PF DELETION WITHIN CHINESE DP[*]

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The aim of this paper is to observe the empty categories inside the Chinese DP domain. Firstly, the deletion of NP/N' is proposed. One novel observation is that equation sentence with a "Modifier- Empty-NP" object can only result from ellipsis but not base-generated empty categories in Mandarin Chinese. Secondly, given the rich functional elements and modifications in the internal structure of Chinese DP, we would be able to ascertain the domain over which deletion happens.

Key words: N'/NP ellipsis, PF, focus movement, i-level predicate, s-level predicate.

1. Introduction

It is known that, in Chinese, the subject and object empty nominals are analyzed as pro-form (Pro) and A-bar-bound variables respectively (Huang 1984). The biggest insight was that, unlike anaphors, the empty nominal in object position displayed many properties of R-expressions. Following this observation, we further propose a possibility that PF deletion has applied in the domain of DP, especially in object DP-internal empty elements. Similar to Japanese *no-* (Kamio 1983; Saito et al. 2008), Chinese pre-nominal morpheme *de-* introduces modifiers of at least three kinds – possessor, relative clause, and adjectival modifier. Multiple modifications are possible among these three kinds. As reported in much literature (Larson & Takahashi 2002, Larson 2007; Hsieh 2005; Lin 2008), *i*-level and *s*-level modifier asymmetry must be observed. Stage-level modifiers must precede the individual-level modifiers and is placed further from a Chinese nominal. This study will explore how functional projections license ellipsis and what is the constituent deleted within DP.

In section 2, we will give a brief background about the nature of Chinese nominals, and how it is a good for analyzing the deletion within DP. Section 3 is our main analysis on the deletion mechanism. 3.1 discusses the DNC[1] order of
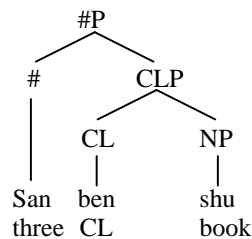
[1] The DNC order is an abbreviation for the pre-nominal elements in Chinese including:

functional elements preceding the stem noun, and how it could be related to the licensing condition of deletion phenomena. 3.2 discusses three kinds of single *de-*modifier, the multiple *de-* modification, and the way we observe deleting domain. 3.3 discusses the antecedent requirement of the NP deletion. Section 4 concludes this article with some insights into Chinese DP structure and theories of the deletion phenomena.

2. Setting the Stage

According to Huang (2010), only when CL is a head of NP, will we have NP ellipsis. The Chinese DP internal, therefore, is analyzed as:

(1)
```
              #P
           /      \
         #          CLP
         |         /    \
         |       CL      NP
         |       |        |
        San     ben      shu
       three     CL      book
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2.1 The R-Expression Properties

Empty nominals have long been an interesting issue among linguistic literatures. Huang (1984; 1987) convincingly showed that Chinese empty NPs in matrix clauses are pro-forms while the (embedded) objects are a variable bound by discourse topic. This means that the interpretation of object is only deictically decided rather than A(rgument)-bound. His typical examples were given as follow. The empty nominal could be A-bound in the embedded subject position as in (2) and its reference is co-indexed with the subject of the matrix clause. The object in (3)a, on the other hand, shows the A-bar-bound nature of the relevant empty category. Its reference could only be someone in the discourse. This is obviously distinct from the overtly realized pronoun in (3)b.

(2) a. Zhangsan$_i$ shuo [[e$_i$] bu-renshi Lisi]
         ZS   say [not-know   LS]
         張三$_i$ 說 [e$_i$ 不認識   李四]
         'Zhangsan said that he does not know Lisi'
     b. Zhangsan$_i$ suo [[e$_i$] yao qu   taibei]
         ZS   say [want go   Taipei]
         張三$_i$ 說 [e$_i$ 要 去 台北]
         'Zhangsan said that he wants to go to Taipei'

Demonstrative, Numeral, and Classifier respectively.

(3)   a.   [Zhangsan$_i$ suo [Lisi$_j$ bu   renshi [e$_{*i/*j/k}$]]]
            ZS   say   LS   not   know
            張三$_i$ 說 [李四 不   認識   e$_{*i/*j/k}$]
            'Zhangsan said that Lisi doesn't know him'
      b.   [Zhangsan$_i$ suo [Lisi$_j$ bu   renshi ta$_{i/*j/k}$]]
            ZS   say   [LS   not know   him/he]
            張三$_i$ 說   李四$_j$不 認識   他$_{i/*j/k}$
            'Zhangsan said that Lisi doesn't know him'

However, the nature of an empty nominal is not so simple. It is naturally assumed that covert nominal-elements could be categorized just like their overt counterparts, and defined by two features mentioned in the literature of Binding (Chomsky 1982:79-89) [2]. Upon examining the two examples, aside from variables, traces or a pro-forms, we now know that PF deleted constituents are also one sort of empty category. With more and more studies and literatures on deletion or ellipsis (Merchant 1999; Lasnik 2006; among others) and the DP internal structure (Abney 1987 among others), we would be able to explore the possibility of this proposal. In the following section, we will demonstrate how the proposal of a deletion works but a pronominal element doesn't.

