

The Mandarin Chinese *de* as a Type  $\langle e, t \rangle$  Nominal Proform:  
A Syntax-Semantics Approach

a Senior Thesis

by

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### Abstract:

In this paper, it is argued that the Mandarin Chinese particle *de* is analogous to the English pronoun *one/ones*. Initial evidence of this can be seen in the English sentence *he likes red ones* (as in, *I like green shirts, he likes red ones*), which translates word for word to *ta xihuan hongse de* (lit. ‘he like red **DE**’). At least superficially *de* and *one* appear to function identically

This analysis, though, is not so simple to assert. Syntactic and semantic analysis of nominal modification in Chinese has long been complicated by the presence, or occasional lack thereof, of *de*. For example, one can say *zang yifu*, ‘dirty clothes’, and yet, one cannot say *hen zang yifu* ‘very dirty clothes.’ The correct form of the latter is *hen zang de yifu*. The connection between *de* and *one* in these situations is not immediately evident. This analysis suggests, however, that such cases are actually examples of adjunction of the *de*-phrase onto the classifier phrase containing the rightmost noun.

This process makes *hen zang de yifu* more directly analogous to the English ‘clothes, dirty ones’, as in *he brought me lots of clothes, dirty ones* or *give me those clothes, the dirty ones*. It will be argued that in English this construction is the result of adjunction of the NP headed by *one*, or the DP that contains that NP, to the DP that contains clothes.

The question of why Chinese would employ this adjunction strategy for adjectival modification still remains. An answer can be found using a modified version of the schema for *de* found in Huang (2006). Noting that simple adjectives like *zang* ‘dirty’ could not serve as sentence predicates, but complex adjectives, such as those proceeded by *hen* ‘very’, as in *hen zang* ‘very dirty’ could serve as sentence predicates. Huang argues that Chinese simple adjectives are type *e* and Chinese complex adjectives are type  $\langle e, t \rangle$ . Noting that most nouns in Chinese are known to be type *e*, Huang then proposes a type-matching constraint on modification. Thus, the simple adjectives could directly modify nouns, as they are both type *e*, but the complex adjectives could not. To resolve this mismatch, Huang proposes that Chinese has a type-shifting operation  $\langle \langle e, t \rangle, e \rangle$ , that she identified with the particle *de* itself. In this paper, that analysis is adjusted slightly: *de* is a type  $\langle e, t \rangle$  noun, which is what allows it to be directly modified by type  $\langle e, t \rangle$  elements. It is then able to act as a modifier at the N’ level, or higher if it is moved from that position. Further, it can be shown that there is a cross linguistic “specificity constraint” on such modification structures which forces the phrase resulting from that modification to be of type *e*, which accounts for several facts about the distribution of specific and non-specific indefinites in both Chinese and English.

Finally, just as Huang (2006)’s schema for *de* applied not only to occurrence of *de* between complex adjectives and nouns, this paper argues that the analysis described above can be extended to many occurrences of *de* in Chinese, including several which cannot be analyzed under Huang’s original proposal.

## 1.0 Introduction<sup>1</sup>

For at least half a century now, students and scholars of Chinese linguistics have grappled with the problem of *de*, a word so “in subordinate” as Paul (2012) put it, and yet so omnipresent in Chinese that, despite numerous theoreticians addressing it either directly or indirectly, there is still no scholarly consensus on what it is, what it does, or how best to analyze it. What is known is that it occurs largely in the context of modification, though inconsistently; while it may be required in one environment, permute that environment slightly and it is optional, while with another permutation, it may be completely ungrammatical for *de* to appear at all.

While most recent attempts to understand *de* have been largely syntactic in nature, there has been movement by some scholars, crucially Huang (2006) and Huang and Li (2009), to look for an account of *de* using the combined tools of the syntax-semantics interface. This thesis seeks to continue along that trend of joint syntactic and semantic analysis, utilizing Huang (2006)’s notion of a type-matching constraint on modification in Chinese, while revising her idea of *de* as a type shifter of type  $\langle\langle e, t \rangle, e \rangle$ , and instead

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arguing that *de* is of type  $\langle e, t \rangle$ . This semantic analysis works in tandem with a syntactic parallel between *de* in Chinese and *one/ones* in English, which leads to the analysis that both *de* and *one* are true pro-nouns, i.e., elements that replace at the level of NP, rather than of DP like typical pronouns such as *he* or *they*. Further, it will be argued that adjunction to D' in English and CL' in Chinese is possible and can be done with phrases headed by *one* and *de*, respectively.

The argument will proceed as follows: in Section 2, some introductory data and literature relevant to the argument at hand will be reviewed. In Section 3, Huang's (2006) account of *de* will be recapitulated and analyzed, with several problematic cases being pointed out in Section 3.3, which will turn out not to be problematic if an  $\langle e, t \rangle$  NP proform analysis of *de* is adopted. In order to motivate this analysis, in Section 4, initial parallels between *one* and *de* will first be illuminated in Section 4.2, and then the crucial account of *one* heading phrases that serve as adjuncts in DP and *de* heading similar phrases that serve as adjuncts in CIP will be given in Sections 4.3 and 4.4, respectively. In Section 5, the consequences of this analysis will be noted, and it will be shown that this analysis has increased explanatory power over the account given of Huang (2006)'s system, resolving the remaining objections that had been raised to it. Finally, the argument will be recapitulated and conclusions will be drawn in Section 6.

## 2.0 Background

### 2.1 Defining the Domain of Data

Given the wide varieties of occurrence of *de* in Mandarin Chinese, it is important to note which varieties are within the scope of this investigation and which are not.

Standard Mandarin Chinese has three characters, 的, 得, and 地, all of which are

Romanized as *de*. Though some scholars such as Zhang (2009) offer joint analysis of

more than one of these, there is a long scholarly tradition going at least as far back as Paris (1979) and Zhu (1961) who treat 的 separately from the others, given the disparate environments in which they occur, and it is this latter analysis that will be adopted for the remainder of this work. This particular *de* occurs in a variety of environments that can all loosely be described as pre-nominal. These environments include modification by relative clauses, possession, adjectival modification, and prepositional modification, as seen in (1a-d) respectively:

(1) Modificatory uses of *de* (的) (Simpson 2002: 2)

a. wo mai de shu  
I buy DE book  
'the book I bought'

b. wo de shu  
I DE book  
'my book'

c. hao de shu  
good DE book  
'good books'

d. dui ta de xinren  
to him DE trust  
'trust in him'

In addition, *de* in the so-called *shi...de* construction is also within the domain of this investigation, as exemplified in (2) as is the *shi*-less sentence final use of *de*, as found in (3):

(2) The *shi...de* construction (Simpson&Wu 1998: 1-2)

a. wo shi zuotian mai piao de  
I be yesterday buy ticket DE

‘It was yesterday that I bought the ticket’

b. ta shi zai Zhongguo xue Yingwen de  
he be in China study English DE

‘It was in China that he studied English’

(3) The sentence final *de* (Huang 2006: 365)

a. zhei pian caodi (\*shi) lüyouyou de  
this Cl lawn green-glossy DE

‘This lawn is so lush’

b. Nei jian yifu (\*shi) zang-bu-la-ji de  
That Cl shirt dirty DE

‘That shirt is disgustingly dirty’

Thus, almost all constructions in Mandarin Chinese where the character 的 is used are under investigation here, with the exception of those of the kind found in (4), an alternation on (2a) found in some northern dialects.

(4) Wo shi zuotian mai de piao  
I be yesterday buy DE ticket

‘It was yesterday that I bought the ticket’

This alternation, wherein *de* seems to interrupt the predicate rather than follow it, cannot be accounted for by the analysis set forth herein. However, Simpson and Wu (1998) argue that the *de* in such constructions has in fact undergone or is currently undergoing reanalysis into some form of tense or aspectual marker, and thus may be considered as a separate issue than most instances of *de*.

## 2.2 Review of Relevant Literature

Some of the earliest modern linguists to look into *de* were Zhu Dexi in China and Marie-Claude Paris in the West. Though few, if any, have analyzed *de* itself as a noun, starting as early as Zhu (1961), it was proposed that modifiers of nouns must be nominal, meaning that modificatory phrases containing *de* must themselves be noun-like. From early on, it was a common analysis to attribute at least some of this nominalization to *de* itself; the title of Paris's seminal 1979 dissertation "Nominalization in Mandarin Chinese: The Morpheme 'DE' and the 'SHI'... 'DE' Constructions" speaks directly to that point. Paris, however, assigns *de* to its own function NMZ, nominalizer, an early entry in a long train of proposed functional analyses of *de*'s that stretches up to works as modern as Paul (2012), where *de* is said to be the head of its own DeP, the properties of which vary based on its position in the DP spine, to Zhang (2014), where *de* is the phonologically realized head of one of two phrases labeled FP or functional category.

