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Chak-Lam Colum Yip

Evidence for DP in Chinese from Reduplicative Classifiers and DP- Internal Information Structural Phenomena

Chak-Lam Colum Yip

A dissertation

Submitted in partial fulfillment of the
requirements for the degree of

Doctor of Philosophy

University of Washington

2018

Reading Committee:

Edith Aldridge, Chair

Barbara Citko

Julia Herschensohn

Program Authorized to Offer Degree:

Department of Linguistics

University of Washington

Abstract

Evidence for DP in Chinese from Reduplicative Classifiers and DP-Internal Information

Structural Phenomena

Chak-Lam Colum Yip

Chair of the Supervisory Committee:

Professor Edith Aldridge

Department of Linguistics

This dissertation argues in favor of the Universal DP Hypothesis (Progovac 1998, Pereltsvaig 2007), which claims that all languages have DPs which contain extended functional projections above the NP, as opposed to the Parameterized DP Hypothesis (Chierchia 1998, Bošković 2005), which argues that only languages with overt articles project DPs, and languages without overt articles have NPs as nominal arguments. I mainly focus on three kinds of data: classifier reduplication, topic and focus within DP, and modifying phrasal constituents.

The first type of evidence is reduplicative classifiers. In order to make a case for functional projections above NP and the Universal DP Hypothesis, I adopt Travis' (2001, 2003) framework to account for two types of classifier reduplication within the Chinese nominal. First, plural reduplication moves a CI to NUM and creates a copy of it at NUM head. Second, the "Each/Every"

type of reduplication in Cantonese can occur without a preceding sentential topic or adverbial because of CL-to-D movement. The moved classifier takes on the function of a determiner and becomes an outer layer of restriction for the quantifier following it. This also corroborates my thesis that the DP layer exists in Chinese. The reduplication facts shown in this chapter also demonstrate that extended functional layers exist above the NP. This suggests that the Universal DP Hypothesis is correct.

The second type of evidence is topic and focus within DP. I mainly study the non-canonical NP-Num-CL order (NP Inversion) and NP Ellipsis. For NP Inversion, I followed Simpson (2005), Lin (2010), Hsu (2012) in claiming that the non-canonical NP-Num-CL order is derived through movement of NP to the left periphery of DP. I showed that the competing analysis presented by Tang (1996), which argues that the NP and [Num-CL] are in a predication relation, is problematic. In particular, that analysis predicts that [NP Num-CL] sequences only appear in clause-final position. I showed that this prediction is not borne out. For NP Ellipsis, I adopted Ntelitheos' (2003) (see also Corver and van Koppen 2009) proposal and treats nominal ellipsis as DP-internal topicalization followed by movement of the focused remnant XP. This proposal resolves the shortcomings of empty category approaches to ellipsis like Lobeck (1995), while making the case that nominal ellipsis involves discourse-related projections just like verbal ellipsis (Johnson 2001). I showed that NP Ellipsis in Chinese is also PF deletion of [spec, DTopP] at the left edge of DP. However, since Lin (2010) has shown that NP can transformationally move to [spec, CP] from inside the DP, it was also important to show that the PF deletion of NP happens at the left edge of DP, and not CP. Consequently, I showed that NP-Ellipsis happens at the left edge of DP by demonstrating that movement of NP to the left periphery is subject to the Complex NP Constraint. The above arguments offer clear evidence that there are information structure related positions in

DP.

Finally, I argue that by assuming a DP-left periphery, we can not only account for the high and low positions for modifying constituents in the Chinese DP, and also relative order of APs and RCs that modify nouns. I follow den Dikken & Singhapreecha's (2004) Predicate Inversion approach to modifying constituents in Chinese. It's been found that grounding relative clauses or APs must appear before their non-grounding counterparts. I argue that in Mandarin, DE is the spell out of *n*, DFoc, and DTop. The two DEs have different functions. DE in DTop expresses specificity, definiteness, or genericity. DE in *n* carries a nominalizing meaning. Phrasal constituents are base-generated low as small clause predicates contained inside *n*P. They move to [spec, *n*P] to check [Nom]. If information structure is involved, they will move further to [spec, DTopP] (for grounding phrasal constituents) or [spec, DFocP] (for non-grounding phrasal constituents),

Therefore, even though Chinese does not have overt determiners, an unpronounced D layer can still be detected by observing the effects they have on modifying constituents. I therefore conclude that Chinese nominals exhibit the same properties as languages with a determiner.

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ACKNOWLEDGEMENTS

First of all, this dissertation would not have been possible without the help of my advisor, Edith Aldridge. Edith, thank you for wisdom, guidance and support. Thank you for always trusting my abilities and pushing me. Although I am not your first student to graduate, I always take pride in being your first advisee at UW. It was truly an honor, and I owe you a lot.

I would also like to thank members of my reading committee, Barbara Citko and Julia Herschensohn, for your insightful comments and your guidance throughout the years. My interest in DP started when I took LING 508 from Barbara. Julia, you sparked my interest in second language acquisition, and I will never forget your sense of fashion.

My GSR Professor Anne Yue-Hashimoto deserves special thanks. Prof. Yue taught me how to be a serious scholar and has been very much a grandmother figure (I hope you do not mind my saying this) in my life in Seattle. Thank you for inviting me to your thanksgiving parties and giving me the opportunity to work with you on the first Li Fang Kuei Young Scholar Symposium.

I would like to express my gratitude to our department secretary Joyce Parvi and administrator Mike Furr, who went out of the way to help me whenever I needed them.

Lynn Gordon at Washington State University is the reason why I am a linguist. I would like to take this opportunity to thank her.