2.2 Deletion or Pronominals?

The examples in the previous section show that empty nominal display distinct properties in referential identification. Another fact displayed in the following examples (5)-(7) is that syntactic forms should not be treated on a par with the semantic reference. Chinese possessive nominal is realized as the example (4). A morpheme ''*de*" introduces the possessor, which modifies the nominal in a possessive DP.

(4)   Zhangsan de shu
          Zhangsan DE book
          張三   的 書
          'Zhangsan's book'

In an equational sentences[3] (Ross 1983), when the possessor modifies an empty

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[2] NP types could be described by two nominal-related features: [Anophor] and [Pronominal].

> [+ Anaphor, - Pronominal] refer to Reciprocals and reflexives, which must be bound
> within its GC.

> [- Anaphor, + Pronominal] refer to Pronouns, which must be free within the GC.

> [- Anaphor, - Pronominal] refer R-expression.

> [+ Anaphor, + Pronominal] refer to PRO which is not governed and has no GC at all.

According to Huang (1984; 1987), the empty nominal in subject position is somewhat similar to PRO, or in his terms as Pro. The empty categories in the object position, and the ones described in this article should obtain the qualities of an R-expression.

[3] Here we adopt Ross (1983)'s analysis on *shi...de* construction as equational sentence.

nominal in the object position, the reference of the whole DP could refer back to the subject. In other words, the references of SUB and OBJ are the same, *there is only one book* in (5). And the Phonological form of $[e_i]$ is *shu* 'book'.

(5) [Zhe-ben shu] shi [Zhangsan de $[e_i]$].
    This-CL book be ZS   DE
    這本 書 是 張三 的
    'This book is Zhangsan's'

In (6), the empty nominal in two conjuncts are all the same in regards to non-pronounced PF forms (The form deleted in $[e_i]$, $[e_j]$, and $[e_k]$ are all *shu* 'book'), but the references are different; there are two books in this proposition. $[e_k]$ could be referred to $[e_j]$, but not as $[e_i]$. This pattern could be compared with (7), where the form deleted in $[e_1]$ and $[e_3]$ are both *shu* 'book'. In $[e_2]$, on the other hand, it's *na-ben shu* 'that book' (NOT *shu* 'book'). As for the references, they are all refer to the same entity, so that there is only one book in the interpretation of this proposition. That's to say, $[e_3]$ could be refered back to $[e_2]$, $[e_1]$, and even the first subject. Suppose one of the cases in (6) and (7) is a result of pronominal binding, there must be something else that governs the surface realization of the other one.

(6) [zhe-ben shu] shi [Zhangsan de $[e_i]$], [na-ben $[e_j]$] shi [Lisi de $[e_k]$].
    This-CL book be ZS   DE   that-CL be LS DE
    這本 書 是 張三   的 $[e_i]$, 那本 $[e_j]$ 是 李四的 $[e_k]$
    'This book is Zhangsan's, that one is Lisi's '
(7) [zhe-ben shu] shi [Zhangsan de $[e_1]$], $[e_2]$ bu shi [Lisi de $[e_3]$].
    This-CL book be ZS   DE,   not be LS DE
    這本 書 是 張三   的 $[e]$, $[e]$ 不 是 李四 的 $[e]$
    'This book is Zhangsan's, not Lisi's '

At this point, it is fair to state two things: First, SEMANTIC REFERENCIALITY of an empty element is related to another linguistic entity by some principled mechanism. But it is different from the mechanism governing SYNTACTIC FORM as the PF forms in (5)-(7). It means that not all the covert nominal forms are anaphorically A-bound. Not all the empty categories are analyzable as pronoun-like elements or anaphors (anaphoric, reflexives). The second fact would be that the empty categories after morpheme *de-* in (6)(7) are constituents smaller than DP. Once again, it is not shsown as an empty pronoun, since a pronoun must be a DP. A possible hypothesis is to assume that phonologically covert forms could be realized as deletion of certain smaller syntactic category following the principles of deletion. The references, on the other hand, are decided by the construction of equational sentences "*DP shi DP*", or its negation "*DP bushi DP*".

  Furthermore, just like in Japanese, the genitive marker and the *pro*-form are possibly homophonous. We can also find a genuine *pro*-form '*no*' in

utterances without any phonological antecendet.[4] We will come back to this discussion in section 3.3.

Before we go through the NP/N' deletion literature in the next section, we will first see why Chinese is a good target for observing deletion phenomena within DP.

2.3 Complexity of Chinese DP

If it holds true that deletion occurs within DP, do we have enough material for further examination? Fortunately, Chinese DP is quite rich in this respect. What is well-known (Huang 1984; Lin 1997; Tang2005b) about Chinese DP is the rich functional elements (8) described as the DNC order. Hsieh (2005) believed that DNC elements are located in the Specifier of NP and headed by ClP; Lin (2008) took Demonstrative to be at the D head; and Simpson (2002), Saito, Lin & Murasugi (2008) treated *de-* as D head.

On the other hand, it is well known that Chinese has complex usages of *de-*[5]. If we only consider the cases of *de-* introducing pre-nominal modifications, there are at least three types – genitive (possesive) *de-*(9), relativization *de-* (10), and adjective modification *de-* (11). Also the different levels of modifications in DP (Lin 2008; Hsieh 2005; Larson 2007) are very much in parallel with the TP structure.