Though viewing *de* as a noun itself is rare in the literature, non-functional approaches to *de*'s categorial status have taken several forms, many of which are somewhat noun-like. This fact is perhaps unsurprising, given that *de* does occur in or near NP's. Simpson and Wu (1998) and Simpson (2002), for example, suggest that *de* is a determiner, which heads the DP containing the noun that is being modified. This analysis, however, has largely been taken by its proponents to suggest that all modification with *de* should be instances of reduced or non-reduced relative clauses, a position argued against vehemently by Aoun and Li (2003) and Paul (2005), all of whom invoke *de*'s ability to co-occur with non-predicative adjectives as evidence that phrases with *de* cannot always be clausal. Another proposal is that *de* is a classifier, as advanced by Cheng and Sybesma (2006). These various proposals parallel general debates in Chinese linguistics as to what

the overall phrasehood of nominal phrases in Chinese is, e.g. DP, CIP, NP, etc. Even *de* as a complementizer has been proposed by Cheng (1986). Although it would be unlikely for Chinese nominal phrases ultimately to be CP's, CP's do have parallels with nominal phrases; they can both occur as subjects and be arguments of certain verbs, so, in a way, this CP-proposal too is a bit “nounish.”

The field of Chinese syntax has thus hovered near the idea of *de* as a noun for quite some time. As for the semantic component of the analysis to be presented, that of *de* as a type  $\langle e, t \rangle$  element, type-theoretical analysis of Chinese nouns originates from thinkers such as Chierchia, who in Chierchia (1998) proposed the notion of a cross linguistic semantic parameter, whereby all nouns of languages like Chinese are type  $e$ , while all nouns of languages like French are of type  $\langle e, t \rangle$ , while English is a mixed bag of type  $\langle e, t \rangle$  count nouns and type  $e$  mass nouns. This line of thought was picked up by Huang (2006), which is discussed in detail below. That same line has been refined and continued, through articles like Huang and Li (2009), Huang (2012), and Huang and Jenks (2013). From the initial starting point of *de* as an  $\langle \langle e, t \rangle, e \rangle$  type-shifter, pieces such as the aforementioned Huang (2012) have responded to the limits of this analysis by proposing that *de* is a generalized type shifter, type-shifting whatever elements however it is needed. This approach greatly increases the power and complexity of *de* in the theory. The argument presented herein takes the opposite approach, simplifying the function of *de* from being type  $\langle \langle e, t \rangle, e \rangle$  to being merely type  $\langle e, t \rangle$ ; while no direct refutation of the idea of a generalized type-shifter is provided, it is intended that the simplicity of this model of *de* over the generalized one, and the two models'



approximately equal explanatory power will suggest that this hypothesis is the more economical one.

### 3.0 Regarding Huang 2006's Type-Theoretic Account of *de*

#### 3.1 Huang (2006)'s Paradigm of Adjectival Modifiers and Predicates

Turning now to the nominal modification structures involving *de*, Huang's (2006) system for modification of nouns in Chinese is recapitulated, with special focus being paid to her arguments regarding *de*.

Following Zhu (1956) Huang divides Chinese adjectival phrases into two groups, Simple Adjectives (SA's) and Complex adjectives (CA's). The former are a basic type of adjectives from which the latter is constructed. To do so "the simple adjectives... undergo some changes either at the word level or at the phrasal level. The resultant complex adjective describes a state or situation more lively or vivid, or a more intensified manner" (Huang 2006: 334). For the purposes of conciseness, the CA's of the form [Deg+A] solely will be considered here, but all behave in more or less the same way as far as the theory here is concerned. Crucially, SA's can modify nouns directly, as can be seen in (5) but CA's cannot, and instead require *de* to be inserted between them and the modified noun, as in (6):

(5) [SA+N] modificational structure (Huang 2006: 345)

- |                   |                  |
|-------------------|------------------|
| a. zang shui      | 'dirty water'    |
| b. hong fangzi    | 'red house'      |
| c. gaodang che    | 'high-end car'   |
| d. piaoliang yifu | 'pretty clothes' |

- (6) [CA+*de*+N] modificational structure (Huang 2006: 345)
- a. hen zang \*(de) shui ‘very dirty water’
  - b. hen hong \*(de) fangzi ‘very red house’
  - c. hen gaodang \*(de) che ‘very high-end car’
  - d. hen piaoliang \*(de) yifu ‘very pretty clothes’

While (6) shows that CA’s require *de* to serve as modifiers, (7) shows they can serve as sentence predicates. SA’s cannot do so, except under special conditions, which will be discussed in Section 4.2.

- (7) Adjectival sentence predicates
- a. Zhangsan \*(hen) gao  
Zhangsan very tall  
‘Zhangsan is (very) tall’
  - b. Zhangsan \*(bi Lisi) lei  
Zhangsan compared.to Lisi tired  
‘Zhangsan is more tired than Lisi’
  - c. Lisi \*(zui) congming  
Lisi most smart  
‘Lisi is the smartest’

In each case in (7), the adjective in question requires a degree marker of some sort to serve as the predicate of the sentence, and without it is ungrammatical under the interpretation intended.

### 3.2. Motivating *de* as type $\langle\langle e, t \rangle, e \rangle$

Following Chierchia (1998)’s notion of a semantic parameter, Huang argues that bare nouns in Chinese are of type *e*, rather than of type  $\langle e, t \rangle$ , which is the norm for count nouns in languages like English. This distinction can be seen by the ability of Chinese

bare-nouns to act as arguments for verbs, unlike English bare count nouns which require determiners like *the* to act as arguments, as can be seen in (8a-b)

(8) Chinese nouns as type e (Huang 2006: 349 and Huang&Li 2009:3)

a. Nuhai kanjianle nanhai  
girl see ASP boy  
'\*(the) girl saw \*(the) boy'

b. nanhai xihuan xiaogou  
boy like puppy  
'\*(the) boy likes \*(the) puppy'

SA's follow an identical pattern to the one for nouns shown in (8), namely, they can serve directly as the subject or object of a verb:

(9) Adjective *qinfen* 'diligent' as subject (Huang 2006: 349)

a. Ta hen qinfen  
she very diligent  
'she is very diligent'

b. Qinfen shi yige meide  
diligent is one-Cl beautiful.virtue  
'Diligence is a beautiful virtue'

(10) Adjective *pinqiong* 'poor' as object (Huang 2006: 350)

a. Tamen neige diqu hen pinqiong  
they that-Cl region very poor  
'Their region is very poor'

b. Women yao zhangsheng pinqiong  
we want overcome poor  
'We want to wipe out poverty'

In both (9) and (10), (a) serves to establish that the item in question is indeed a SA, and (b) uses it as a subject or object, respectively. Huang therefore argues that SA's are also of type e, while CA's which have been shown to be able to function as sentence predicates, are of type <e, t>. This analysis is supported by the distribution of SA's and

CA's in conjunction expression. As (11) shows, *he* 'and' conjoins elements only of type e, unlike *ye* 'also,' which can co-occur with elements of type <e, t>

- (11) *he* vs. *ye* (Huang 2006:350)
- a. Wo xihuan Zhangsan he Lisi  
I like Zhangsan and Lisi  
'I like Zhangsan and Lisi'
- b. Women chi le fan, ye xi le zao  
we eat ASP food also wash ASP bath  
'We had a meal and took a bath'
- c. \*Women chi le fan he xi le zao  
we eat ASP food and wash ASP bath

While (11a) shows that *he* can conjoin names like *Zhangsan* and *Lisi*, which are of type e, it cannot conjoin sentence predicates like *chi le fan* 'eat food' or *xi le zao* 'take a bath' which are necessarily type <e, t>. As (12) shows, SA's and CA's obey this pattern as expected if they were of type e and type <e, t> respectively:

- (12) SA's and CA's with *he* and *ye* (Huang 2006: 351)
- a. qinfen he qianxu shi zhide tichang de meide  
diligent and modestbe worth advocating DE virtue  
'Diligence and modesty are virtues worth advocating'
- b. Zhangsan hen qianxu ye hen qinfen  
Zhangsan very modestalso very diligent  
'Zhangsan is very modest and diligent'
- c. \*Zhangsan hen qianxu he (hen)<sup>2</sup> qinfen  
Zhangsan very modestand very diligent

<sup>2</sup> That is to say, the sentence is bad with or without *hen*. The case without *hen* is of some import, as it shows that *he* cannot conjoin one CA and one SA, further suggesting that the two are fundamentally different. One might note, however, that the following sentence is acceptable: (Huang and Li, 2009: 8)

(i) laoshi kua tamen (hen) congming erqie (hen) yonggong  
teacher praise them very smart and very hardworking  
'the teacher praised them for being smart and hardworking'

*erqie* conjoins elements that are not of type e, and yet here, it is able not only to conjoin apparent SA's if both *hen*'s are left off, or an SA and a CA if just one *hen* is left off. As will be seen in section 4.2, however,

Crucially, SA's appear to be of type *e* as they can be conjoined by *he* but CA's cannot, and instead pattern with other  $\langle e, t \rangle$  predicates. Reconciling this fact with the distribution of SA and CA nominal modifiers examined previously, Huang (2006) proposes a type-matching constraint on modification, namely:

- (13) Type-Matching Constraint on Modification: (Huang, 2012)  
In a nominal modification structure in Chinese, the modifier and the modifiee must be of the same semantic type

This analysis explains why [SA+N] modification is possible but [CA+N] modification is not, as the types of the former match, but those of the latter do not.

To resolve this mismatch, Huang (2006) proposes that *de* is an  $\langle \langle e, t \rangle, e \rangle$  type-shifter, allowing the CA's to move from type  $\langle e, t \rangle$  to type *e* and thus modify nouns. This analysis also applies to other uses of *de*, such as relative clauses, which are also of type  $\langle e, t \rangle$  and would thus need to be shifted by *de* in order to modify nouns, as has been shown above to be the case.

