be suggested to be base-generated in (or perhaps undergo raising to) the specifier of such a deictic projection.⁹

If the patterns found in (38) and (39) can thus be given a reasonable explanation, a second more testing question about the *de*-as-enclitic determiner hypothesis is now the following. If *de* is indeed to be analyzed as a determiner, why is it then not possible to have just simple sequences of *de*-noun or noun-*de* as in (43) below?

- (43) a. **de* ren b. *ren-*de*
 DE person person-DE
 intended: 'the person'

(43a) is ruled out because it has been suggested that *de* requires some element in its specifier to provide it with phonological support, but nothing so far explains why (43b) should not be possible with the noun/NP *ren* raised to SpecDP. This particular problem I will actually set aside just for the present and return to it later on in section 4.1. For now it can be noted that the underlying intuition which needs to be captured is that *de* only ever occurs when there is some modification relation. In section 4.1 it will be shown that there are in fact *many* other instances cross-linguistically where determiners or determiner-like elements similarly seem to require the presence of some other modifying phrase in order to legitimately occur in syntactic structure, and hence the requirement that the putative Mandarin

⁹ In support of such proposals, it can be noted that Huang (1982) suggests that a demonstrative in a position preceding a relative clause results in a clearly stronger deictic interpretation than one following a relative clause, hence that different interpretations are associated with demonstratives in the pre- and post-relative clause positions.

determiner *de* be accompanied by some other modifying phrase is really just one instantiation of a more general pattern which possibly calls for a wider reassessment of the functional role of determiners.

4. Definiteness, Demonstratives and Szabolcsi (1994)

In this section I would first like to return to *de* and the *definiteness issue* - the traditional assumption that the definiteness of a DP is a direct result of the definiteness specification of a DP's determiner. Essentially I will propose adopting a version of a rather different approach towards the locus of definiteness in the DP put forward in Szabolcsi (1996), investigating the structure of the DP in Hungarian.

Szabolcsi makes the interesting observation that a determiner in Hungarian may co-occur with a low demonstrative or other low quantifier such as *minden* 'every' only if some other element such as a reduced relative clause or a possessor phrase intervenes between these elements, as e.g. in (44) and (45):

- (44) a. *(tol-ed kapott) valemennyi level
 the from-2sg received each letter
 'the letter I/we received from you'
- (45) az *(en) minden allitas-om
 the I every book
 'my every book'

If a determiner does not occur in forms such as (44), then the Demonstrative/Quantifier is forced to raise to the initial D⁰ position, as in (46):

- (46) valamennyi_i tol-ed kapott t_i level
 each from-2sg received letter
- (47) *tol-ed kapott valamennyi level
 from-2sg received each letter

Suggesting that this raising is triggered by a simple need to fill the D⁰ position with some overt element, Szabolcsi then notes that the interpretation of (44) with the determiner and (46) without the determiner is exactly the same and concludes that the determiner does not make any special contribution towards interpretation in (44). Szabolcsi goes on to argue that if the definiteness interpretation in (46) results from the presence of the quantifier alone, it should likewise also result from just the quantifier

in (44) where the determiner is in fact present. Interpretations of definiteness are consequently suggested not to come from determiners in Hungarian and it is argued that such elements must therefore have some other function in the DP. Drawing a parallel with CP complementizers, Szabolcsi proposes that the primary function of both determiners and complementizers is to act as *subordinators* and formally enable a CP proposition or a DP to refer as an argument. She then notes that complementizers cross-linguistically might in fact seem to have two regular functions - sometimes acting simply as pure embedders/subordinators and elsewhere also 'typing' clauses in the sense evoked by Cheng (1997). In some languages these two functions may possibly be performed by separate lexical items, as for example in Japanese where the element *to* is a pure clausal embedder and *ka* is an interrogative clause typer, however it is suggested that other languages might be found to employ a single lexical element for both functions, as for example in English with the C^0 'that' functioning being as an embedder and as a (declarative clause) typer. Parallel to this and in the domain of the DP, Szabolcsi speculates that the English determiner 'the' might similarly fulfill both functions of subordination *and* providing a definiteness specification (an equivalent 'typing' function), this potentially allowing for an explanation of why determiners do not co-occur with demonstratives in English - the determiner alone is able to fulfill both roles of subordinating and typing). In Hungarian Szabolcsi takes the determiner to be a pure subordinator, while the definiteness specification of the DP is assumed to *always* come from some other element - an overt demonstrative or quantifier if one is present, as in (44/45/46), or some covert null variant of such elements which is suggested to occur when only the determiner is overtly present, as in (48):