(8)   DNC order

Zhe	-san	-ben	-shu
Demonstrative	Numeral	Classifier	book
這	三	本	書

'these three books'

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[4] In some dialects, they are realized in distinct morphological forms (Li 2009). For instance, the pronominal '*no*' is realized as '*ga*' in the Kochi dialect.

(1)   LA-kara-no   ga   (Kochi dialect)
          LA-from-Gen thing
          'the one from Los Angeles'

[5] In correspondence to Chinese *de-*, Japanese has two kinds of *no-* as well. *No-* is ambiguous between a genitive marker and pronominal. Kamio (1983) once proposed an observation, which helped to distinguish two kinds of elements. Kamio's generalization stated that: "The pronoun *no* can occur as a pro-form of concrete nouns, but not as a pro-form of abstract nouns." And it accounted for the contrast in the following examples taken from Arimoto and Murasugi (2005, p. 174):

(2)   a.   [NP [RC Mari -ga   motteki -ta] ringo]-wa amari oisiku-nai   no dat-ta
                    -Nom bring -Pas apple -Top too   delicious-not NO be-Past
             'The apple which Mari brought with her was not too delicious.'
    b. * [NP Taroo -no sinnen] -wa totemo katai no   dat-ta
                 -Gen conviction-Top very   firm NO be-Past
             'Taroo's conviction was very firm.'

(9)　　　　[Zhangsan de]　　shu
　　　　　ZS　　　　DE　book
　　　　　張三　　　的　　書
　　　　　'Zhangsan's book'
(10)　　　　[zhangsan　zuotian　mai　de]　　shu
　　　　　ZS　　　　yesterday　buy　DE　　book
　　　　　張三　　　昨天　　　買　　的　　書
　　　　　'the book Zhangsan bought yesterday'
(11)　　　　[hou　　hou　　de]　　shu
　　　　　thick　thick　DE　　book
　　　　　厚　　厚　　的　　書
　　　　　'thick book'

English attributive modifiers (Larson 1998, Del Gobbo 2005), Japanese (Takahashi 1997) and Korean relatives (Larson 2007), display an ordering preference. Chinese shows the same *s*-level and *i*-level asymmetry which is well-captured in Hsieh (2005) and Lin (2008) [6]. Their point is that individual-level modifier must be placed closer to the stem noun and stage-level one is further to the noun as in (12).

　　　　More interestedly, the multiple possesive *de-* also display the *i*-level and *s*-level asymmetry. As shown in the example (13), the first possessive phrase *Zhangsan de* 'Zhangsan's' is interpreted as *the owner of the book,* while the second possessive phrase *Lisi de* 'Lisi's' is realized as *the author of this book*. The property of being written by a certain person is comparatively more stable a characteristic than the property of being owned by a person. The different meanings of the two modifiers reflect the phenomena reported in the literatures mentioned above.

(12)　　Japanese Individual-level & Stage-level RC (Larson & Takahashi 2002)
　　　　a.　[Watashi-ga　kinoo　　atta]　[tabako-o　　suu]　　hito-wa
　　　　　　[1SG-NOM　yesterday　met]　[tobacco-ACC　inhale]　person-TOP
　　　　　　Tanaka-san　desu.
　　　　　　T.-COP
　　　　　　'The person who smokes who I met yesterday is Miss Tanak
　　　　b.　?* [Tabako-o　suu]　[watashi-ga　kinoo　atta]　hito-wa　Tanaka-san desu.
(13)　　　　Zhe-ben　shu　shi　[[Zhangsan　de]　[Lisi　de]　　shu]
　　　　　　This-CL　book　is　　Zhangsan　DE　Lisi　DE　　book
　　　　　　這本　　書　是　[張三　　的]　[李四　的]　書
　　　　　　Lit: 'This book is Zhangsan's and is written by Lisi'

Given the rich contents of Chinese DP's internal elements, we will see how these nominal phrases could tolerate an empty category in a deletion environment in the next section. And we will also see how far the current

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[6] Hsieh (2005) and Lin (2008) are different in that the previous account simply treats two modifications as spec of DP and NP respectively; while Lin (2008) suggested that *s*-leveland *i*-level relatives can both occur within the domain of NP and DP. The ordering restriction is the result of superiority effect.

understanding of PF deletion could deal with the DP internal deletion with multiple modifications in Mandarin Chinese.

3. The Deleted Constituent

At this point, it is necessary to go back to the literatures about deletion inside of DP. The typical example of NP or N' deletion is the case in (14), and its two accounts are given in (14)a and (14)b. Traditionally, the empty element is analyzed as N'-deletion (14)a; while Lobeck (1990) and Saito & Murasugi (1990) reanalyzed it as NP deletion (14)b.[7]

(14)   This book is Mary's [e].
     a. [NP Mary's [N' ~~book~~]]
     b. [DP Mary [D 's] [NP ~~book~~]]

3.1 Chinese DNC Order & Licensing Condition

It is naturally assumed in the literature (Lobeck 1990, 1995; Saito & Murasugi 1990; and Saito et al 2008) that deletion must be licensed under certain configuration, which is mostly related to a functional head. The licensing condition helps explain why NP/N', VP, and IP are legitimate targets for PF deletion, when other constituents are not. Lobeck (1990); Saito & Murasugi (1990) proposed a licensing condition to the deletion of NP/or DP elements (15). It is defined under a condition that Spec of a functional projection must be filled with an XP.