### 3.3 Three Problems with Huang's Account of *De*

While Huang's account is far reaching, it suffers from several pitfalls. In general, the ones to be considered herein share one common feature, namely, that *de* doesn't always behave as though it is of type  $\langle \langle e, t \rangle, e \rangle$ .

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there is a variety of CA's that frequently masquerades as SA's, so (i) is probably not a counterexample after all.

### 3.3.1 Problem 1: *de* occurs between apparent SA's and nouns

If *de* is a type  $\langle\langle e, t \rangle, e \rangle$  type shifter, we do not expect it to co-occur with a type-*e* modifier, as such modifiers are not the correct input type for *de*'s type-shifting.

However, [A+*de*+N] structures are quite common in Chinese:

- (14) [SA+*de*+N]
- a. zang de shui 'dirty water'
  - b. hong de fangzi 'red house'
  - c. gaodang de che 'high-end car'
  - d. piaoliang de yifu 'pretty clothes'

Crucially, however, these NP's with *de* do not have exactly the same interpretation as those in (5), which are identical save that they do not have *de*. This point will be revisited in Section 4.2, and in fact, it will be shown that this problem is not ultimately a challenge to the  $\langle e, \langle e, t \rangle \rangle$  analysis of *de*, but is revealing nevertheless.

### 3.3.2 Problem 2: Strings ending in *de* can be conjoined by *erqie*

A prediction of Huang's  $\langle\langle e, t \rangle, e \rangle$  analysis of *de* is that [ $\langle e, t \rangle + de$ ] compounds should be of type *e*, and thus should be able to be conjoined by *he*. This prediction is indeed borne out:

- (15) Zhei-ge yue, chidao de he zaotui de  
This-Cl month late.arrive DE and early.leave DE  
bu hui you jiangjin  
not will have bonus  
'This month, those that arrive early and those that leave late won't receive bonuses' (Huang, 2006: 354)

Though *chidao* 'arrive late' and *zaotui* 'leave late' are verbal predicative expressions of type  $\langle e, t \rangle$ , Huang's theory predicts that *de* type shifts them to type *e* elements, thus allowing them to co-occur with *he*.

*De*, however, apparently can “have its cake and eat it too,” as *de*-elements can co-occur with *erqie* ‘and’, which Huang and Li note does not conjoin elements of type *e*.

Indeed, it seems to conjoin elements of type  $\langle e, t \rangle$ , as can be seen in (16):

(16) Conjunction by *erqie*

Lisi    hen    congming    erqie    hen    yonggong  
 Lisi    very    smart                    and    very    hardworking

‘Lisi is smart and hardworking’ (Huang&Li 2009: 8)

As shown in (16) *Erqie* can conjoin elements of type  $\langle e, t \rangle$ , rather than type *e*, which is not a novel argument; see, for example, Aoun and Li (2003)’s generalization that *erqie* cannot conjoin nominal phrases. Given this fact, one would not expect *erqie* to be able to conjoin [CA+*de*] elements, and yet it can, as demonstrated in (17):

(17) Hen    qianxu de    erqie    hen    qinfen            de    xuesheng  
       very    modestDE    and    very    diligent            DE    student  
       ‘Very modest and very diligent student(s)’

If *hen qianxu* and *hen qinfen* had been shifted to type *e* by *de* as expected, (17) should not be grammatical. Apparently, therefore, type-shifting has not occurred.

### 3.3.3 Problem 3: $\langle e, t \rangle$ *de* $\langle e, t \rangle$

Another prediction of Huang’s type-matching constraint is that  $\langle e, t \rangle$  nominals should be able to be directly modified by CA’s, as they are both of the same type. Once again, this prediction is borne out:

(18) Indefinite nominal modification (Huang 2012)

- a.    hen    cu    yi    gen    shengzi  
      very thick one Cl rope  
      ‘a very thick rope’
- b.    you    hen    cu    yi    gen    shengzi    zai    zhuozi-shang  
      have very thick one Cl rope        on table-top  
      ‘There is a very thick rope on the desk’

In this case, the modifiee, *yi gen shengzi* ‘a rope’ is <e, t> by virtue of being an indefinite expression. As illustrated in (18b), the resulting compound is also <e, t>, as it can be used in an existential sentence, which, in Chinese, permit only <e, t> expressions (Huang, 2012).

As Huang (2012) points out, however, examples like (19) show *de* can occur in between these type <e, t> elements, and when it does, the entire phrase becomes type e:

- (19) Hen    tiaopi        de    yi    ge    nanhai xian    kao-wan  
      very naughty    DE one Cl boy first test-finish  
      le  
      ASP

‘A very naughty boy finished the test first’ (Huang 2012)

Not only has *de* intervened between *hen tiaopi* ‘very naughty,’ a CA of type <e, t>, and *yi ge nanhai* ‘a boy,’ an indefinite nominal phrase, but the resulting string can appear in the subject position, which is restricted to type e elements in Chinese (Huang 2012). Instead, the theory of Huang 2006 would predict that *hen tiaopi de* would be of type e, and thus would be unable to modify *yi ge nanhai*, and the sentence would be ungrammatical.



#### 4.0 On Noun Proforms, *One/Ones* and *De*

To resolve the above issues, Huang (2006)'s system can be modified so that *de* is no longer an  $\langle\langle e, t \rangle e \rangle$  type-shifter, but a  $\langle e, t \rangle$  pro-noun, analogous to the English *one*. Before the merits of such a shift can be observed however, several facts about *one* must be elucidated:

##### 4.1 Which *one* are we talking about?

Just as the multiple homophonous occurrences of *de* complicate analysis of Chinese, so too do multiple homophonous versions of *one* complicate analysis of English. There appears to have been little research published on these varieties of *one*, so the following result may be somewhat novel to the literature: There are at least three types of *one* that exist in English: a numeral, a pronoun that replaces DP's, and a pronoun that replaces NP's, as shown in (20)-(22)

(20) Numeral *one*

- a. One cake will be plenty
- b. Five cakes will be plenty
- c. \*Ones cakes will be plenty

(21) DP *one*

- a. One should not believe everything one hears
- b. \*Two should not believe everything two hear
- c. \*Ones should not believe everything ones hear

(22) NP *one*

- a. I haven't seen a green one
- b. \*I haven't seen (a) green two
- c. I haven't seen green ones

As (a), (b), and (c) each show, only the numeral *one* can be replaced by other numerals, and only the NP-pro form *one* can be replaced by *ones*. It is this last type of

*one* that is of interest here, and all subsequent references to *one* will indicate the NP proform, and not either of the others.

#### 4.2 *One* and *De* as NP Proforms

Though *one*'s NP proform status has been asserted above, some justification is in order. Corver and van Koppen (2011) note the following properties as evidence that *one* is in fact a weak NP proform:

- (23) English *one*
- a. Can inflect for number  
'the one that I know' or 'the ones that I know'
  - b. Can be part of a DP headed by a determiner  
'a fancy one' or 'the fancy one' or 'this (fancy) one'
  - c. Can be preceded by attributive adjectives  
'a blue one' or 'very nice ones'
  - d. Can be followed by prepositional and clausal modifiers  
'one from Spain' or 'ones that I met yesterday'
  - e. Cannot bear prosodic stress (which makes it a phonologically *weak* pronoun, by their definition)

The properties displayed by *one* in (23a)-(23d) are shared by count-nouns in English, indicating *one*'s direction relationship with nouns. It is (23e), however, that shows that *one* cannot actually be a noun, as English nouns are normally able to bear stress. *One* therefore is a likely candidate for being a pronoun that replaces noun.

Here is the first parallel between *de* and *one*, as *de* more or less shares all five properties listed in (23) with *one*:

(24) Chinese *de*

- a. Nouns in Chinese do not inflect for number, but phrases with *de* may be singular or plural in interpretation<sup>3</sup>

hen qinfen de  
very diligent DE

‘very diligent one’ or ‘very diligent ones’

- b. Can be part of a numeral/classifier phrase<sup>4</sup>

yi tiao lan yanse de  
one CI blue color DE

‘a blue one’ (Huang 2012)

- c. Can be preceded by attributive adjectives

The previous examples serve to show this.

- d. Can be *preceded* by prepositional and clausal modifiers rather than followed, but this is a parametric variation on word order between English and Chinese

i. wo mai de shu  
I buy DE book

‘the book I bought’

ii. dui ta de xinren  
to him DE trust

‘trust in him’

---

<sup>3</sup> This fact is true of all Chinese bare nouns. This is demonstrated by the following examples (Cheng and Sybesma, 1999: 510), wherein *gou* ‘dog’ can take both singular and plural interpretations with no morphological changes:

ii. gou yao guo malu  
dog want cross road  
‘The dog wants to cross the road’

iii. Gou jintian tebie tinghua  
dog today very obedient  
‘The dog/dogs was/were very obedient today’

iv. Gou ai chi rou  
dog love eat meat  
‘Dogs love to eat meat’

<sup>4</sup> This property parallels *one*’s ability to be part of a DP. The claim here is not that Chinese NumP/CIP’s are the direct equivalents of English DP’s, rather, both are functional projections of the noun, and in that way, *one* and *de* share the property that they can occur within these functional extensions of nominal phrases.