I would like to thank my best friends in the department, Sophie Ahn, Yin Li, and Brent Woo. You guys made my grad school life interesting. I am grateful for my good friends in Seattle, Andrew Ivanov, Andy Siler and Eric Richardson, who gave me a lot of emotional support.

To Stella Chan, Kit Tong, Christine Ho, Zacharias Cheng, and Bonnie So, thank you for being awesome friends.

To Man Vu, thank you for all those years together, even though we have gone separate

ways.

I would also like to thank my pets. My cat babies Schmitty and Hotchkiss helped me deal with my stress throughout this process. Dodo, thank you for being with me for 28 years.

Last, but not least, I would like to thank my parents for their support throughout the years. I am very fortunate to be part of this family.

All errors are my own.

Abbreviations

ACC	Accusative
ASP	Aspect
CL	Classifier
CP	Complementizer Phrase
CLP	Classifier Phrase
DEM	Demonstrative
D	Determiner
DP	Determiner Phrase
FEM	Feminine
GEN	Genitive
MASC	Masculine
NEG	Negation
N	Noun
<i>n</i>	light noun
NP	Noun Phrase
NUMP	Numeral Phrase
PERF	Perfective
PL	Plural
POSS	Possessor
TOP	Topic
FOC	Focus
DTOP	DP-internal Topic
DFOC	DP-internal Focus
QP	Quantifier Phrase
VP	Verb Phrase

Chapter 1 The Chinese DP

1. Introduction

The DP Hypothesis (Szabolcsi 1983, Abney 1987) argues that nouns project to a functional category D(eterminer)P. The goal of this dissertation is to provide new evidence from Mandarin and Cantonese in favor of previous accounts (Simpson 2005 and Wu and Bodomo 2009) that analyze Chinese nominal arguments as Determiner Phrases (DPs).

The DP Hypothesis has changed the way generative syntacticians analyze nominal arguments but also raised several new questions, namely:

- (1) a. Do all languages, even the ones with no overt articles, project DP arguments? (Chierchia 1998, Progovac 1998, Bošković 2005, Pereltsvaig 2007)
- b. Is there a parallelism between clauses and nominal phrases?¹ (Abney 1987, Szabolcsi 1983, 1987, 1994, Bernstein 2001, 2008)
- c. Is there Information Structure in the left periphery of DP? (Bernstein 1997, 2001, Haegeman 2004, Aboh 2004)
- d. Is DP a Phase? (Matushansky 2005, Bošković 2002, 2005, Manlove 2016, Saurov 2017)

Question (1a) is related to the Universal DP Hypothesis (Progovac 1998, Pereltsvaig 2007). The Universal DP Hypothesis argues that all languages have DPs which contain extended functional projections above the NP. The Parameterized DP Hypothesis (Chierchia 1998, Bošković 2005) argues that only languages with overt articles project DPs, and languages without overt articles have NPs as nominal arguments. Question (1b) is related to the issue of CP²/DP parallelism (Abney 1987, Szabolcsi 1983, 1987, 1994, Bernstein 2001, 2008, Hiraiwa 2005, among others). It has been reported in the literature that DPs and CPs share many similarities in agreement/case morphology, extraction possibilities, and argument structure (see Bernstein 2008 for a

¹ This is not a question that I will discuss in this work. However, by claiming that there is information structure in DP in Chapters 3 and 4, I already assume that a CP/DP parallelism exists to some degree.

² However, for Abney (1987), the parallelism is between IP and DP, as D is the parallel of INFL in his work.

comprehensive summary). Question (1c) pertains to the parallels between the left peripheries of DP and CP that have been observed. It has been claimed that DP also contains information structure (Bernstein 1997, 2001, Haegeman 2004, Aboh 2004), similarly to CP (Rizzi 1997). Question (1d) is also related to the notion phases, which was originally proposed in Chomsky (2000) as chunks that are propositional. Chomsky (2000) claims that vP and CPs are phases, but recent works (Matushansky 2005, Bošković 2002, 2005, Manlove 2016, Saurov 2017) on phases have suggested that DPs can be phases as well. All these questions are of interest to scholars working on DP structure.

2. The case of Chinese

Chinese languages, like most East Asian languages, do not have overt articles. The structure of the Chinese noun phrase is also different from its English counterpart in the presence of a classifier and the absence of plural morphological inflection.

To express definiteness, a demonstrative is often used. A definite nominal expression in Mandarin usually appears in the order of DEM-NUM-CL-NP. The difference between (2a) and (2c) is number. Both Chinese and English use a different demonstrative to convey plurality, as shown in *that* versus *those* for (2a) and *na* versus *naxie* in (2c). As shown in (2b) and (2d), Chinese does not have overt determiners. As an alternative, a native speaker of Mandarin will have to resort to using demonstratives. Across languages, demonstratives are usually always deictic while determiners are usually not. *Na* and *naxie* are definite, deictic and specific³, and

³ Lyons (1999:157) aptly points out that definiteness refers to various uses that have often been treated as different manifestations of the same category. Therefore, it is important for me to define what I mean by 'definiteness.' For our purposes, when I say that something is definite, it means that it is familiar to both the speaker and hearer (familiarity). This includes anaphoric uses of definites like (i). Essentially, definiteness is a function of the definite determiner.

- (i) A: A woman just came by and asked to see you.
B: Do I know the woman?

therefore they fit the descriptions of demonstratives and not determiners.