(15)   An XP which is a complement of a functional category can be deleted iff the functional head has a specifier which it agree with.

Later, Lobeck (1995) gave another definition to the licensing condition in her book (16). This configuration is only defined under head-government. We adopt this position[8] and see what Chinese deletion data could tell us.

(16)   An empty, non-arbitraty pronominal must be properly head-governed, and identified by an X-0 specified for strong agreement.   (Lobeck 1995:35)

It is known that English numerals and demonstratives are qualified licensers for deletion within DP.

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[7] We don't mention the possibility of "one's deletion" (Ross 1986) because a nominal is never replaced by any overt pronominal --- English counterpart of *one* -- in Chinese grammar.

[8] Though what is good about the previous (14) licensing condition is better in dealing with sluicing data, the null hypothesis in analyzing DP is to avoid movement of any modifier phrase if simply licensing is sufficient to account for the surface data.

(17)   John bought [$_{DP}$ these [books]], and Mary bought [$_{DP}$ those ~~[$_{NP}$]~~].
(18)   John bought [$_{QP}$ three [$_{NP}$books]], and Mary bought [$_{QP}$five ~~[$_{NP}$books]~~]

Pre-nominal elements in Chinese DP display a DNC order. The DNC represents Demonstrative, Numeral, and Classifier respectively. Among these elements, empty category is only licensed by classifier (19) and *xi*e (20)—the plural marker bound to Demonstrative. Different from English, Chinese numerals (21) and demonstratives (22) are not possible licensers for the deletion within DP.[9]

(19)   Zhangsan kan-le   zhe-san-ben shu, Lisi kan-le na-san-ben [e]
         ZS   read-Prf this-three-CL book LS   read-Prf that-three-CL
         張三   看了   這三本   書，李四 看了   那三本   ~~[$_{NP}$書]~~
         'Zhangsan read these three books, Lisi read those three'
(20)   Zhangsan mai-le zhe-xie shu, Lisi mai-le na-xie ~~[shu]~~.
         ZS   buy-Prf this-PL books LS   buy-Prf that-PL
         張三   買了   這些 書， 李四 買了   那些   ~~[書]~~
         'Zhangsan bought these books, and Lisi bought those'
(21) a. *Zhangsan kan-le   zhe-san-ben shu, Lisi kan-le   na-wu ~~[ben shu]~~
         ZS   read-Prf this-three-CL book LS   read-Prf that-five
         *張三   看了   這三本   書，李四 看了   那五   ~~[$_{NP}$本書]~~
         'Zhangsan read these three books, Lisi read those five.'
      b. *Zhangsan kan-le   san-ben shu, Lisi kan-le wu   ~~[ben shu]~~
         ZS   read-Prf three-CL book, LS   read-Prf five
         *張三   看了   三本 書，李四 看了   五   ~~[$_{NP}$本書]~~
         'Zhangsan read three books, Lisi read five'
(22)   *Zhangsan kan-le   zhe-san-ben   shu, Lisi   ye
         ZS   read-Asp   this-three-CL book, LS   also
         *張三   看了   這三本   書， 李四 也
         kan-le   na   ~~[$_{NP}$ san ben shu]~~
         read-Asp   that
         看了   那   ~~[$_{NP}$三本書]~~
         'Zhansan read these three books, and Lisi read those ones'

If the licensing condition analysis is on the right track, Classifier must head certain functional projection in Chinese nominals, whether we endorse the DP hypothesis (Abney 1987) or not. This could shed light on a future analysis on Chinese DP structure.

3.2 Three Kinds of *-de* in Nominals and Deletion Domain

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[9] Some might suggest another possible case as in the following example. Xu (2003) and Huang (1991) have provided some analysis concerning NOC-like/ V-stranding VPE respectively. Therefore, we would not take this example as any kind of DP deletion at this stage.

(3)   Zhangsan kan-le   zhe-san-ben shu, Lisi ye kan-le   ~~[$_{DP}$na-san-ben shu]~~
        Zhangsan read-Asp this-three-CL book, Lisi also read-Asp   that-three-CL book
        張三   看了   這三本   書，李四 也 看了   ~~[$_{DP}$那三本   書]~~

As mentioned in the previous section, multiple *de-* modification is possible. This section is to show the way an empty category (or PF deletion) is licensed under the complex *de-*modification of Chinese DP. Different layers of modifier between N and DP domain can tell us much about the deletion domain of this operation. One delima concerning deletion domain within DP will be discussed in 3.2.2. It is suggested that focus fronting must apply on the modifier phrase for the deletion to operate on one single constituent.

3.2.1 One *de-* Modification

Chinese *de-* introduces possessive modifier (9), relative clause (10), adjectival modifier (11). Among the three kinds of *de-* modification, all of them (23)-(26) can license an empty nominal in object (a sentences), subject (b sentences), and comparative construction (c sentences) as illustrated in the following examples. We will mention it as deleted nominal from now on.