- (48) a \emptyset level
the \emptyset letter

Finally, Szabolcsi suggests that although definiteness may in fact be the result of the (definiteness) specification of a low position hosting demonstratives and certain quantifiers in all languages (rather than come from a purely subordinating determiner element in D^0), there may also be some kind of definiteness 'concord' process whereby a higher subordinating determiner has to agree in definiteness specification with a lower demonstrative. Such a definiteness agreement process would then require

the use of the 'definite' determiner in Hungarian (44/45) rather than an indefinite equivalent.¹⁰

I would now like to assume, following Szabolcsi's insights above, that the definiteness specification of a DP may indeed be a direct function of a position where demonstratives and indefinite quantifiers potentially can occur, lower than the initial D-position, and that definiteness may not be directly or even necessarily a function of D^0 . In Chinese it can be seen that the overall definiteness of a DP would often seem to relate to elements which appear lower than the initial (D-)position, as illustrated in examples (49) and (50):

- (49) wo de nei-ben shu
I DE that-CL book
'that book of mine' DEFINITE
- (50) wo de liang-ben shu
I DE 2-CL book
'two books of mine' INDEFINITE

Concerning the definiteness concord which is in other languages assumed to exist and be manifested between a lower demonstrative and a higher D^0 position (in Szabolcsi's approach), here it can be suggested that this has only a covert, abstract representation in Chinese and no overt morphological reflex, as the single lexical element *de* occurs in D^0 in both definite and indefinite DPs such as (49/50). In regard to such a suggestion, note first of all that if the essential definiteness of the DP is indeed a function of low demonstratives or (possibly indefinite) quantifiers, then there clearly is no absolute necessity for the definiteness value to be repeated overtly elsewhere in D^0 , hence D^0 elements should not necessarily be expected to overtly encode (in)definiteness. Secondly, if a language were to possess only one instantiation of D^0 (i.e. have just a single embedding determiner element), neutral with regard to any overt definiteness specification, this will have the effect that overt definiteness concord will simply just not be visible in the language, in the same way that a language with a single subordinating complementizer/ C^0 will not show any overt finiteness agreement/concord with an embedded T^0 -head. This then is essentially what I would like to suggest is the case in Chinese, that the element *de* is simply a determiner now under-specified for and neutral with regard to definiteness, so that *overt* definiteness concord does not occur in

¹⁰ Szabolcsi likens this concord/agreement to that obtaining between a complementizer and a lower T^0 -head - a complementizer may have to 'agree' in terms of finiteness with T^0 , as in English where *that* is a finite-C and *for* a non-finite C.

Chinese, unlike in Hungarian/Spanish etc.¹¹ The issue that *de* is claimed to be a determiner yet appears to have no inherent definiteness specification can consequently be given a reasoned explanation, and the suggested covert nature of the representation of DP-internal definiteness concord in Chinese can be taken to be just a further example of the frequent overt/covert alternation of agreement phenomena assumed in natural language.

4.1 The Function of *de*

Here the paper now returns to a question raised earlier in section 2 and speculates that the actual function of the determiner *de* in Chinese (and possibly determiners in certain other languages) may perhaps be somewhat different from Szabolcsi's idea of a pure subordinating function. The important question put aside in section 2 was why it is not possible to have just the element *de* and a bare head-noun/NP as in (51):

- (51) *ren_i -de t_i
person DE

As briefly noted in section 2, the idea which needs to be captured is that *de* only occurs when there is some other modifying element present. This section will now try and show that there are in fact many instances where determiners or determiner-like elements require some other modifying element to be present, and that broadly this might indeed be a pre-condition on determiners of certain types, possibly that the primary function of these determiners precisely is to enable a modification relation to be effected; the determiners themselves might then perhaps be taken to instantiate syntactic