(2)

a.	That boy	Na (yi) ⁴ ge nan hair Dem one CL male child 'That boy'
b.	The boy	Na (yi) ge nan hair Dem one CL male child 'That boy'
c.	Those boys	Naxie ⁵ nan hair DEM:pl male child 'Those boys'
d.	The boys	Naxie nan hair DEM:pl male child 'Those boys'

Indefinite nominals usually appear in the form of NUM-CL-NP. (3a) shows that in Chinese, a classifier is added between the numeral and the head noun when counting is involved. The function of the classifier is to individuate the entity in question so that counting is made possible. In (3b), while the head noun in *two boys* takes on a plural suffix *-s*, no plural morphology is found in the Chinese equivalent. This therefore shows that plurality in Chinese is mainly reflected in the numeral and a classifier must co-occur with numerals. (3c) has no Chinese equivalent. The closest translation for *a boy* is (1a) since it is the closest in meaning, but there is no (overt) determiner in Chinese.

I define deixis as what Lyons refers to as 'ostension' uses, where the hearer's attention is being directed to a referent. Deixis can be proximal or distal. This is the function of a demonstrative. Specificity refers to situations where the speaker knows the identity of the referent but the hearer does not. Something that is deictic is necessarily definite. Something that is specific does not have to be definite, as (ii) shows. Presumably, only the speaker knows which three books he bought.

(ii) I bought three books.

⁴ The numeral *yi* 'one' is often silent between a demonstrative and a classifier. However, other cardinal numbers are obligatory.

⁵ Following Tang (2006), I do not assume that *xie* is a plural classifier given its incompatibility with numerals other than *yi* 'one'.

(3)

a.	One boy	Yi ge nan hair One CL male child 'one boy'
b.	Two boys	Liang ge nan hair Two CL male child 'Two boys'
c.	A boy ⁶	Yi ge nan hair One CL male child 'one boy'

Bare nouns in Chinese can express definiteness, indefiniteness, and genericity. When a bare noun occurs in a clausal topic or subject position, it is *necessarily* definite (or generic - see below).

(4)

(As for) The boy , where did he go?	Nan hair qu na le? Male child go where PERF 'As for the boy, where did he go?'
--	---

A bare noun in post-verbal position can either be definite (5a) or indefinite (5b). Note that bare nouns can also be singular or plural, as (5b) shows.

(5)

a.	Hufei finished drinking soup.	Hufei he-wan-le tang. Hufei drink-finish-PERF soup 'Hufei finished drinking (the) soup.'
b.	She went to buy books.	Ta qu-le mai shu. She go-PERF buy book 'She went to buy a book/(the) books'

⁶ Lyons (1999) analyzes the indefinite article *a* as a cardinality expression. I do not make such an assumption. On that basis, I argue that there is no Chinese equivalent to the English nominal *A boy*. As Lyons points out, that the semantic differences of *a* and *one* are very subtle. For example, *one* means 'the numeral *one* as opposed to *two*, *three*, etc.' and *a* means 'not more than one'.

Lyons (1999: 179) notes that across languages generic meaning is always expressed by noun phrase types which can be non-generic in meaning, indicating that there is no syntactic operation or morphological marking available in the grammar which is specifically used for expressing genericity. English uses pluralization (6a), definite plural (6b), and singular (6c) markings to express genericity. This is in stark contrast to the Chinese examples in (6), in which generics are only expressed with bare nouns. Example (6c) is also ruled out because genericity cannot be expressed using indefinite marking in Chinese.

(6)

a.	Mayans wouldn't eat aliens.	Maya ren bu hui chi waixingren Maya person NEG will eat aliens 'Mayans wouldn't eat aliens' 'The Mayans wouldn't eat aliens.'
b.	The Mayans wouldn't eat aliens.	Maya ren bu hui chi waixingren Maya person NEG will eat aliens 'Mayans wouldn't eat aliens' 'The Mayans wouldn't eat aliens.'
c.	A Mayan wouldn't eat aliens.	*yi ge maya ren bu hui chi one CL Maya person NEG will eat waixingren aliens 'A Mayan would not eat aliens'

As the data above shows, Mandarin does not have an overt determiner and an English phrase like *the boy*, where *the* is [+definite, -deictic], is translated into Chinese using a [+definite, +deictic] demonstrative, as in (2d). However, bare nouns in Chinese are interpreted as necessarily definite when occupying the clausal subject position and sometimes definite in the post-verbal position. In English a definite determiner or a demonstrative is required to express definiteness. The data in (4) and (5) seem to suggest that perhaps a phonetically null D is present in the Chinese data when the bare nominal is a definite expression.

Inspired by the works of Szabolcsi (1983), Abney (1987) and Longobardi (1994), many Chinese syntacticians (Li 1998) assume that D exists even in Chinese in part because of the assumption that D turns a nominal predicate into an argument. Chierchia (1998) has an alternative view. He proposes that Chinese nominals are mass nouns with kind interpretations, which are argument-ready as NP. Cheng and Sybesma (1999) argue that the count/mass distinction is encoded in Chinese classifiers. They claim that Chinese nouns can be classified into two main groups: count mass nouns and mass mass nouns. A count classifier selects a count mass noun, as in (7), and a mass classifier selects a mass mass noun, as in (8).

(7) liang zhi yazi
 Two CL duck
 ‘two ducks’

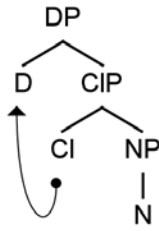
(8) liang tong shui
 Two CL:bucket water
 ‘two buckets of water’

One major difference between Cantonese and Mandarin is that classifiers in Cantonese can appear at the beginning of a nominal argument to convey definiteness. This use of the classifier parallels the definite article in English, as both are [+definite, -deictic]. Based on data from Cantonese, Cheng and Sybesma also argue that classifiers in both Mandarin and Cantonese can perform the function of D, even though (9) is not possible in Mandarin.