(23)   Genitive *de-*
    a.   Zhe-ben shu shi[Zhangsan de [shu]], na-ben shu shi[Lisi de [e]]
        This-CL book be ZS   DE book that-CL book be LS DE
        這本   書 是 張三   的[書]，那本 書 是 李四的 [e]
        'This book is Zhangsan's book, and that book is Lisi's '
    b.   [Zhangsan de [shu]] shi yi-ben jiaokeshu, [Lisi de [e]] shi
         ZS   DE book be one-CL textbook, LS DE   be
         張三   的 [書] 是 一本   教科書， 李四 的 [e] 是
        yi-ben   cankaoshu
        one-CL   reference.book
        一本   參考書
        'Zhangsan's book is a textbook; Lisi's book is a reference book'
    c.   [Zhangsan de [shu]] bi [Lisi de [e]] gui
         ZS   DE book than LS DE   expensive
        張三   的 書 比   李四 的 [e] 貴
        'Zhangsan's book is more expensive than Lisi's'

Chinese relative clause as head final also license a deleted nominal both in *s*-level (24) and *i*-level (25) relativizations.

(24)   *S*-level Relative Clause *de-*
    a.   Zhe-ben shu shi [wo zuotian mai de shu[10]],
        this-CL book be I yesterday buy DE book,
        這本   書 是 我 昨天   買 的 書，
        na-ben shu shi [ta zuotian mai de [e]]
        that-CL book be he yesterday buy DE
        那本   是 他 昨天   買 的 [e]
        'This book is the one I bought yesterday, that book is the one he

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[10] The object nominal *shu* here tends to be empty, though the sentence is just as grammatical with its existence.

bought yesterday'

    b.   [Wo zuotian   mai de shu] shi yi-ben   jiaokeshu,
       I   yesterday buy DE book be   one-CL textbook,
       我　昨天　　 買　的　書　是　一本　　教科書，
       [ta jintian mai de [e]] shi yi-ben   cankaoshu
       he today buy DE   be one-CL reference.book
       他　今天　買　的　[e]　是　一本　　參考書
       'The book I bought yesterday is a textbook, the one he bought today
       is a reference book.'

    c.   [[Wo zuotian   mai de] shu] bi   [ta jintian mai de [e]] gui
       I   yesterdat buy DE book than he today buy DE   gui
       我　昨天　　買　的　書　比　　他　今天　買　的　[e]　貴
       'The book I bought yesterday is more expensive than the one he
       bought today'

(25)   *i*-level Relative Clause *de-*

    d.   zhe-ben shu   shi [[Zhangsan xie   de]   shu],
       this-CL book be   ZS   write DE   book,
       這本　書　是　張三　　寫　的　書，
       na-ben shu   shi [[Lisi xie   de   [e]]
       that-CL book be   LS   write   DE
       那本　書　是　　李四寫　　的　[e]
       'This book is the one Zhangsan wrote, that book is the one Lisi
       wrote'

    e.   [[Zhangsan xie de] shu] shi yi-ben   jiaokeshu,
        ZS   write DE book be one-CL textbook
       張三　　寫　的　書　是　一本　　教科書，
       [Lisi xie de   [e]] shi yi-ben   cankaoshu
       LS   write DE   be one-CL reference.book
       李四寫　的　[e]　是　一本　　參考書
       'The book Zhangsan wrote is a textbook, the one Lisi wrote is a
       reference book'

    f.   [[Zhangsan xie   de] shu] bi   [Lisi xie de [e]] gui
        ZS   write DE book than LS   write DE   expensive
       張三　　寫　的　書　比　李四寫　　的　[e]　貴
       'The book Zhangsan wote is more expensive than the one Lisi
       wrote.'

Adjective modifiers display the same pattern; the empty categories are allowed
in object (26)a, subject (26)b and comparative phrases (26)c.

(26)   Adjective Modifier *de*

    a.   Zhe-duo hua   shi hong de [hua], na-duo hua   shi huang de [e]
       This-CL flower be red   DE flower, that-CL flower be yellow DE
       這朵　花　是紅　的 [花]，那朵　花　　是黃　　的 [e]
       Lit. 'This flower is red, and that one is yellow'

    b.   hong de hua   shi meiguihua, huang de [e] shi juhua
       red   DE flower be rose   yellow DE   be chrysanthemum
       紅　的　花　　是　玫瑰花，　黃　　的 [e] 是　菊花

'The red flower is a rose, and the yellow one is a chrysanthemum'

c.   hong de hua   bi   huang de [e] gui
    red   DE flower than yellow DE   expensive
    紅 的 花   比   黃   的 [e] 貴
    'Red flower is more expensive than yellow one'

3.2.2 Stacking: Two *de-* Modification

Things could be more complicated when we get into the multiple modifications. Two identical modifiers could precede an empty nominal. For example, the double genitive modifier in (13) repeated in (27) could modify a deleted nominal (28). As mentioned in section 2.2, multiple genitive display the *i*-level / *s*-level asymmetry as well. The first possessor (Zhansan in (27)) is interpreted as *the owner of the book* while the second possessor (Lisi in (27)) is semantically realized as *the writer of this book*. Being the author of a book is obviously a more i-level property than owning a book. And it must stand closer to the stem noun.