- e. Cannot bear prosodic stress (Personal communication, Shizhe Huang, 2015)

As (24) shows, *de* is at least as consistent as *one* with being a phonologically weak NP proform. Of course, as has been demonstrated, *de*'s behavior is somewhat removed from *one*'s, as *one* has generally not been seen in the same nominal phrase as a noun, while *de* frequently occurs in that environment. It will be argued in Section 4.3 that, *one* does in fact occur in such environments, even if not so frequently as *de*.

Before considering that parallel between *de* and *one*, however, several others should be noted first. Like other English count nouns, *one* is type <e, t>, as is evident from its inability to appear without a determiner or plural marking:

- (25) *One* as <e, t>
- a. \*Green one is nice
  - b. Green ones are nice
  - c. The green one is nice

Not only is it restricted in that way, *one* must also co-occur with a modifier or at the very least a deictic determiner, as shown in (26):

- (26) *One* needs additional information<sup>5</sup>
- a. \*I saw ones
  - b. \*I saw the ones<sup>6</sup>
  - c. I saw those ones
  - d. I saw green ones

---

<sup>5</sup> Dr. Jason Overfelt has proposed to me that this “additional information” requirement may be a need to be restrictively modified, at least for the English *one*. There is an active debate regarding restrictive modification and *de* in Chinese, see Del Gobbo (2010) for a good summary of the arguments for an against exclusive restrictive modification in Chinese relative clauses. While formally describing this requirement is outside the scope of this thesis, it is no doubt a crucial step in establishing the semantics of *de* and *one*, and should be undertaken in future work.

<sup>6</sup> One might want to raise the issue of the expression ‘the one’, often used in a romantic context to describe a supremely desired partner. This idiomatic example further supports the analysis presented here; it takes the saliency requirement imposed by *the* and makes it contrastive, namely, that said person is the only salient person, and all other people are contextually irrelevant.

Apparently, *one* cannot stand on its own, but must be modified or indexed by some other property. This requirement may reflect *one*'s lack of inherent semantic content of its own, which forces it to combine with some other content-bearing element. Adjectival modification, or indeed, any form of modification seems to be sufficient, as seen in (26c), as is deixis (26d), but definiteness marking is not, as (26b) shows. Perhaps this is because nouns in English are necessarily marked as definite or indefinite, so that information is not “additional” enough.

Crucially, the grammatical examples, (26c) and (26d), create comparisons or contrasts with some other *ones*, *these ones* in the case of (c) and perhaps *red ones* or *blue ones* in the case of (d). This property applies to all cases of *one*, but not in all cases of adjectival modification, as is shown in (27) and (28)

(27) He walked off into the dark night

(28) He walked off into the dark one

While there may or may not be nights that are less than dark, (27) does not imply so. *Dark* in *the dark night* primarily calls attention to a property that *the night* possesses, rather than invoking a set of nights that are dark, as opposed to a set of nights that are not. In (28), on the other hand, that there are *ones* (of something) that are not *dark* is necessarily implied, and it would be completely infelicitous to say it if there were none. Both of these properties, i.e. needing additional information and making that information contrastive are true of *de*. The former can be seen in the contrast in (29):

(29) *De* needs additional information

a. ta xihuan hongse de  
 he likes red DE  
 ‘he likes red ones’

b. \* ta xihuan de

he likes DE  
 \*‘he likes ones’ (as a sentence)

This necessity for an additional element serves as a partial justification for *de*’s status as type <e, t>. Huang and Li (2009) propose that process nominals such as *guwu* ‘encouragement’ are of type <e, t>. This proposal is motivated by the fact that such combinations as (30) are possible:

(30) Hen da guwu  
 very big encouragement  
 ‘Great encouragement’

Under the assumption that *guwu* is of type e, the type matching constraint would prohibit it from being directly modified by *hen da* ‘very big,’ a CA of type <e, t>. Huang and Li note, however, that nouns that pattern this way, like *guwu* ‘encouragement’ or *chongji* ‘impact’ are often de-verbalized processes of verbs that retain an extra theta role, which they give to a PP as in (31), or they are not verbal but still have co-occurring PP’s, as in (32):

(31) A    dui    B    you    hen    da    chongji  
 A    to    B    have    very    big    impact  
 ‘A has a great impact on B’ (Huang&Li 2009: 9)

(32) A    dui    B    you    hen    da    xingqu  
 A    to    B    have    very    big    interest  
 ‘A to B has great interest’ (Huang&Li 2009: 10)

Because these nouns cannot appear bare, and require an argument, Huang and Li analyze them as type <e, t>, which explains the *de*-less modification found in (30)-(32), as both the noun and the CA modifying it are of type <e, t> and thus obey the type-matching constraint on modification.

Later, in Huang (2012) and Huang and Jenks (2013), relational nouns such as *mama* ‘mom’ and *pengyou* ‘friend,’ which cannot exist in absolute on their own but must be relative to some other person, also are said to require that person to be an argument of theirs and exhibit behaviors consistent with type <e, t> nouns. Thus, there is arising in the literature a class of nouns that, in order to be grammatical, need some other component or argument to co-occur with them. As *de* also seems to require some additional component, namely a modifier, it would be at least consistent with the above paradigm for *de* to be a member of this <e, t> class of Chinese nouns. While this evidence is far from conclusive, identifying *de* as a type <e, t> element will have large theoretical and explanatory benefits, which will be explored in Section 5.

As mentioned, *de* also shares *one*’s evocation of a comparative or contrastive set. In fact, this sense of comparison is the very difference between the [SA+*de*+N] and [SA+N] structures mentioned in Problem 1 and repeated here as (33) (Paul, 2005: 12); [SA+N] need not evoke other N’s which are not SA, while that is precisely what [SA+*de*+N] evokes.

(33) [SA+(de)+N]

- a. zang (de) shui ‘dirty water’
- b. hong (de) fangzi ‘red house’
- c. gaodang (de) che ‘high-end car’
- d. piaoliang (de) yifu ‘pretty clothes’

This difference in meaning between bare SA’s and SA’s found with *de* suggests that perhaps the SA’s in the latter are not actually SA’s at all, but rather covert CA’s; their meaning is not merely the meaning of the adjective in question, but that meaning put into a contrastive reading. The prediction that they are indeed CA’s is borne out, as

sentences like (34) are indeed grammatical, assuming they have that contrastive reading (Huang, 2006: 345).

- (34) Zhangsan      gao  
         Zhangsan      tall  
         ‘Zhangsan is tall’ (in contrast to being short)

Given that apparent SA’s with such a reading are not true SA’s at all, Problem 1 is thus not a challenge to Huang’s model. Though its resolution does not shed light on that type of *de*, it does serve to highlight the parallels between *de* and *one* in terms of contrast.

A final parallel between *de* and *one* can be observed in both items’ use as rescue device for non-predicative adjectives used as sentence predicates. For example, *main* and its Chinese equivalent *zhuyao* can serve as modifiers, but not as sentence predicates, as seen in (35) and (36):

- (35)      Non-predicative *main*  
a.      The main road  
b.      \*The road is main  
(36)      Non-predicative *zhuyao* (Aoun and Li, 2003)  
a.      zhuyao de      daolu  
         main   DE      road  
         ‘the main road  
b.      \*daolu hen      zhuyao  
         road   very   main  
         Intended: ‘the road is main’

To get around this prohibition, English and Chinese insert *one* and *de* respectively:

- (37)      Pronominal rescue  
a.      This road is the main one



- b. Zhe tiao daolu shi zhuyao de  
 This Cl road be main DE  
 ‘This road is the main one’

In these cases *one* and *de* serve the same ultimate function, namely creating an NP with the non-predicative adjective as a modifier but with no other real content, allowing the adjective to effectively serve as the predicate of the sentence.

### 4.3 Adjunction to DP’s with *One*

#### 4.3.1 Modification with *One*-Phrases

Up to this point, parallels between *de* and *one* have been drawn that suggest that they may both be NP proforms of type  $\langle e, t \rangle$ . In this sense, it is the type matching constraint that permits predicative expressions and *de* to combine, as in (38):

(38) *De* matching with type  $\langle e, t \rangle$  expressions

- a. Ta shi qu Beijing de  
 he be go Beijing DE  
 ‘He is one who went to Beijing’
- b. Wo xihuan hen piaoliang de  
 I like very pretty DE  
 ‘I like very pretty ones’

In both cases in (38), a predicative expression, a verb-object compound and a CA respectively, combine with *de* to make a noun phrase. This straightforward paradigm is, however, a very small subset of the uses of *de*; as has been the case in most of the examples heretofore examined, *de* usually occurs between a modifier and its noun, and cases like (38a) and (38b) have pairs like (39a) and (39b), respectively:

(39) <e, t> *de* N

- a. Ta shi qu Beijing de ren  
he be go Beijing DE person  
'He is a person who went to Beijing'
- b. Wo xihuan hen piaoliang de yifu  
I like very pretty DE clothes  
'I like very pretty clothes'

These examples provide a significant challenge to the notion of *de* as *one*. First of all, as discussed in Section 3.2, the head nouns *ren* and *yifu* in (39a) and (39b), respectively are of type e, as are the overall nominal phrases *qu Beijing de ren* and *hen piaoliang de yifu*. Despite this, the phrase consisting of *de* and e predicative expression, *qu Beijing* and *hen piaoliang*, respectively, is predicted to be of type <e, t>, and yet it acts as a modifier, of the head noun, so there is a type mismatch between <e, t> and e under the type-matching constraint on modification. Also complicating matters is the fact that examples of NP's with *one* occurring to the left of their antecedents are not found in English. There are, however, examples of them occurring to the right:

(40) He is a talented gardener, one that I admire.<sup>7</sup>

In (40) this structure, *one that I admire* looks either to be an appositive or something quite analogous to an appositive.<sup>8</sup> Crucially, *one that I admire* and *a talented gardener*

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<sup>7</sup> My thanks again to Dr. Jason Overfelt for pointing out to me that, in sentences like these, *one(s)* may be replaced by the main noun, yielding something like

(41') He is a talented gardener, a gardener I admire

Whether or not these are identical structures is not immediately apparent, but they are nevertheless quite similar. It also causes a divergence in the symmetry of *de* and *one*, as, though one can say *hen zang de yifu* 'very dirty clothes,' or, according to this analysis, 'clothes, dirty ones,' one cannot say *hen zang yifu yifu*, 'clothes, dirty clothes.' The translation of that sentence, however, is quite alright in English. Perhaps it is the fact that in Chinese, unlike in English, the word order forces *yifu* to appear next to another *yifu*. Or perhaps it is merely a type-matching issue, as *yifu* should be of type e, and thus not match with the type <e, t> CA *hen zang*. On the other hand, maybe (41) and (41') really are not the same structures after all, and (41') represents a parenthetical. Either way, it is an intriguing puzzle for future research

<sup>8</sup> While a direct comparison between traditionally analyzed appositives and this structure is outside the scope of this paper, a future comparison of the two would doubtless prove interesting. Current work on *de*

are both properties of the same indefinite entity. As will be argued later, the phrase headed by *one* in fact modifies the main noun phrase. One may be tempted, however, to analyze (40) as a reduced form of (41):

(41) He is a talented gardener and one that I admire.

However, though (40) and (41) do appear semantically identical, it is crucial to note that both *one that I admire* and *a talented gardener* are indefinite. When both phrases are definite, the same effect arises, as demonstrated in (42). When one is definite and the other indefinite, however, the form without *and* cannot be a reduced form of the former, as shown by (43) and (44):

(42) Definite nominal modifiers with and without *and*

- a. He is the teacher I like best, the one who always stuck by me
- b. He is the teacher I like best and the one who always stuck by me

(43) Definite nominal modifiers of indefinite nominals with and without *and*

- a. Some of my friends<sup>9</sup>, the wiser ones, cautioned me against it
- b. #Some of my friends and the wiser ones, cautioned me against it
- c. I brought you a horse, the fastest one I could find
- d. #I brought you a horse and the fastest one I could find

---

and appositives in Chinese can be found in Del Gobbo (2010), referred to the reader in a previous footnote, which posits *de* as the head of a CP containing the head noun and c-commanding the modifier/appositive.

<sup>9</sup> It is worth noting that ‘some friends of mine, the wiser ones’ is grammatical here as well, and \*‘some friends of mine and the wiser ones’ is not. Thus, the grammaticality is not a by-product of the preference of ‘some of’ for a specific reading.

- (44) Indefinite nominal modifiers of definite nominals with and without *and*
- a. The teacher's favorite students, ones who supposedly have higher IQ's, get preferential treatment
  - b. The teacher's favorite students and ones who supposedly have higher IQ's get preferential treatment
  - c. \*The teacher's favorite students, ones who supposedly have higher IQ's, both get preferential treatment
  - d. The teacher's favorite students and ones who supposedly have higher IQ's, both get preferential treatment

While (43a) and (43b) mean essentially the same thing, with *the teacher I like best* and *the one who always stuck by me* co-referring, the pairs (43a) and (43b), (43c) and (43d), and (44a) and (44b) do not. While *some of my friends* and *the wiser ones* are able to co-refer in (43a), in (43b), they cannot, and it is unclear to the point of confusion who the *ones* in *the wiser ones* are. That contrast is repeated in (43c) and (43d), where, in the former *a horse* and *the fastest one I could find* clearly describe the same entity, but in (43d), *the fastest one I could find* does not co-refer with *a horse* and again is confusing in its lack of antecedent.

Finally, (44a) and (44b), are both grammatical, but in (44a), *the teacher's favorite students* is co-referential with *ones who supposedly have higher IQ*, while this is not the case in (44b). This contrast in meaning demonstrated in (44c) and (44d), where it is seen that, when *and* is used to conjoin *the teacher's favorite students* and *the ones who supposedly have higher IQ's*, *both* may be inserted before *get preferential treatment*, which requires there to be two distinct subjects. When *and* is not present, however, *both* may not be inserted, implying that there is only one subject. It seems, therefore, that when *and* is not present, the relationship between the two nominal is not coordination at all, but modification.

### 4.3.2 The Specificity Constraint on Modification by Nominals

A couple of other points are worth noting about these examples. First, it is possible for the rightward nominal to be an NP rather than a DP, as in (38), *one that I trust*, which lacks a determiner. Also, Huang (2012) argues that specific indefinite nominal are actually of type  $e$ , while non-specific nominal are of type  $\langle e, t \rangle$ . With that in mind, it can be seen that if one of the two nominal phrases in question is of type  $e$ , the combined structure is also of type  $e$ . For example, in (43a), *some of my friends, the wiser ones*, though it is indefinite, is specific about which friends are involved, and is thus type  $e$ . The same goes for *the teacher's favorite students, ones who supposedly have higher IQ's*, which is less surprising, as it is headed by the definite expression.

If both terms are of type  $\langle e, t \rangle$ , however, the resulting expression need not be of type  $e$ , as illustrated by (45):

- (45) Indefinite nominal modifiers of indefinites
- a. I saw a clever gardener, an extremely talented one
  - b. I want a good friend, one I can trust

While it could be a specific gardener that the speaker is looking at in (45a), it could also just be any gardener that meets the criterion of being talented and clever. In (45b), the verb *want* implies that the speaker does not in fact have such a friend, so the reading must be non-specific. Thus, it looks as if  $\langle e, t \rangle$  nominal modified by an  $\langle e, t \rangle$  one phrase apparently need not yield an overall nominal of type  $\langle e, t \rangle$ .

Recall, however, the generalization established in (40)-(44), namely that if both modifier and modifiee were alike in definiteness, then an overt coordination could be inserted. A reduced coordination analysis is therefore possible of the sentences in

(45), which accounts for their ability to yield type  $\langle e, t \rangle$  overall nominals. In this sense, when such a reading arises, it is due to an entirely different structure than the one in (42)-(44), namely conjunction of the two nominal, rather than modification of one by the other. On the other hand, when the overall nominal is of type  $e$ , as is possible under the specific reading of (45a), that phrase may be an instance of the modification structure seen in (42-44).<sup>10</sup>

With this explanation, the apparent exceptions in (45) can be discounted, and the general pattern emerges that the result of modification with a phrase containing *one* always results in a type  $e$ , or specific, expression. If we wish to preserve the type-matching constraint on modification and not introduce any new covert type-shifting operations, then this fact can be captured by the following generalization:

(46) The Specificity Constraint on Modification by Nominals

If one nominal phrase modifies another, both must be of type  $e$ , and thus the constituent they form will also be of type  $e$  as well.

In other words, for modification of a nominal by a *one*-phrase, both must be of type  $e$ ; this generalization is essentially a selection restriction which rules out either of them being of type  $\langle e, t \rangle$ . The only options are definite expressions, which are necessarily specific<sup>11</sup>, or specific indefinites.

Two caveats should be noted about this proposed constraint: first, it should be noted that it is most likely derived from the type-matching constraint and either a requirement that the modified nominal be of type  $e$ , or that the modifying, *one*-headed nominal be of type  $e$ . If one of them is of type  $e$ , the type-matching constraint will

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<sup>10</sup> Or it may be coordination of two specific indefinites, but that is still consistent with the argument advanced here.

<sup>11</sup> At least in the cases considered here.

naturally force the other one to be of type e as well; it is unclear, however, which one the initial constraint applies to. Second, there does not appear to be a clear reason for this constraint to exist; why specificity should be a prerequisite for this sort of modification is not obvious. It does, however, capture the type distribution of these phrases, and will prove useful later when analyzing Chinese.

### 4.3.3 *One*-Phrases as DP Adjuncts

As has been shown, *one*-headed phrases behave semantically as modifiers of the DP's that follow them. Further, they can be deleted without loss of grammaticality, they can be stacked continuously, and they can be switched with one another, as shown in (47):

- (47) Stacking and switching rightward nominals
- a. This is a horse, the swiftest one we have, the smartest one I know
  - b. This is a horse, the smartest one I know, the swiftest one we have

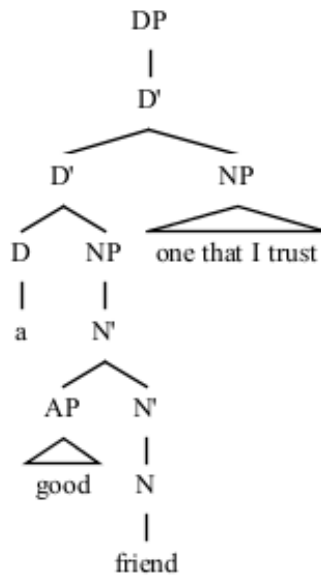
Thus, these rightward nominal seem to be adjuncts given their behavior. They cannot, however, be adjuncts in the NP, as they always occur to the right of such adjuncts, as seen in (48):

- (48) Rightward nominal versus adjuncts in the NP
- a. A man who I met, one who would change my life
  - b. ??A man, one who would change my life, who I met
  - c. The lady from Canada, the one who bit me
  - d. \*The lady, the one who bit me, from Canada

If one tries to move the adjunct in the NP, either a relative clause as in (48a-b) or a PP, as in (48c-d), the resulting string is severely degraded in grammaticality, if not completely ungrammatical. Therefore, these elements are not adjuncts in the NP.