(9) Zek maau zungji sek jyu
 CL cat like eat fish
 ‘The cat likes to eat fish.’

Simpson (2005) takes (9) as evidence that in Cantonese classifiers undergo Cl-to-D movement. Wu and Bodomo (2009) offer the same movement analysis for Cantonese classifiers and also argue that demonstratives occupy the D position in Chinese.

(10)



Finally, Simpson (2001, 2003) follows Kayne (1994)⁷ in his analysis of relative clauses and argues that the marker DE for modifying constituents in Chinese is a D head.

(11) Mandarin

- a. qu meiguo de nei ge ren
 go U.S.A DE DEM CL person
 ‘The person who went to the United States’
- b. [D' de [XP nei-ge [CP [NP ren]_i [IP t_i qu meiguo]]]]
- c. [DP [IP t_i qu meiguo]_k [D' de [XP nei-ge [CP [NP ren]_i t_k]]]]

However, Simpson’s controversial analysis has faced criticism (see Tang 2007) as his historical basis for positing DE as D is inaccurate (Aldridge 2009, 2017) and it also faces empirical problems as modifying constituents with DE can also appear fairly low in the structure (Yip 2009).

3. The DP Hypothesis

One of the core goals of generative syntax is to identify what is shared by languages underlyingly, despite surface variations. In other words, my goal is to find out whether some structures are universal across languages. The rise of the D(eterminer)P Hypothesis (Brame 1982, Szabolsci 1983, Abney 1987) in the 80’s changed the way syntacticians analyze nominal phrases

⁷ Kayne’s promotion analysis involves a complementation structure. In Kayne(1994), D selects a CP as its complement and the NP within the CP raises to [spec, CP]:

(i) [_{DP} D[_{CP} NP_i[C [IP...t_i...]]]]

and led to the more contentious Universal DP Hypothesis (Progovac 1998), which claims that all languages, including article-less languages have a DP layer.

Abney's (1987) influential work on gerundive constructions in English is among the first kind of evidence in support of the DP hypothesis. While Poss-ing gerundive constructions have the appearance of sentences, they also pattern with noun phrases syntactically⁸. In (12)-(14), the (a) sentences are out because the sentences are clauses and not noun phrases.

Subject-aux inversion:

- (12) a. *Did [that John built a spaceship] upset you?
b. Did [John] upset you?
c. Did [John's building a spaceship] upset you? (Abney 1987:15)

Subject of embedded clause:

- (13) a. *I wondered if [that John built a spaceship] had upset you.
b. I wondered if [John] had upset you.
c. I wondered if [John's building a spaceship] had upset you. (Abney 1987:15)

Object of preposition:

- (14) a. *I told you about [that John built a spaceship]
b. I told you about [John]
c. I told you about [John's building a spaceship] (Abney 1987:15)

Moreover, Abney argues that the possessor in a NP can be thought of as the "subject" of the NP that receives genitive case. It is therefore not a coincidence that the possessor of the gerundive also receives genitive case, and not nominative case as one would expect for the subject of a clause.

- (15) a. [John] destroyed the spaceship.
b. [John's] destruction of the spaceship
c. [John's] destroying the spaceship (Abney 1987:15)

⁸ These observations have also been made in Lees (1960) and Chomsky (1970). Lees tries to derive nominals transformationally from sentences, while Chomsky offers a non-transformational account.

Poss-ing gerundive constructions are also different from nouns derived from verbs in a variety of syntactic environments.

Case assignment to object

- (16) a. *John's destruction the spaceship
b. John destroyed the spaceship.
c. John's destroying the spaceship (Abney 1987:16)

Raising

- (17) a. *John's appearance to be dead.
b. John appeared to be dead.
c. John's appearing to be dead. (Abney 1987:16)

ECM (Raising to object)

- (18) a. *John's belief Bill to be a cat.
b. John believed Bill to be a cat.
c. John's believing Bill to be a cat. (Abney 1987:16)

Double Objects:

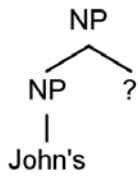
- (19) a. *John's gift/rental (of) Mary (of) a flat.
b. John gave/rented Mary a flat.
c. John's giving/renting Mary a flat. (Abney 1987:16)

Particle shift:

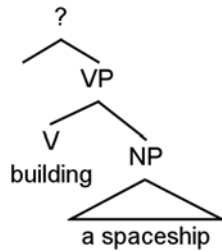
- (20) a. *John's explanation (away) of the problem (away)
b. John explained (away) the problem (away)
c. John's explaining (away) the problem (away) (Abney 1987:16)

The above data clearly shows us what the problem is. In examples (12)-(15), we are led to believe that the gerundive is a NP, but (16)-(20) shows that the V-ing part of the gerundive structure clearly behaves more like a verb as they differ from derived nouns in their syntactic behaviors. It appears that the top part of the gerundive construction is a NP and the V-ing portion is a VP, as shown in (21a-b).

(21) a.

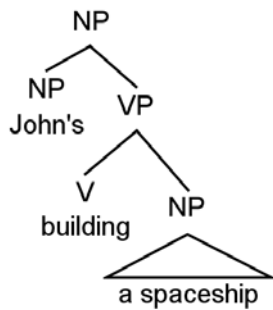


b.