(27)   Zhe-ben shu   shi [[Zhangsan de] [Lisi   de]   shu]
           This-CL book be   Zhangsan DE Lisi   DE   book
           這本   書   是 [張三   的] [李四 的] 書
           Lit: 'This book is Zhangsan's and is written by Lisi'

What is interesting is that, in the second conjunct of examples (28) and (29), we allow an empty category to be "one modifier with the head noun". According to the principle of parallelism, the non-pronounced [e$_k$] in (28) is *[chaomusiji de] shu 'Chomsky's book'*, and the native judgment indicates so, too. The [e$_y$] in (29), on the other hand, could be a little bit problematic. The parallel requirement and semantic interpretation indicate that the deleted constituent in (29) is *[Zhangsan de] shu 'Zhangsan's book'*. It is, again, a constituent of "one modifier with the head noun". But the ordering requirement constraints the deleted modifier *[Zhangsan de] 'Zhangsan's'* to precede the *i*-level modifier *[Lushun de]* 'Lushun's'.

(28)   Zhe-ben shu   shi [zhangsan de] [chaomusiji de]   shu,
           This-CL book be   ZS   DE Chomsky   DE   book,
           這本   書   是 [張三   的] [僑姆斯基 的]   書；
           na-ben   shu   shi [Lisi de]   [e$_x$]
           that-CL book be   LS   DE
           那本   書   是 [李四 的]   [e$_x$]]
           Lit. 'This book is the book owned by Zhangsan and written by Chomsky; however, that book is the one owned by Lisi and written by Chomsky'

(29)　Zhe-ben shu　shi [[zhangsan de] [yukuangchung[11] de]]　shu,
　　　This-CL book be　ZS　　　DE Yukuangchung DE　　book
　　　這本　　書　是 [張三　　的] [余光中　　　　的]　書，
　　　na-ben　shu　shi　[[Lushun de]　[e$_y$]]
　　　that-CL　book be　　Lushun DE
　　　那本　　書　是　[[魯迅　的]　[e]]
　　　Lit. 'This book is the book written by Yukiangchung and owned by
　　　Zhangsan; however, that book is the book written by Lushunowned
　　　by Zhangsan'

Here comes the problem for our deletion analysis of empty nominal. Analyzing
the case in (29) to be ellipsis will lead to a configuration in (30), where the
deleted element is not a constituent as a whole. The catch is that deletion could
ONLY operate on one syntactic constituent.

(30)　Zhe-ben shu　 shi [[zhangsan de] [yukuangchung de]] shu,
　　　This-CL book be　ZS　　　DE Yukuangchung DE　book
　　　這本　　書　是 [張三　　的] [余光中　　　　的] 書
　　　na-ben　shu　shi　[~~zhangsan de~~　[Lushun de]　~~shu~~]
　　　that-CL　book be　ZS　　DE Lushun DE　book
　　　那本　　書　是　[~~張三　　的~~ [魯迅　的] ~~書~~]

In the cases of stacking, two *i*-level (31)(32) and two *s*-level (33) modifications
display the same problem. A modifier could be deleted with noun (31), but it
would lead to a conflict on the constituency of ellipsis (32)(33)[12] if the deleted
nominal includes the first modifier.

(31)　Zhangsan shi [hui shuo jingpianzi　de] [xihuan guoju　　de] ren
　　　ZS　　　be [can speak Peking.dialect DE] [like　Chinese-opera DE] person
　　　張三　　是 [會 說　京片子　的] [喜歡 國劇　　的] 人；
　　　'Zhangsan is the person, who can speak Peking dialect and loves
　　　Chinese opera'
　　　Lisi ze　　　shi [buhui shuo jingpianzi　　de]
　　　LS　however be [cannot speak Peking.dialect DE]
　　　李四則　　　是 [不會 說 京片子　　　的]

---

[11] *Yukuangchung* and *Lushun* are writers of famous Chinese modern literature.