Instead, they will be analyzed as adjuncts of the DP<sup>12</sup>. Our initial sentence of this type, here repeated as (49a), can thus be analyzed syntactically as (49b):

- (49) DP adjuncts  
 a. He is a good friend, one that I trust  
 b.

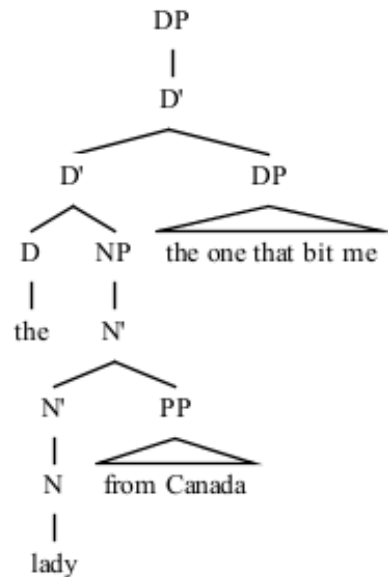


Similarly, the more structurally revelatory (48c) would have the following structure:

<sup>12</sup> Though they could go off of any number of functional projections of the N, just so long as they adjoin above wherever specificity is assigned (see Section 4.4)



(50)



Not shown in these trees are the nodes at which specificity is determined. Given that there is limited consensus on where or how this determination is made, a formal exploration of the subject would be too far afield from the focus of this thesis. However, many thinkers, such as Zamparelli (1995) and Guillemain (2011) locate it somewhere quite high up in the functional projections of the noun, whether it be due to a certain type of raising like Zamparelli proposes based on Diesing (1992)'s quantifier raising analysis of specifics, or just a specificity phrase as Guillemain would have it. Moving forward, the arguments presented herein will not assume any particular theory on this issue, merely that, somewhere, high-up in the nominal, specificity is determined, which allows a type shifting of indefinites from  $\langle e, t \rangle$  to  $e$ .

#### 4.4 Nominal Adjunction with *De*

If the above analysis can be successfully applied to Chinese, then many of the problems raised in section 3.3 regarding *de* as an  $\langle e, t \rangle$  NP proform will be resolved.

However, as has been argued by scholars such as Bošković (2008), Chinese lacks a DP; even if it did have one, an identical system to English would produce an incorrect word order, as *de* occurs to the left, not the right, of the noun. Instead, what is proposed here is that most<sup>13</sup> NP's with *de* are adjoined directly to the NP.

As the *de*-nominal will be an adjunct, following the generalizations of Huang (1982) and Li (1990), it must occur to the left of its head. All Chinese adjuncts must occur to the left of their heads, as opposed to English ones, which vary in location based on syntactic category. Thus, the initial word ordering concern is alleviated, as *de*-phrases will be correctly predicted to occur to the left of the nouns they modify.

In solving one word ordering problem, however, another one has been incurred, namely the fact that CA's always occur to the left of SA's, but as both are now predicted to occur as adjuncts in the same phrase, one might expect them to be interchangeable in ordering. As Paul (2005) notes, however, [SA+N] structures are highly restricted, as shown in (51):

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<sup>13</sup> An exception has already been explored in the form of the problem posed in Section 3.3.3, wherein *de*-phrases are generated to the left of the number and classifier. This structure will be revisited in Section 5.2

(51) [SA+N] Semantic/Lexical Restrictions

a. zang yifu	‘dirty clothing’	(Paul, 2005: 16)
b. *zang tang	‘dirty candy’	
c. ba zhi	‘white paper’	
d. *ba shou	‘white hand’	
e. gui dongxi	‘expensive thing’	
f. *dui dangao	‘expensive cake’	
g. congming haizi	‘intelligent child’	
h. *congming dongwu	‘intelligent animal’	
i. da bai panzi	‘big white plate’	(Paul, 2005: 9)
j. *bai da panzi	‘white big plate’	
h. bai da guar	‘white big gown’	
k. *da bai guar	‘big white gown’	

As can be seen from (51a-i), there are strong lexical or semantic restrictions on which adjectives can appear with which nouns in the [SA+N] structure. Further, as (51i-k) shows, the ordering between SA's is itself not entirely free. Though Paul (2005) disagrees with what she views as the prevailing view that these facts about [SA+N] structures are due to the nouns and adjectives forming compounds, and instead advocates for a semantic account of these restrictions, either will suffice for the purposes of the argument at hand. In either case, there are strong reasons for SA's to appear closer to the noun than any other adjuncts, so that CA's can never interrupt the SA's and the noun is not unusual.

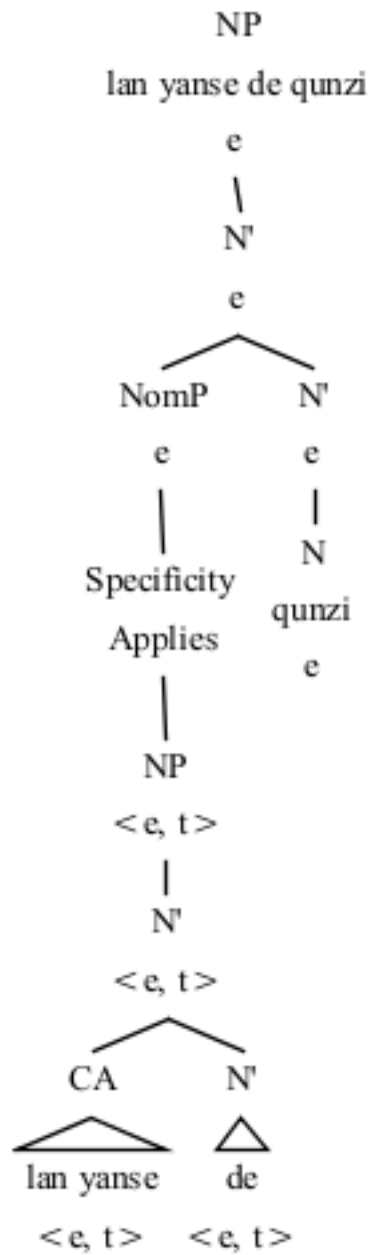
While this accounts for the structure syntactically, semantically, the nominals headed by *de* must still obey the type-matching constraint; namely, as the *de*-phrase is predicted to be of type  $\langle e, t \rangle$ , it must find some way to match with the bare noun, which is of type *e*. Consider (52):

(52) lan yanse de qunzi  
blue color DE dress

‘the blue-colored dress’ or literally ‘the dress, the blue-colored one’

If *lan yanse de* ‘the blue-colored one’ is of type  $\langle e, t \rangle$ , then how does it type-match with *qunzi* ‘dress,’ the type *e* noun it modifies? Here is where a strategy essentially identical to the one used to identify the specificity constraint in English can be invoked. Namely, one can posit that nominal adjuncts with *de* are in fact full Chinese nominal phrases, with all the functional projections that entails, including the one at which specificity is determined. Thus, the *de* phrase has the option to undergo the type-shifting that makes indefinites specific, i.e. from  $\langle e, t \rangle$  to *e*, and thus can type match with *qunzi*, as they are both of type *e*. A tree of this structure is provided in (53), with the type at each level provided.

(53)



NomP in (53) is used here as a theory neutral term to represent whatever the highest level of function projection is in the Chinese NP; its only real import is that it allows for specificity to be assigned to the *de*-NP somewhere before it joins with the bare noun.

One might object to the claim that *de* NP's are actually embedded in a full nominal phrase, as Chinese nouns usually can take classifiers, while *de* cannot. This fact, however, follows from Chierchia (1998)'s hypothesis that classifiers are of type  $\langle e, \langle e, t \rangle \rangle$ , lifting type *e* nouns into type  $\langle e, t \rangle$ 's. As a result, they are predicted to be unable to take *de* as their input, as it is of type  $\langle e, t \rangle$ , so *de* can never take a classifier.<sup>14</sup>

The noun which the *de*-phrase modifies, however, can have a classifier, which allows a sort of escape from the specificity constraint on modification by *one/de* nominal, as in (54), which can receive an  $\langle e, t \rangle$  reading.