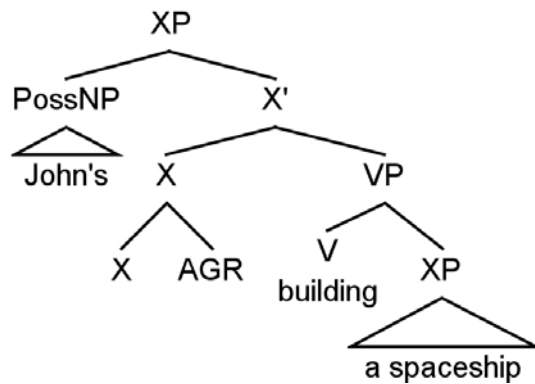
However, combining (21a) with (21b) gives us a problematic structure in which the maximal projection NP is not projected by any head.

(22)



However, Abney argues that this problem will be solved if there is a maximal XP in which the possessor *John's* can serve as the specifier and the VP *building a spaceship* can serve as the complement.

(23)



Abney observed that in many languages, agreement within the nominal domain and agreement

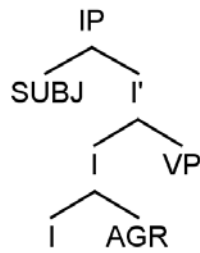
within the clausal domain are strikingly similar. (24) is an example from Yup'ik, a Central Alaskan Eskimo language:

- (24) Yup'ik
- a. Angute-m kiputa-a-Ø
man-ERG buy-OM-SM (SM = 'subject agreement marker';
'the man bought it' OM = 'object agreement marker')
 - b. Angute-t kiputa-a-t
'The men (pl.) bought it'
 - c. Angute-k kiputa-a-k
'The men (du.) bought it'
 - d. Angute-m kuiga-Ø
man-ERG river-SM
'The man's river'
 - e. Angute-t kuiga-t
'The men's (pl.) river'
 - f. Angute-k kuiga-k
'The men's (du.) river.'
- [=(24) in Abney 1987:42]

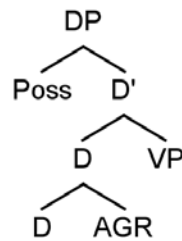
(24b-c) shows that the subject agreement marker, -t suffix, and -k suffix agree with the subject.

(25d) shows that the subject of noun phrases take ergative case, the case of subjects of transitive verbs, as shown in (24a). (24 e-f) show that the same corresponding suffix agreeing with the possessor is also attached to the head noun. The similarities in agreement illustrated in (24) show that the functional category in the nominal domain functions quite similarly to INFL in the clausal domain. However, Abney rejects the possibility that this projection is an INFL because the distinction between a sentence and a nominal phrase will not be preserved if that is the case. Since modals form the lexical class of INFL, Abney argues that the NP equivalent of modal is the determiner. He proposes that D is the INFL element of the nominal phrase, and DP is the maximal projection in a nominal phrase.

(25) a.



b.



Abney's proposal gains support from Szabolcsi (1987), who reports that Hungarian nouns agree with their possessors. Szabolcsi proposes that there are two types of INFL. Nominal INFL is specified for [+/- Poss] whereas verbal INFL is specified for [+/-] tense.

(26) a. az en kalap-om
the I:NOMhat-1sg
"my hat"

b. a te kalap-od
the you:NOM hat-2sg
"your hat"

c. a Peter kalap-ja
the Peter:NOM hat-3sg
"Peter's hat"

Interestingly, possessors in Hungarian carry nominative case. Szabolcsi claims that the nominative case is assigned by nominal INFL. This is not surprising in the Government and Binding framework because INFL in the clausal domain is assumed to be a nominative case assigner. Szabolcsi's nominal INFL is equivalent to Abney's D.

3.1 D as a subordinator

Szabolcsi (1987, 1994) argues that there are two types of Ds. The first type, labelled "D", heads the highest projection of a nominal phrase and has a subordinating function that turns NP predicates into arguments. The second type, labelled "DET", includes quantifiers and demonstratives. Her work shows that D in the nominal domain is analogous to C in the clausal

domain. She proposes that there exists a parallelism between CP/DP and that both C and D are subordinators. Szabolcsi (1994:214) writes that:

- (27) (i) only phrases in the canonical argument format can function as arguments of theta-role assigning heads;
 (ii) both the complementizer and the article are subordinators in the sense that they enable the clause or noun phrase to act as arguments.

Regarding the first point in (27), Szabolcsi argues that noun phrases, embedded finite clauses and infinitival clauses are categories that receive thematic roles and can act as arguments. She claims that there is a complementizer, which may be phonetically overt or null, in embedded finite clauses and infinitival clauses. However, matrix clauses in English never act as arguments and they must not have the complementizer *that* or *for*.

- (28) a. I know [_{CP} (that) he will come.]
 b. [_{CP} That he will come.] (Coene and D’hulst 2003)

It is claimed in Szabolcsi that vocatives are the nominal equivalent of matrix clauses. In German and Hungarian, names of persons appear with an article. However, in vocative constructions, the article is always disallowed.

- (29) a. Der Peter kommt.
 the Peter comes
 ‘Peter is coming.’
 b. Jön a Péter.
 Comes the Peter
 ‘Peter is coming.’
 c. *Der Peter, komm!
 the Peter come
 ‘Peter, come!’
 d. Peter, komm!
 Peter come
 ‘Peter, come!’ (Szabolcsi 1994:32)

Szabolcsi takes this as evidence for the subordinating function of D and DP/CP parallelism.

3.2. Reference to Individuals⁹

Longobardi (1994) examines argument bare nouns in Romance and Germanic languages. He takes Szabolcsi's (1987, 1994) position that D has the function of turning predicates into arguments. But he takes this a step further and argues that D is the locus of reference to individuals through a chain/CHAIN formation, which can be satisfied either by (i) covert or overt head movement of N-to-D (=chain), (ii) or base-generating in D an expletive article which is coindexed with N (=CHAIN).