[12] Actually one *s*-level and one *i*-level modification shows the same pattern. The following is an
example:

(4)　　　Zhangsan shi [zuotian　lai　Taipei de] [hui shuo jinpianzi　　de] jiaoshou
　　　　ZS　　　be [yesterday come Taipei DE] [can speak Peking.dialect DE] professor
　　　　張三　　是 [昨天　　來　台北 的] [會 說　京片子　　的] 教授
　　　　'Zhangsan is the professor who speaks Peking dialect, and came to Taipei yesterday'
　　　　Lisi ze　　　shi ~~[zuotian　lai　Taipei de]~~ [buhui shuo jinpianzi　　de] jiaoshou
　　　　LS　however be [yesterday come Taipei DE] [cannot speak Peking.dialect DE] professor
　　　　李四則　　　是 [~~昨天　　來　台北 的~~] [不會 說　京片子　　的] ~~教授~~
　　　　'Lisi; however, is the professor who cannot speaks Peking dialect, and came to
　　　　Taipei yesterday'

~~[xihuan guoju de] ren~~
[like   Chinese-opera DE] person
~~[喜歡   國劇   的] 人~~
'Lisi, in contrast, is the one who cannot speak Peking dialect, but loves Chinese opera'

(32)   Zhangsan shi [hui shuo jingpianzi   de]
        ZS   be [can speak Peking.dialect DE]
        張三   是 [會 說   京片子   的]
        [xihuan guoju   de]   ren
        [like   Chinese-opera DE] person
        [喜歡   國劇   的]   人；
        'Zhangsan is the person who can speak Peking dialect and loves Chinese opera'
        Lisi   ze   shi ~~[hui shuo jingpianzi   de]~~
        LS   however be can speak Peking.dialect DE
        李四 則   是 ~~[會 說   京片子   的]~~
        [bu xihuan guoju   de]   ~~ren~~
         not like Chinese.opera DE   person
        [不 喜歡   國劇   的]   ~~人~~
        Lit: 'Lisi; on the other hand, is the one who can speak Peking dialect, but does not love Chinese opera'

(33)   Zhe-shu hua   shi[zuotian mai de] [jintian cai kai de] meiguihua,
        This-CL flower be [yesterday buy DE][today then bloom DE] rose
        這束   花   是[昨天   買 的] [今天 才 開   的] 玫瑰花；
        'This bundle of flowers is the one bought yesterday, and bloomed today'
        Na-shu hua   shi~~[zuotian mai de]~~ [jintian haimei kai   de] ~~meiguihua~~
        That-CL flower be [yesterday buy DE][today not.yet bloom DE] rose
        那束   花   是~~[昨天   買 的]~~ [今天 還沒 開   的] ~~玫瑰花~~
        'that bundle of flower is the one bought yesterday, but not yet bloomed today'


3.2.3 To Solve the Problem

To solve the problem discussed in the previous section, we can account for example repeated as (34), by assuming focus-fronting movement. A focused modifier can be fronted to a DP-internal focus position and the internal NP is then deleted. The focus fronting of a modifier is an independent phenomenon in Chinese. As noted in Zhang (1998) and Lin (2008), Chinese attributive adjective can undergo fronting to precede the DNC sequence; her example is given as in (35). This movement is also observed in other languages such as English (Ntelitheos 2004) and Dutch (Corver & van Koppen 2009) as an instance of focus movement.[13]

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[13] There is a remaining problem. If the movement account is on the right track, how is it that the fronted element shows no superiority effect? Superiority effect is known to constraint crossing paths of multiple movements of the same type (Rudin 1988; Bruening 2001). Lin (2008) extended it to the

(34)   [DP Lushun de] ~~[NP [[Zhangsan de] [tᵢ] [shu]~~
         [DP Lushun DE] [NP [Zhangsan   ] [tᵢ] [book]]
(35) a. Yi-jien [hong hong de] yifu   (Zhang 1998:198)
          One-CL [red   red   DE] clothes
          'a piece of red clothing'
      b. **[hong   hong   de]** yi-jien   *tᵢ*   yifu. **14**
          [red   red   DE] one-CL   clothes
          'a piece of **red** clothing'

Our analysis is, again, illustrated in the following tree diagram (36). Focus fronting of a modifier *Lushun-de* following a NP deletion results in the surface form of (34).

(36)
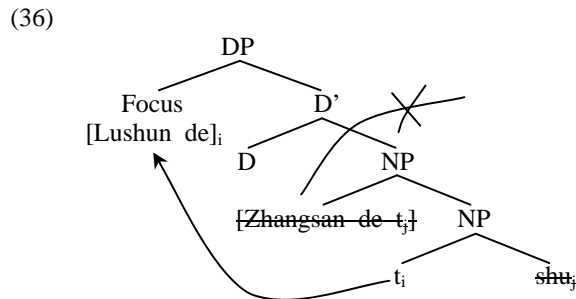
In regarding to the DET-NUM-CL and the –de phrase in Chinese, they can be diagramed as the following

(37)

(38)

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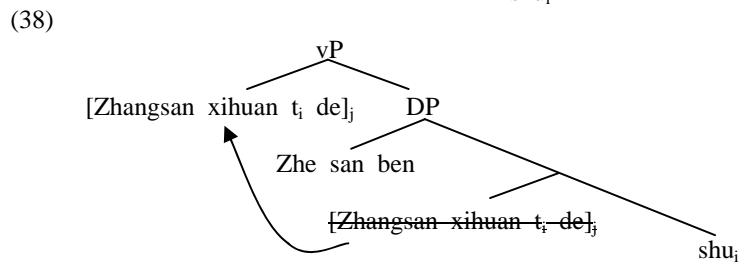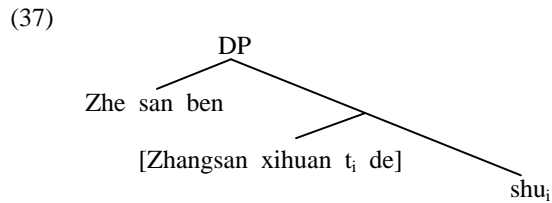
prenominal modifiers. We could suggest that either the stacking of the same type of *de-* modifier (9) (10) is equi-distance or the ellipsis repairs superiority violation, so that one modifier could be moved across another *de*-modification.