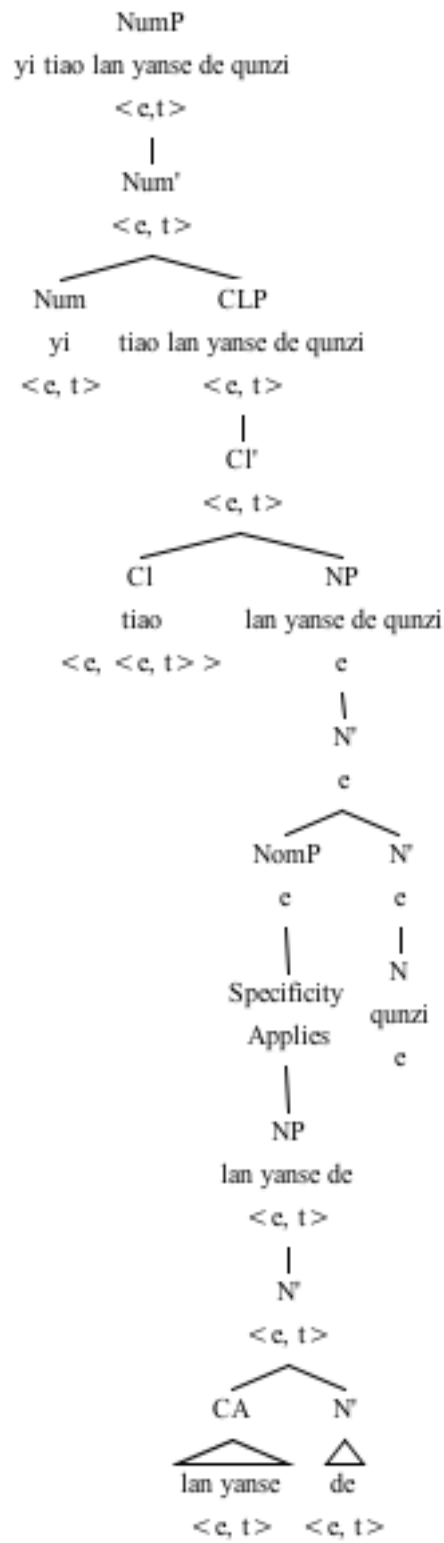
- (54)      yi      tiao    lan      yanse   de      qunzi  
                  one    Cl      blue   color   DE      dress  
                  'a blue dress' lit 'a dress, a blue one'

This differs from what is predicted for English, but is entirely consistent given the lower adjunction point of *de*-phrases in the nominal than *one*-phrases. The path by which (54) receives its  $\langle e, t \rangle$  type is shown in (55)

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<sup>14</sup> *De* cannot take numerals either, but this fact can be accounted for if one supposes NumP subcategorizes for a CIP or that numerals otherwise require classifiers in Chinese.

(55)



The classifier *tiao* shifts the entire NP *lan yanse de qunzi* from type *e* to type  $\langle e, t \rangle$ , thus getting around the restrictions on specificity found in such phrases' English equivalents.

## 5.0 Resolutions and Ramifications

### 5.1 *Shi...de* and Problem 2 (*erqie*)

The analysis of *de* as an  $\langle e, t \rangle$  pronoun analogous to *one* is thus viable, as it type-matches at the CI' level, where it's modifiee is always of type  $\langle e, t \rangle$ . Our prior problematic sentences now are perhaps better understood and translated as the following:

- (56)  $\langle e, t \rangle$  *de* N
- a. Ta shi qu Beijing de (ren)  
 he be go Beijing DE person  
 'He is (a person,) one who went to Beijing'
- b. Wo xihuan hen piaoliang de (yifu)  
 I like very pretty DE  
 'I like (clothes,) very pretty ones'

In these cases, the head noun can appear overtly, or it can be elided but still be structurally present. Paris (1978) noted, however, that sometimes, no noun can follow *de* in a *shi...de* construction, as in (57):

- (57) wo shi bu qu de (Paris 1979: 110)  
 I be not go DE  
 'I am not going' lit: 'I am one who won't go'

In the case of (57), there is no head noun structurally present, so *bu qu de* is the entire nominal phrase. This analysis is not problematic though, as the nominal *bu qu de* occurs in the predicate of the sentence rather than the subject, so Chinese permits it to be of type  $\langle e, t \rangle$ .



Indeed, *de*'s <e, t> status may explain why sometimes *shi* 'be' may be eliminated in entirely, as in (58a), or simply never be grammatical, as in (58b):

(58)

- a.    wo    bu    qu    de  
       I     not go    de  
       'I am not going'
- b.    zhei   pian   caodi   (\*shi)   lüyouyou   de  
       this   Cl    lawn            green-glossy   DE  
       'This lawn is a lush one'

If *bu qu de* and *lüyouyou de* are <e, t>, they are then predicative, and perhaps they may serve as the sentence predicate on their own in this state. Chinese nouns are not normally able to serve as sentence predicates on their own, but, as has been seen, *de* is quite different from most Chinese nouns in several ways, so perhaps some explanation for this phenomenon can be found.<sup>15</sup>

This analysis of *de* also eliminates Problem 2, i.e., *de*-phrases being conjoined by *erqie* as in (53):

- (59) Hen    qianxu de    erqie    hen    qinfen    de    xuesheng  
       very    modestDE    and    very    diligent    DE    student  
       'the student, a very modest one and a very hardworking one'

Both *hen qianxu de* 'very modest one' and *hen qinfen de* 'very diligent one' are type <e, t>, and thus can be conjoined by *erqie*. Rather than each *de* type shifting

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<sup>15</sup> A closer look at such phrases is a natural next step from this thesis, especially given tantalizing data like (58b'):

- (58b') zhei    pian    caodi    \*(shi)    lüyouyou    de    caodi  
       this    Cl    lawn    be    gree-glossy    DE    lawn  
       'This lawn is a lush lawn'                    (Shizhe Huang, personal communication)

This is entirely predicted by the specificity constraint, as, when *lüyouyou de* modifies *caodi*, it forces both of them to be of type e, and thus unable to serve as the sentence predicate, which is what then forces the insertion of the copula *shi*.

from type <e, t> to e, it is the entire noun-phrase that is converted to type e in one swoop by N to Cl raising of *xuesheng*.

Importantly though, this theory still predicts the grammaticality of conjoining *de* phrases with *he*, as is the case in (60):

- (60)      Zhei-ge      yue,      chidao      de      he      zaotui      de  
             This-Cl      month late.arrive      DE      and      early.leave      DE  
             bu      hui      you      jiangjin  
             not      will      have      bonus  
             ‘This month, the ones that arrive early and the ones that leave late won’t  
             receive bonuses’

*Chidao de* ‘ones that arrive late’ and *zaotui de* ‘ones that leave early’ are in fact *de*-headed adjuncts with elided nominal heads. The conjunction is thus more accurately:

- (61)      [[chidao      de]      e]      he      [[zaotui      de]      e]  
             late.arrive      DE                      and      early.leave      DE  
             ‘Those that arrive early and those that leave late’

While these covert nouns may seem like an entirely theory-internal stipulation to rescue the type-shifting account, they do, in fact, make an accurate prediction; namely, when there is a covert noun through ellipsis, the two conjuncts may refer to different entities, but when there is no covert noun, the conjuncts will have to refer to the same entity, as dictated by the meaning of *ergie*. This prediction is borne out in (62):

- (62) a. #zuo zai ta zuobian de erqie zuo zai  
 sit at he left DE and sit at  
 ta youbian de gongren  
 he right DE worker  
 #‘the worker sitting on his left and on his right’
- b. zuo zai ta zuobian de he zuo zai  
 sit at he left DE and sit at  
 ta youbian de gongren  
 he right DE worker  
 #‘the worker sitting on his left and the one sitting on his right’

(62a) is nonsensical, as one cannot sit on both the left and right side of someone simultaneously. If, however, *zuo zai ta zuobian de* ‘the one sitting on his left’ could have an elided noun as its head, the sentence could read something like ‘the [worker] sitting on his left and the worker sitting on his right,’ which would be perfectly logical. Doing so, however, would also shift *zuo zai ta zuobian de* into a type e expression, unable to be conjoined with *erqie*, which would render the phrase ungrammatical. This prediction is borne out precisely if we substitute in *he* for *erqie* as in (62b). *He* does indeed conjoin type e nouns, and, as a result, the sentence is grammatical and has the interpretation of there being two different workers. Thus, elided nouns are not ad-hoc stipulations, but rule-governed and predictive of what a given phrase will be able to mean.

## 5.2 <e, t> *de* <e, t> Revisited

Finally, the issue raised in Problem 3 of *de* intervening between two <e, t> elements as in (63) must be addressed.