¹¹ Note that the present lack of overt definiteness specification in *de* may well not have been true of the morpheme *de* in the past. As noted in Simpson 2001, it is widely speculated that the element *de* developed from the earlier classical Chinese element *zhi* which had a distribution largely parallel with modern Chinese *de*. Here it can be noted that in addition to functions similar to modern Chinese *de*, *zhi* was significantly also used as a clear demonstrative, as illustrated in (i) below:

(i) zhi er chong you he zhi
these two worm again what know

'And what do these two worms know?' (Zhuangzi 1.10)

Modern-day *de* consequently may have developed from an early demonstrative and so at an earlier time have had a positive definiteness specification just like other demonstrative elements. See here Simpson 2001 for much further discussion of the issue of definiteness agreement and its gradual loss over time. Given furthermore the common observation (e.g. Vincent 1997) that determiners are elements which develop out of earlier demonstratives, the fact that *de* most probably developed from a demonstrative is also further good support for the suggestion that *de* is now a determiner/an element of category D°.

variables allowing the modifying element to enter into some kind of a non-canonical predication relation with the noun.

A first illustration of the wider connection between determiners and noun modification was actually present in the preceding section. There it was shown that the sequence the...every in Hungarian is only licit if some additional modifying expression is included in the sequence, either a possessor or a reduced relative clause as schematized in (52), hence that the determiner may only co-occur with a demonstrative if there is some other noun modifier present:¹²

- (52) the *(poss-NP/RC) that/every N

A second example of essentially the same phenomenon can be given from Vietnamese. Bisang (1997) argues that classifiers are not always necessary for counting in Vietnamese and that it is therefore possible to have a numeral with a noun without a classifier as in (53):

- (53) trong nha-hat kia co muoi-bay ghe
in cinema this are 17 chairs
'There are 17 chairs in this cinema.'

However, if a further modifying expression is added in to (53), use of the classifier interestingly becomes obligatory, as illustrated in (54). Therefore a clear link obtains between the occurrence of a modifying expression and that of a determiner-like element, classifiers in many languages having clear determiner-like properties - see here Cheng & Sybesma (1996) on Cantonese, Daley (1995) on Vietnamese, also Simpson (2001):

- (54) trong nha-hat kia co muoi-bay *(cai) ghe lam bang cay tot
in cinema this are 17 CL chairs made of wood good
'There are 17 chairs made of good wood in this cinema.'

Further examples can actually be given from English. Whereas sequences of determiners and quantifiers such as the every boy are not normally licensed (as in Hungarian), when an additional modifying possessor phrase is added on, this can have the effect of making such sequences quite acceptable and licensing the determiner to appear with the quantifier:

- (55) *the every whim
(56) the every whim [of Margaret Thatcher]

¹² Note too the suggestive fact that both these types of modifiers are elements which occur marked by *de* in Chinese.

(57-59) below show a similar patterning, this time with a relative clause. Whereas (57) is grammatical with a demonstrative, if the demonstrative is replaced with a determiner, the sequence immediately becomes unacceptable (58). This illicit presence of the determiner can then however be licensed by the addition of a modifying relative clause, so again the presence of the determiner is dependent on that of the relative clause:

- (57) that sweater of John's (is expensive)
 (58) *the sweater of John's (is expensive)
 (59) the sweater of John's [that you showed me last night]

Another quite similar case is noted in Kayne (1994) - in English, names can only be accompanied by determiners if there is also an additional modifying relative clause, as shown by the contrast in (60) and (61):

- (60) *the Rome
 (61) the Rome [that I love]

Through all of these cases we see then that the presence of the determiner depends on the presence of a second modifying element, which is exactly what is also found with *de* in Mandarin. As certain determiner elements consequently seem to be intrinsically bound up with (the presence of) restrictive modification, it can be suggested that the introduction of a predication relation may indeed be a critical, primary function of such elements. Here we may also reflect back on earlier examples from Romanian, Albanian and other languages where it was shown that adjectives introducing properties of the head noun are all marked with a determiner, this in addition to the presence of a determiner on the head noun, as for example in (17) repeated here:

- (17) ha-bayit ha-gadol
 the-house the-big
 'the big house'

Generally then it actually seems to be quite common for restrictive predication on a noun to be introduced by means of a determiner. Given such an observation, it is possible to understand the determiner in these instances as providing something like a visible externalized variable allowing an unsaturated predicate to be interpreted as modifying some other nominal, and this is how I would here like to propose analyzing Chinese *de* -

as an element of this same determiner class specifically used to introduce a predicative restriction on some second nominal expression. This function of *de* parallel to that of clear determiners in other environments may then be held directly responsible for the fact that sequences such as **ren-de* in (51) critically do not occur - *de* obligatorily introduces a restriction on the head noun but none is present in such sequences.^{13 14}

¹³ An alternative (though perhaps less revealing) way to capture the fact that *de* co-occurs not just with a bare noun but necessarily also with some kind of modifier is to suggest that this is simply due to the syntactic sub-categorization requirements which *de* has - if *de* specifically selects for a CP complement rather than an NP complement (as indeed suggested here), then in addition to the head-noun following *de* there will clearly also always be a clausal modifier present (raised to SpecDP after relativization of the head-noun to SpecCP).

¹⁴ In connection with the '**ren-de*'-problem, a reviewer of the paper asks why it is that an intermediate form such as (i) cannot give rise to a surface form (ii) via raising to SpecDP of the NP rather than the IP:

- (i) [de [[NP shu]_i [IP wo mai t_i]]]
 (ii) *[[NP shu]_i [de [t_i [IP wo mai t_i]]]]
 (iii) [[IP wo mai t_k]_k de [[NP shu]_i t_k]

If movement of the IP to SpecDP is triggered by a need to provide phonological support for *de*, one might wonder why the NP could not be raised to SpecDP to provide this phonological support instead of the IP. This, I believe, can arguably be ascribed to the selective nature that clitics are cross-linguistically observed to show and the fact that clitics vary quite considerably with regard to their tolerance of different phonological hosts. Whereas certain clitics may allow attachment to a wide variety of hosts, others appear to be rather intolerant and target only a single specific type of host (as e.g. the pronominal clitics in Romance languages). Chinese *de* can therefore be suggested to be highly selective in this latter way and only target/attract a clausal IP constituent, not NPs or any other type of element; in the Minimalist model of syntax this may be achieved by assuming that *de* is base-generated with strong *v*-(or T-)features which are satisfied when a clause headed by an element with *v*-features is attracted to the Specifier of DP (it can also be noted that movement of the full IP rather than just the I⁰/V⁰ carrying the *v*-features may be forced by the Head Movement Constraint - head-movement of I⁰/V⁰ alone might well be impossible across the intervening C⁰ head).

This answer to the question of why (ii) is not permitted will in fact also provide an alternative solution to the '**ren-de*' problem (as the same reviewer suggests) - if *de* will only tolerate (can only attract) an IP to its Spec for phonological support, then the non-occurrence of '**ren-de*' forms will be straightforwardly ruled out - *ren* as an NP will simply fail to satisfy the highly selective enclitic requirements projected by *de*. Note that possessor structures such as (iv) which might appear to pose a problem for such a view are analyzed in Simpson (1998) as relative clause-type structures containing a null verb of predication. Consequently the constituent to the left of *de* is (suggested to be) an IP out of which the head-noun *shu* has been relativized and the IP-requirement imposed by *de* is indeed uniformly maintained:

- (iv) [IP wo t_i]_k de [[shu]_i t_k]
 I DE book
 'my book'

5. DP Structure, Complements and Adjuncts

Having argued for the analysis of *de* as a determiner in the preceding sections, I would now like to try to show how such an analysis allows for a somewhat different view of DP structure in Chinese which accounts for the apparent head-final character of NPs/DPs and suggests that the NP/DP is instead a fully regular head-initial phrasal-type. The traditional assumption that DPs/NPs are head-final in Chinese can be suggested to be otherwise rather problematic, first of all for the purely theory-internal reason that head-final categories are argued not to exist in approaches such as Kayne (1994) and more generally because Chinese elsewhere seems to be regularly head-initial in all its other major categories - in PPs, VPs, IPs (with auxiliary verbs preceding the VP), and in CP (with elements such as *ruguo* and *yaoshi* 'if' etc occurring in C⁰ and preceding IP).¹⁵ The NP/DP might then seem to be rather exceptional if it were to really be head-final.