In Romance languages, the R(eferential) feature in D is strong and therefore chain/CHAIN must be overt, either by overt head movement or a co-indexed expletive determiner. Evidence of this comes from the placement of adjectives with proper nouns in Italian. In Italian, possessive and non-possessive adjectives generally come before N, as exemplified in (30). Example (30a) shows an expletive article appearing with a proper noun, forming the chain $[D_i \text{ Adj } N_i]$, with the adjective placed in between. In (30b), N-to-D movement has taken place and the N moves over the adjective, which is why the adjective follows the noun. In (30c), it shows that no N-to-D movement has taken place. Since Italian is a strong D language and N-to-D movement cannot happen covertly at LF, the derivation crashes.

- (30) a. L'antica Roma
the ancient Rome
'Ancient Rome'
b. Roma antica
Rome Ancient
c. *antica Roma
ancient Rome

(Longobardi 1994)

D has a weak [R] feature in English. Longobardi, based on the economy principle,

⁹ The presentation of this sub-section benefitted greatly from Dayal's (2011) and Jiang (2012) clear summaries of Longobardi's complex proposal.

proposed that formation of chain/CHAIN must be avoided except as a last resort operation. We therefore see that any attempt to insert an expletive article (31a) or apply overt N-to-D movement causes the derivation to crash. In (31c), covert N-to-D movement happens at LF. The derivation converges.

- (31) a. *The ancient Rome
b. *Rome Ancient
c. Ancient Rome (Longobardi 1994, as summarized in Jiang 2012)

Longobardi assumes that there are two Ds: the definite D which is spelled out as the definite article and the empty D which contains an existential operator. In Italian, the definite D is the D that forces chain/CHAIN formation (i.e. N-to-D movement of proper nouns and the insertion of an expletive article). CHAIN is still required for common nouns with a kind and/or definite interpretation. In fact, it is assumed that the kind reading can only be established by an overt CHAIN. For common nouns the formation of a CHAIN can only be satisfied by using an expletive article, as it is claimed that N-to-D movement is not possible for nouns that are not inherently referential. D_{\emptyset} , which is an empty D with an existential operator, does not force CHAIN formation. Therefore, bare plurals appear in the base order of Adj-N without N-to-D movement.

Let us look at how this works in Italian, a strong D language where CHAIN must be formed in narrow syntax. In (32a), the insertion of the definite article and its being coindexed with the noun form a CHAIN. It can therefore receive definite and kind interpretations. In (32b), N-to-D movement is barred because the moving N is a common noun and is not inherently referential. In (32c), the D head is the empty D hosting an existential operator; this guarantees an existential (but not kind) interpretation. However, Longobardi (1994) assumes the Empty

Category Principle (ECP), which requires that empty heads be lexically governed. In other words, bare plurals in Italian can only appear in postverbal position.

(32) Meaning of chain formation and licensing of empty D in **narrow syntax** (Italian)

- a. I grandi cani a'. [DP[D_{def} L_i [AP grandi [NP cani_i]]]]
 The big dogs *definite, kind*
- b. *cani grandi b'. *[DP[D cani_i [AP grandi [NP t_i]]]]
 dogs big
- c. grandi cani c'. [DP[D_∅ ∃ [AP grandi [NP cani_i]]]]
 big dogs *existential only, *kind*
 (adapted from Jiang 2012:35)

As for English, a weak D language, CHAIN formation can wait until LF given the economy principle. In (33a), although insertion of the definite article happens in narrow syntax, it is not until LF that it is linked to the common noun. As kind interpretation is only established by an overt CHAIN, this delay to LF means that (33a) only has a definite reading. In (33b), N-to-D movement is barred from happening overtly in a weak D language. The derivation crashes. For (33c), Longobardi points out that English bare plurals can occur both pre-verbally and post-verbally. This means that bare plurals in English are licensed differently. He adopts Diesing's Mapping Hypothesis in (34) to claim that English bare plurals (=indefinites) can receive different interpretations depending on their syntactic position. The hypothesis predicts that bare plurals from within VP will be mapped into the nuclear scope and receive an existential reading, whereas bare plurals outside of VP will be mapped into the restrictor and receive a generic reading.

- (33) Meaning of chain formation and licensing of empty D at LF (English)
- | | | | |
|----|--------------|-----|--|
| a. | The big dogs | a'. | $[\text{DP}[\text{D}_{\text{def}} \text{the}_i [\text{AP} \text{big} [\text{NP} \text{dogs}_i]]]]$ |
| | | | <i>definite, *kind</i> |
| b. | *dogs big | b'. | $*[\text{DP}[\text{D} \text{dogs}_i [\text{AP} \text{big} [\text{NP} \text{t}_i]]]]$ |
| c. | big dogs | c'. | $[\text{DP}[\text{D}_{\emptyset} \exists [\text{AP} \text{big} [\text{NP} \text{dogs}]]]]$ |
| | | | <i>kind/existential</i> |
- (adapted from Jiang 2012:35)

- (34) Diesing's (1992:10) Mapping Hypothesis
- (i) Material from VP is mapped into the nuclear scope (=existential)
 - (ii) Material from IP is mapped into a restrictive clause (=generic)

To summarize this sub-section, Abney, Szabolcsi and Longobardi all propose that the DP layer is responsible for the following two functions, aptly characterized by Sio (2006):

- (35) (i) The deictic function: to anchor an entity to the discourse, similar to the function of T, which anchors an event to the time axis (Abney 1987, Longobardi 1994);
- (ii) The subordinator function: to turn a noun phrase into an argument, similar to the clause-typing function of the complementizer (Longobardi 1994, Szabolcsi 1994).