14 The boldface is used to indicate the placement of a focal stress.

At this point, it has shown that the discontinuous empty category is only possibly licensed by deletion operation, but not by an empty pro-form. And the status of *de* should be certain functional category in line with Chinese classifers mentioned in the last section (cf. also Cheng and Sybesma 2009). In the following, we will show that the DP-internal empty category must have a linguistic antecedent. This is, again, a characteristic of PF deletion phenomena.

3.3 Antecedent

Another property of deletion must be observed in our cases is the antecedent requirement. PF operation is operated in the Phonological component of the second conjunct, and must be applied in accordance with the first conjunct (Merchant 1999). The null hypothesis is to assume the strictest syntactic parallel that the antecedent must appear in the same syntactic position of the first conjunct. And this requirement is observed in Chinese data. The contrast in (37)(38) shows that deleted nominal is only possible when the antecedent is available in the first conjunct.

OBJECT CHAIN
(39)   *[zhe-san-ben   shu]   shi   [Zhangsan   de   **[eᵢ]**], [na-san-ben   shu]
            This-three-CLbook   be   ZS   DE   that-three-CLbook
          *[這三本   書]   是   [張三   的   [eᵢ]], [那三本   書]
          shi   [Lisi   de   shu]
          be   LS   DE   book
          是   [李四   的   書]
          'These three books are Zhangsan's, and those three books are Lisi's book'
(40)   Zhe-san-ben   shu   shi   Zhangsan de   shu,
           This-three-CL book   be   ZS   DE   book,
          [這三本   書] 是   [張三   的   書],
           na-san-ben   shu   shi   Lisi   de   **[eᵢ]**
           that-three-CL book   be   LS   DE
          [那三本   書] 是   [李四   的   [eᵢ]]
          'These three books are Zhangsan's books, and those three books are Lisi's'

The same asymmetric is shown in the subject position as in (39)(40).

SUBJECT CHAIN
(41)   * zhe-san-ben   [eᵢ]   shi Zhangsan de shu,   na-san-ben   shu
            This-three-CL   be   ZS   DE book that-three-CL book
          *[這三本   [eᵢ]] 是 [張三   的 書], [那三本   書]
          shi   Lisi   de   shu
          be   LS   DE   book
          是   [李四   的   書]
          'These three are Zhangsan's books, and those three books are Lisi's book'

(42)　　　zhe-san-ben shu　shi　Zhangsan de　shu,　na-san-ben　[e$_i$]
　　　　　this-three-CL book be　ZS　　DE　book,　that-three-CL
　　　　　[這三本　　　書]　是　[張三　　的　書],　[那三本　　　[e$_i$]]
　　　　　shi　Lisi　de　　shu
　　　　　be　LS　　DE　　book
　　　　　是　[李四　的　　書]
　　　　　'These three are Zhangsan's books, and those three are Lisi's book'

However, here we meet another puzzle that NP can be left empty in both subject position (43), both two object positions (44), or even all of the nominals of the two conjuncts in the case of (45). It seems that our account in the previous section leaves it unclear how the object is deleted since ellipsis in PF is subject to parallel condition. Our answer to this question is that the cases mention in (43)-(45) shows no deletion mechanism. The two conjuncts are independent propositions similar to the cases of Huang (1984; 1987) or shown in (2)(3). Here we suggest a covert topic in the matrix CP of the conjoint IP or CP constituent.

NO ANTECEDENT
(43)　　　[Zhe-ben [e] shi [Zhangsan de　shu]], [na-ben [e]] shi [Lisi de shu]
　　　　　This-CL　be ZS　　　DE book that-CL　be LS DE
　　　　　[這本　　[e]]是 [張三　　的　書]，[那本　[e]]是 [李四的 書]
　　　　　Lit. 'This book is Zhangsan's, and that one is Lisi's'
(44)　　　[Zhe-ben shu]　shi [Zhangsan de [e]], [na-ben shu] shi [Lisi de [e]]
　　　　　This-CL book be ZS　　　DE　　that-CL book be LS DE
　　　　　[這本　　書] 是 [張三　　的 [e]], [那本　書]　是 [李四的 [e]]
　　　　　Lit. 'This book is Zhangsan's, and that one is Lisi's'
(45)　　　[Zhe-san-ben [e] shi [Zhangsan de [e]], [na-ben　[e]] shi [Lisi de [e]]
　　　　　This-three-CL be ZS　　　DE　　that-three　be LS DE
　　　　　[這三本　　　[e]]是 [張三　　的 [e]], [那三本 [e]]是 [李四的 [e]]
　　　　　Lit. 'These three books are Zhangsan's, and those are Lisi's'

4. Conclusion

With numerous observations supporting this paper, we argue for a deletion mechanism within Chinese DP domain. There are examples in Mandarin Chinese where an empty place can only result from ellipsis but not base-generated empty categories, since the empty place is "discontinuous". And this will shed light on the deletion phenomena in three aspects: [i] Constituent requirement: an ellipsis is applicable only on a constituent. This will also provide an evidence for the focus fronting of modifier phrase in DP (Zhang 1998; Lin 2008). [ii] Licensing condition: the empty category or elided form must be licensed by a functional head (Lobeck 1990; Saito et al. 2008). All the DP internal empty elements are licensed by de- or Classifier, which are both functional heads of DP. [iii] Antecedent requirement: every empty nominal need an overt antecedent in its strict syntactic parallel position.

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