To begin with, we can briefly review what has been proposed along the way in sections 2-4. Basically, it has been suggested that the structure of the DP is as in (62):

- (62) DeicticP Q D_(de) Poss Dem Num N

Such a structure also coincides with what is found in many other languages and so would seem to receive cross-linguistic support if DPs are assumed to exhibit a universal type of hierarchical organization.¹⁶

Turning now to other elements which occur DP-internally, Lin (1994) and Tang (1990) both suggest that there is actually no structural distinction in Chinese DPs between complements and adjuncts because adjuncts regularly occur separating complement-type elements from the nouns which select them, as in (53) where the PP *dui Lisi* is the complement of the head noun *piping* but the adjunct *yanli (de)* separates these two elements:

- (63) Zhangsan [dui Lisi] yanli de piping
Zhangsan towards Lisi severe DE criticism
'Zhangsan's severe criticism of Lisi'

¹⁵ See also Simpson & Wu (to appear) for evidence that the clause-final positioning of certain sentential particles is not a good indication of the underlying location of C⁰ relative to its IP complement.

¹⁶ Supposing one analyzes English (i) below as being derived via the movement indicated, in order to account for the otherwise odd final position of the possessor following the head noun (basically as in Kayne 1994), then English can also be argued to have the underlying order in (62) with demonstratives and numerals being base-generated below D and Poss:

(i) [those three books]_i of John's t_i.

Tsao (1997) however shows that ordering restrictions which do seem to reflect a complement/adjunct distinction within DPs are to be found when both elements are clausal, as seen in examples (64) and (65) which show that a clausal complement must occur adjacent to the selecting noun and an adjunct clause may not intervene:

- (64) [wo zuotian tingdao]-de [Deng Xiao-ping shishi]-de xiaoxi
I yesterday hear DE Deng Xiao-ping die DE news
'the news that Deng Xiao-ping had died which I heard yesterday'
- (65) *[Deng Xiao-ping shishi]-de [wo zuotian tingdao]-de xiaoxi
Deng Xiao-ping die DE I yesterday hear DE news
'the news that Deng Xiao-ping had died which I heard yesterday'

Assuming this to be a valid indication that there is indeed a DP-internal complement/adjunct distinction, it suggests that the complement PP *dui Lisi* in (63) separated from its selecting N-head by the adjunct *yanli (de)* should then be analyzed as having been repositioned away from its base-generated complement position. Now, if the complement PP has indeed undergone repositioning, there is no compelling reason to assume that it has been moved from a position *preceding* the noun rather than from a position following the noun - i.e. there is no strong reason for believing that Chinese is underlyingly N-final rather than N-initial as the complement of a noun might always seem to be forced to undergo some kind of movement away from its base-generated position, and hence it may never be possible to be exactly sure where the original base position of the complement actually is.

Continuing on, Fu (1994) provides convincing arguments that elements occurring with *process* nominals in Chinese really are arguments and contrast in their behaviour with similar elements occurring with result nominals and other non-verbal nouns which appear more genuinely adjunct-like. Process nominals are distinguished from result nominal equivalents by occurring with special classifiers (*ci*, *bian* and *hui*) and the process light verb *jinxing*, and by being compatible with 'time-how-long' adverbs rather than 'time-when' adverbs. Using such diagnostics, Fu shows first of all that the complement of a process nominal must indeed be present, as illustrated in (66):

- (66) ta ??(dui zaiqing) de baodao jinxing-le san-ge-xiaoshi
he towards disaster DE report last Asp 3-CL-hours
'His reporting of the disaster lasted three hours.'