- (63) hen cu (de) yi gen shengzi  
 very thick DE one Cl rope  
 ‘a very thick rope’

Recall that with the *de* the overall structure is of type e, while without it, it is of type <e, t>. Though these structures are superficially similar, given the analysis of *hen cu de* ‘a very thick one’ as an NP adjunct, it is not immediately obvious how it is able to move to be to the left of the numeral *yi* ‘one’. *Hen cu* ‘very thick’ on the other hand, may be base-generated there; both *hen cu* and *yi gen shengzi* ‘one rope’ are of type <e, t>, and in fact, adjectival phrases can be seen to serve as numeral or numeral phrase modifiers in English as well. For example:

- (64) I wanted to have a **quiet few** days away from home, but they turned out to be the **worst five** days of my life

As can be seen in (64), both *quiet* and *worst* proceed the quantity denoting expressions *few* and *five*, rather than coming between them and the noun. There is thus nothing particularly marked about a CA occurring in that position. A [CA+ *de*] expression, on the other hand, would normally go to the right of the numeral-classifier compound, as in (65):

- (65) yi      gen    hen    cu      de      shengzi  
       one    Cl     very   thick   DE     rope  
       ‘a very thick rope’

While (65) is grammatical as well, it does not share (63)’s requirement to be of being type e when the *de* is overt, and can either be specific or non-specific, i.e. type e or type <e, t>. The key to this contrast, as well as the derivation of the word order in (63), may lie in Zhang (2014)’s analysis of such constructions, where she argues that the *de* NP raises out of their base-generated position, in a process analogous to the English alternation seen in (60):

(66) Marked versus Unmarked adjective order

Unmarked: The visible stars

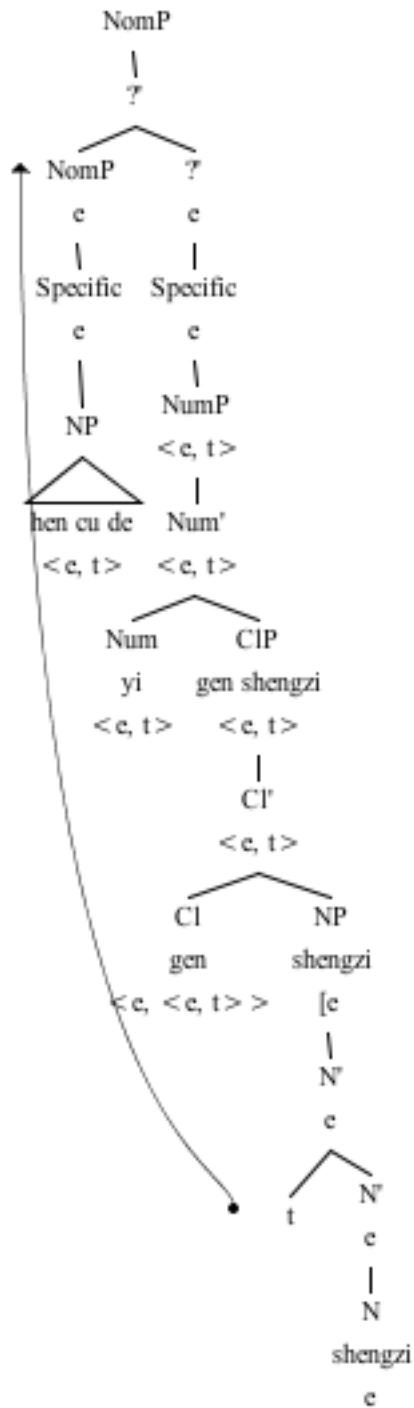
Marked: The stars visible

The marked order is constrained in English, in that, in *the stars visible*, *visible* must be stage-level, referring to the stars visible at a given moment, rather than in general, whereas in the unmarked *the visible stars* visible may refer to either the stage or the latter, individual-level interpretation of *visible*.

With this process in mind, the specificity constraint provides a fairly explanation for

(63) When these *de* phrases raise as Zhang has proposed, they move to an adjunct position somewhere high up in the nominal, as shown in (67):

(67)



As the adjunction takes place above the classifier, the whole NumP is forced to be specific and thus of type e, and there is no higher classifier above it to type shift it back

into type  $\langle e, t \rangle$ , so the whole nominal phrase is forced to be a specific indefinite of type  $e$ . It is therefore the specificity constraint first seen in English on modification by nominals that accounts for type  $e$  reading of  $[\langle e, t \rangle \text{ de } \langle e, t \rangle]$  structures.

## 6.0 Conclusion

It has been demonstrated that *de* is not only consistent with being a NP proform like the English *one/ones*, but also that if this analysis is coupled with a semantic account of *de* as being of type  $\langle e, t \rangle$ , a wide variety of syntactic constructions and the semantics thereof in Mandarin Chinese can be explained. Critically, the role in some instances of *de* and *one* as heads of phrases adjunct to DP's and NP's respectively, and the constraint that both modifiers and modifiees in that structure must be of type  $e$ , brings parallelism between analyses of the two languages. It also demonstrates the strategies for modification that Chinese has employed as a language wherein most modifiers cannot directly modify nouns due to type-matching constraints. English, on the other hand, can obey such constraints quite easily, as its count nouns begin as type  $\langle e, t \rangle$ . It seems reasonable to conjecture, then, that this contrast is the reason why adjunction with *de* is so prevalent in Chinese but, while certainly employed, relatively uncommon in English, at least when compared to Chinese.

While this hypothesis works well for occurrences of *de* mentioned in the data of this thesis, there are naturally many more occurrences of *de*, including more complex structures to the left of the numeral and classifier, as well as in the sentence predicate position. More work is required in those areas to determine whether the predictions made by this model hold in such environments, or whether they need to be further revised.

## 7.0 Works Cited:

- Aoun, Joseph and Y.-H. Audrey Li. 2003. *Essays on the Representational and Derivational Nature of Grammar* Cambridge: The MIT Press.
- Bošković, Željko. 2008. What will you have, DP or NP? In *Proceedings of NELS 37*.
- Cheng, Lisa L.-S. 1986. *de* in Mandarin. *Canadian Journal of Linguistics* 31:313-326.
- Cheng, Lisa L.-S. and Rint Sybesma (1999). "Bare and Not-So-Bare Nouns and the Structure of NP." *Linguistic Inquiry* 30(4): 509-542.
- Cheng, Lisa L.-S., and Rint Sybesma. 2009. *De 的* as an underspecified classifier: first explorations. *Yuyanxue Luncong [Essays on Linguistics]* 39:123-156. Beijing: The Commercial Press
- Chierchia, G. (1998). Plurality of mass nouns and the notion of 'semantic parameter'. In S. Rothstein (Ed.), *Events and grammar* (pp. 53–104). Dordrecht: Kluwer.
- Corver, Norbert and Marjo van Koppen. 2011. NP-ellipsis with adjectival remnants: a micro-comparative perspective. *Natural Language and Linguistic Theory*. 29: 371-421.
- Del Gobbo, Francesca. 2011. On Chinese appositive relative clauses. *Journal of East Asian Linguistics*. 19: 385-417.
- Diesing, Molly. 1992. *Indefinites*. Cambridge, MA: MIT Press.
- Guillemin, Diana. (2011). *The Syntax and Semantics of a Determiner System: A Case Study of Mauritian Creole*. John Benjamins North America, Philadelphia.
- Huang, C.-T. James. 1982. Logical relations in Chinese and the theory of grammar. Doctoral dissertation, Massachusetts Institute of Technology.
- Huang, Shi-Zhe. 2006. Property theory, adjectives, and modification in Chinese. *Journal of East Asian Linguistics*. 15: 343-369.
- Huang, Shi-zhe and Y.-H. Audrey Li. 2009. "Henda Guwu—more on the type matching constraint on Modification" *Essays on Linguistics*. 39: 157-203.
- Huang, Shi-Zhe. 2012. *De* as a generalized type-shifter. MS presented at the joint session of the Semantics Lab at University of Pennsylvania and Philadelphia Semantics Society, Philadelphia, Dec. 7, 2012
- Huang, Shi-zhe & Peter Jenks. "Nominal Modification in Chinese and Thai." In *Proceedings of the 31st West Coast Conference on Formal Linguistics. Cascadilla Proceedings Project, 2017: 227-237*.
- Li, Y.-H. Audrey (1990) *Order and Constituency in Mandarin Chinese*, Kluwer Publishers, Dordrecht.
- Paris, Marie-Claude. 1979. *Nominalization in Chinese. The morpheme de and the shi...de construction*. Paris: Université Paris 7, Département de Recherches Linguistiques.
- Paul, Waltraud. 2005. Adjectival modification in Mandarin Chinese and related issues. *Linguistics* 43(4): 757-793.



- Paul, Waltraud. 2012, to appear. The insubordinate subordinator *de* in Mandarin Chinese: Second take. In *The Attributive Particle in Chinese* (tentative title) [Frontier in Linguistics Series], ed. Sze-Wing Tang. Beijing: Peking University Press.
- Simpson, Andrew, & Zoe Wu. 1998. "The Syntax and Interpretation of Sentence-Final DE". In Proceedings of NACCL 10. 257-274.
- Simpson, Andrew. 2002. On the status of "modifying" *de* and the structure of the Chinese DP. In: Tang, Sze-Wing & Liu, Chen-Sheng Luther (eds.). On the formal way to Chinese languages. CLSI publications.
- Zamparelli, Roberto (2000) *Layers in the Determiner Phrase*. Garland Publishing Inc., New York.
- Zhang, Niina Ning. 2009. *Coordination in Syntax* (Cambridge Studies in Linguistics Series 123). Cambridge: Cambridge University Press
- Zhang, N. 2015. Nominal-internal phrasal movement in Mandarin Chinese. *The Linguistic Review* 32 (2): 375-425.
- Zhu, Dexi. 1956. Xiandai Hanyu Xingrongci Yanjiu [Studies of adjectives in modern Chinese]. Yuyan Yanjiu 1. Also published in Zhu Dexi (1980) Xiandai Hanyu Yufa Yanjiu [Grammatical studies of modern Chinese], Commercial Press, Beijing, pp. 3–41.
- Zhu, D. (1961). Shuo DE [On DE]. Zhongguo Yuwen. China: Beijing, also published in Zhu Dexi (1980) Xiandai Hanyu Yufa Yanjiu [Grammatical studies of modern Chinese], Commercial Press, Beijing, pp. 67–103.