3.3 *The universality of DP*

As shown above, early works on the DP Hypothesis mainly center on Romance languages, Hungarian, and English. However, it is unclear how the DP Hypothesis can be supported with evidence for languages without overt articles. Proponents of the DP Hypothesis are generally split into two camps. One camp subscribes to the Parameterized DP Hypothesis (Bošković 2005, Chierchia 1998) which claims that only languages with overt definite determiners project a DP layer. The other camp subscribes to the Universal DP Hypothesis (Progovac 1998, Pereltsvaig 2007), which claims that argument nominals in all languages project a DP layer. We will present the arguments for both.

3.3.1 *Parameterized DP Hypothesis*

The Parameterized DP Hypothesis assumes that argument nominals can be DPs or NPs depending on parameter setting. I will present two accounts: Chierchia (1998) and Bošković (2005) here.

Chierchia (1998) approaches the DP/NP problem from a semantic perspective¹⁰. He proposes the Nominal Mapping Parameter, which claims that there exist three types of languages which have different parameter settings ([+/-predicate, +/-argument]) for nouns. French and Italian nominals are [-arg, +pred]. Being predicative, they need D to turn them into arguments. Slavic and Germanic languages are [+pred, +arg]. Count nouns are predicative (<e,t>) and mass nouns are argumental (<e>). Therefore, Germanic and Slavic¹¹ languages must project a DP layer for count nouns (e.g. the car, the s) but mass nouns are argument-ready as NPs. Bare plurals in English receive a kind interpretation like mass nouns and they undergo covert typeshifting¹². Finally, Chinese and Japanese [+arg, -pred] languages. In these languages, all argument nominals are NP¹³ as they are already argumental (i.e. they do not need D). They are inherently mass as they come from the lexicon already pluralized, and therefore they receive a kind interpretation.

Bošković (2005) offers a phase-based account of the phenomenon commonly referred to as the “Left Branch Condition” (Ross 1967, Uriagereka 1988, Corver 1992). He links the possibility of Left Branch Extraction (LBE) to the absence of a DP layer. The Left Branch Condition is Ross’s (1967) observation that determiners, possessors and adjectives cannot be extracted out of a nominal phrase in many languages.

¹⁰ See also Krifka (1995) and Dayal (2004).

¹¹ Although Slavic languages do not have overt D, it is assumed in Chierchia that they still need to project a null DP.

¹² Chierchia also proposes a Blocking Principle which claims that overt D will block type-shifting. This is why bare plurals cannot be DPs and have a kind interpretation.

¹³ See Julie Li Jiang (2007) for a similar discussion of Mandarin.

- (36) a. *Whose_i did you see [t_i father]?
 b. *Which_i did you buy [t_i car]?
 c. That_i he saw [t_i car].
 d. Beautiful_i he saw [t_i houses].
 e. How much_i did she earn [t_i money]? (=1 in Bošković 2005)

However, there also exist languages like Serbo-Croatian, which allow LBE.

- (37) a. Čijeg_i si video [t_i oca]?
 Whose are seen father
 ‘Whose father did you see?’
 b. Kakva_i si kupio [t_i kola]?
 What-kind-of are bought car
 ‘What kind of a car did you buy?’
 c. Ta_i je vidio [t_i kola].
 That is seen car
 ‘That car, he saw.’
 d. Lijepe_i je vidio [t_i kuće].
 Beautiful is seen houses
 ‘Beautiful houses, he saw.’
 e. Koliko_i je zaradila [t_i novca].
 How-much is earned money
 ‘How much money did she earn?’ (=2 in Bošković 2005)

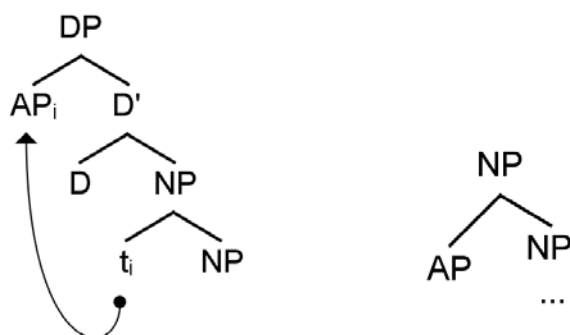
Bošković accounts for the difference using Phase Theory (Chomsky 2000, 2001, 2004, 2008). Chomsky argues that syntactic derivations are spelled out and transferred in incremental chunks (‘phases’) to the interfaces for interpretation. Only the complement is transferred at the end of each phase. The phase edge remains accessible. Movement of a constituent out of a phase is only possible if the constituents move to the phase edge, i.e. the specifier. Another important component of the Phase theory is the Phase Impenetrability Condition (PIC):

- (38) Phase Impenetrability Condition (Chomsky 2000:108)
 In phase α with head H, the domain of H is not accessible to operations outside α , only H and its edge are accessible to such operations.
- (39) [**HP** **XP** [**H** **H⁰** **YP**]] (bolded = phase edge, shaded = complement)

Under the PIC, the complement YP will be shipped to the interface and therefore is not accessible to operations outside of HP. XP, however, will remain accessible because it is at the phase edge. In Chomsky (2000), v and C are said to be phase heads, but the claim that DP is a phase is also gaining traction (Bošković 2002, Svenonius 2004, Giusti 2006, Matushansky 2005, Citko 2014, Saurov 2017, and others).

Bošković (2005), following Wurmbrand and Bobaljik (2003)'s proposal that structural environment can determine whether a phrase is a phase, argues that NP can be a phase for languages without a definite article. Assuming that APs are adjoined to NP, (40) shows the structures for English and Serbo-Croatian.