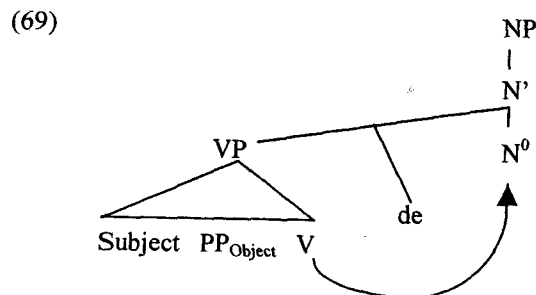
Secondly it is shown that only a single instance of the element *de* occurs with process nominals; in contrast to result nominals neither the subject

argument nor a PP may be marked with an additional *de* in process nominal structures, such as (67) and (68):

- (67) [Lisi (**de*) dui zhei-ge anjian *de* diaocha] jinxing-le yi-ge-xiaoshi
 Lisi DE to this CL case DE investigation last Asp 1-CL-hour
 'Lisi's investigation of this case lasted an hour.'

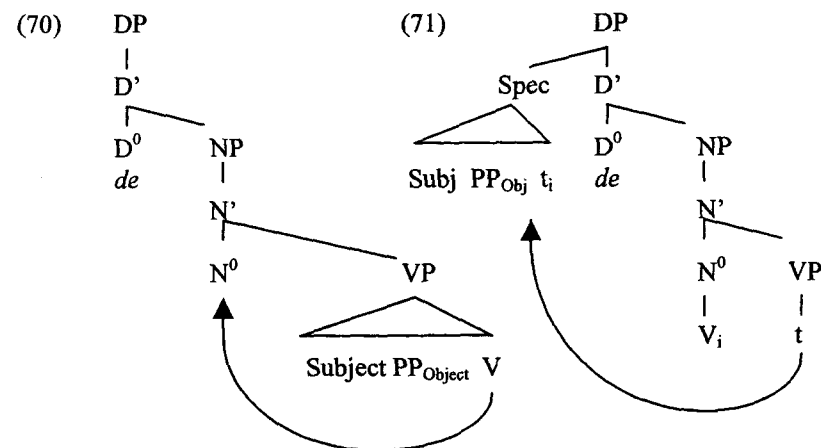
- (68) [ta zai zher (**de*) dui zhei-ge anjian *de* diaocha] jinxing-le yi-ge-xiaoshi
 he at here DE to this CL case DE investigation last-Asp 1-CL-hour
 'His investigation of this case here lasted an hour.'

Fu then suggests that process nominals are syntactically derived from underlying VPs, pointing out that the linear sequence of all elements associated with a process nominal precisely follows that found in VPs with complements realized as PPs and contrasts with the more varied order of the same elements in non-process nominals. Fu proposes that the V^0 head of the posited underlying VP raises rightwards past *de* to a head-final N^0 resulting in a deverbal derived nominal with many of the properties of VPs, abstractly as indicated in (69):



While agreeing with much of the argumentation in Fu, I would like to suggest that the derivation actually proceeds in a different linear direction. One potential shortcoming of the analysis given by Fu is that it is not clear what position *de* occurs in, and why as an X^0 category it does not block head-movement of the verb and give rise to a Head Movement Constraint/HMC violation. Here I would consequently like to propose that the relevant structure underlying process nominals is not in fact head-final but a fully regular head-initial structure, that the verb does raise to N^0 as Fu suggests but in a leftward movement as in (70), followed by raising of the remnant VP higher to SpecDP (as in 71, with *de* in D^0). In such a derivation there will be no HMC violation as the verb does not raise over *de* to a

higher head position, and no new assumptions are needed to account for the structure:



In this fairly straightforward way it can easily be seen how an NP may come to have the appearance of being strongly head-final on the surface yet in fact relate to an underlying structure which is fully head-initial. To illustrate the derivation with a concrete example, sentence (63) will have a regular head-initial underlying form (72) which subsequently gets converted into the surface form via two applications of movement - first V-to-N movement in (73) and then VP-remnant movement to SpecDP as in (74):

- (72) [DP de [NP [VP Zhangsan dui Lisi yanli piping]

- (73) [DP de [NP [N piping_i [VP Zhangsan dui Lisi yanli t_i]

- (74) [DP [VP Zhangsan dui Lisi yanli t_i]_k de [NP [N piping_i t_k]]]

Note that it is no longer particularly problematic that *dui Lisi* the PP complement of the head noun is not adjacent to the noun, appearing to be separated from the N^0 by the adjunct *yanli* - essentially the position of *yanli* between *dui Lisi* and *piping* is fully due to its adverbial-type position in the corresponding VP. A single *de* occurs in D^0 and the VP is attracted to SpecDP for the same reasons as in other cases, to support the clitic-like D^0 -element *de*. In short, a simple explanation of the word order facts can be provided in a principled way which is fully in line with Kayne's assumption that languages are uniformly head-initial

One might then ask what happens when there are in fact two occurrences of *de*, and how one might account for the ordering restrictions found in examples (64) and (65). (64) will be generated in the following way. The DP object to the verb *tingdao* 'the news that Deng Xiao-ping died' will first have to be formed and then inserted into the larger structure (as object to *tingdao*). Consequently the derivation begins with the structure in (75):

(75) [DP *de* [NP *xiaoxi* [Deng Xiao-ping shishi]]]

(75) is then converted into (76) for the normal reasons, and inserted as the object of *tingdao* in (77):

(76) [DP [Deng Xiao-ping shishi]_i [D *de* [NP *xiaoxi* *t_i*]]]

(77) *wo zuotian tingdao* [DP *Deng Xiao-ping shishi de xiaoxi*]

(77) is subsequently converted into a relative clause structure where *de* selects a CP and the relativized element is attracted to SpecCP as in (78):

(78) [DP *de* [CP[DP D-X-P shishi de xiaoxi] [IP *wo zuotian tingdao t_m*]]]

Finally the IP is attracted to SpecDP as in all regular relative clauses, resulting in the attested surface form:

(79) [DP[IP *wo zuotian tingdao t_m*]_p [D *de*[CP[DP *D-X-P shishi de xiaoxi*]_p]]]

The reverse derivation should not be available, where the relative clause would be created first and then the complement clause is built in afterwards, i.e. it should not be possible to first create a DP *wo zuotian tingdao de xiaoxi* 'yesterday' and then somehow add in an extra initial determiner and follow this by building in the complement to the head noun *xiaoxi* in such a way that it could be attracted up to the initial SpecDP resulting in a form such as (78).¹⁷ Consequently the proposed account of *de* as a determiner combined with Kayne's approach to relative clauses provides an explanation of the ordering restrictions noted by Tsao, and generally the analysis is able to make sense of the apparent surface head-final nature of Chinese NPs without the need for any radical new assumptions. Chinese can therefore be argued to be underlyingly head-initial and fully regular in

¹⁷ Such a derivation would be clearly counter-cyclic, building in a complement after the noun is embedded in higher structure.

its DP structure with an internal hierarchical organization clearly parallel to that in other languages. What causes significant surface distortion of this regularity can in large part be suggested to be simply the enclitic attractor-like properties of the element *de* when analyzed as a determiner.

6. Concluding Remarks

Concluding now with some brief summarizing remarks, this paper began by showing that the typologically odd combination of basic V-O order and N-final relative clauses together with Kayne's analysis of relativization leads to the initially surprising result that *de* in Chinese should be analyzed as a determiner. Rather than immediately rejecting this conclusion however, the paper showed that a broad investigation of the patterning of determiners across languages provides evidence that the obvious initial objections to an analysis of *de* as a determiner are not in fact well-grounded. Following ideas in Szabolcsi (1994), it was suggested that while elements in D⁰ may often show overt morphological definiteness concord with lower demonstratives and quantifiers which properly encode the definiteness value of a DP, in Chinese such definiteness agreement is simply not overtly instantiated, and *de* therefore has no outwardly identifiable definiteness specification. The paper then considered further the function of determiners and *de* and it was shown that determiners may frequently only appear when there is some modification relation present, and hence that determiners might well have modification as a primary function in a number of languages, possibly providing an external variable in an unsaturated open predication. Finally the paper re-examined the general architecture of the Chinese DP and attempted to show that the analysis of *de* as a clitic-like determiner attracting some element to its Spec along with Kayne's theory of relativization and Fu's insights into process nominals ultimately leads to a view of the underlying structure of DPs in Chinese which is both highly regular and resolves the theoretical problem that Chinese DPs/NPs might appear to be exceptionally head-final in their surface word-ordering patterns.

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