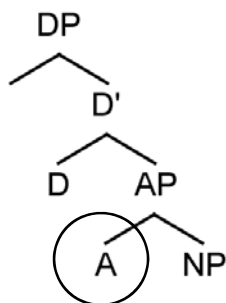
(40) a. English b. Serbo-Croatian



Bošković also assumes Anti-locality (Abels 2003, Grohmann 2000), which says that movement cannot be too local. In (40a), if AP needs to undergo LBE, it needs to first move to the phase edge [spec, DP] because NP will be inaccessible once spell-out takes place. However, this movement is blocked by anti-locality as one segment of NP (the complement of D) is trying to move to the [spec, DP]. This movement is considered too local and therefore LBE is not possible in English. However, in (40b), AP is already at the phase edge and is accessible for movement operations outside of the DP.

This is, however, not the complete story. Another possible reason that LBE is ungrammatical in English may be because AP is NOT an adjunct. Since Abney (1987), there have been two main approaches to AP in the literature. Abney suggests the AP-over-NP analysis for English, which means that A takes NP as its complement. Bošković argues that Serbo-Croatian takes the NP-over-AP option, which means that AP is contained within the NP. Bošković contends that AP-over-NP is linked to the presence of D, and NP-over-AP is linked to the absence of D. Additional evidence for this assumption is that languages without D (like Serbo-Croatian) usually do not have ordering restrictions among adjectives like English, which means that adjectives in those languages are APs adjoined to NPs and not in different functional projections reserved for different adjective types (see Cinque 1994 and Scott 2002). If A takes NP as a complement in English, then the unavailability of LBE could be due to the fact that A is a part of the AP constituent but it does not exhaustively constitute that constituent, as shown in (41). Furthermore, [spec, DP] must host a phrasal element, which A is not.

(41)



Therefore, both the PIC and the constituency of AP will rule out LBE in languages with D but allow it in article-less languages.

3.3.2 Universal DP Hypothesis

We now look at arguments for the Universal DP Hypothesis, which is the position I will take for this work. The Universal DP Hypothesis claims that all languages, regardless of whether they have overt determiners, project a DP layer. I will present Progovac (1998) and Pereltsvaig (2007) here.

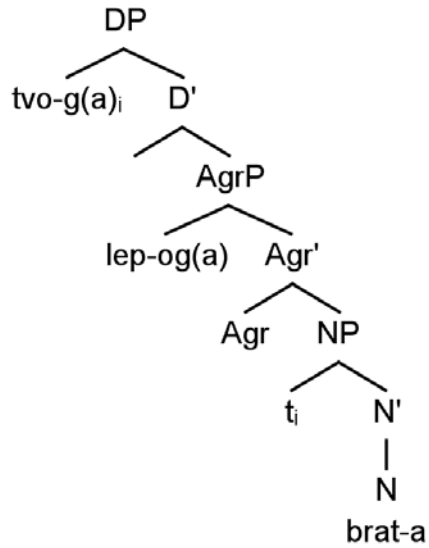
Progovac (1998) argues that in a language like Serbo-Croatian (SC), where there are no articles, DP is still projected. Evidence for this comes from pronouns. Adjectives like *samu* ‘alone’ precede nouns in SC but uniformly follow pronouns. Since pronouns move from N-to-D (Cardinaletti 1993), the fact that adjectives follow pronouns indicates that there is indeed N-to-D movement.

- (42) a. I samu Mariju to nervira
And alone Mary that irritates
‘That irritates even Mary.’
b. ?*I Mariju samu to nervira.
c. ?*I samu nju/mene to nervira
and alone her/me that irritates
‘That irritates even her/me.’
d. I nju/mene samu to nervira. (Progovac 1998)

However, an alternative explanation would be to say that in (42) pronouns are base-generated in D (Postal 1969, Longobardi 1994), instead of moving there from N. Progovac argues that evidence for N-to-D movement can be found in the overt morphology. Pronouns, like adjectives, show more overt functional morphology than nouns. Nominal agreement on adjectives is determined by spec/head agreement at AgrP. SC adjectives agree with nouns in gender, number, and case. Case markers on adjectives and nouns do not co-occur all the time. In (43), the agreement morphology on the adjective is richer as it contains the case marker –g, which is absent in the N.

(43) tv-o-g(a) lep-o-g(a) brat-a
 Your-ACC/GEN-MASC-SG handsome-ACC/GEN-MASC-SG brother-MASC-SG
 ‘Your handsome brother’

(44) Adjective

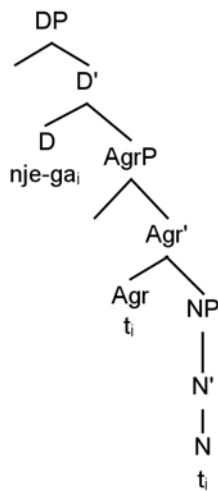


(=37 in Progovac 1998)

However, it is this richer agreement morphology that pronouns always take on, as shown in (45-46).

(45) nje -g -a
 3SG -ACC/GEN -MASC/SG
 ‘him’

(46) Pronoun ‘him’



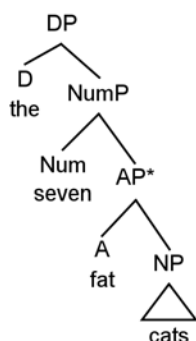
(=38 in Progovac 1998)

The fact that pronouns pick up the same morphology as adjectives suggests that they move through all the extended projections in the DP (including AGR) on the way to D. In (44), we see that Ns do not carry the case marker but the adjective *lep-o-g(a)* ‘handsome’ agrees with the N in case, gender, and number. Tree (45) shows that the pronoun *nje-g-a* ‘him’ picks up the same morphology, indicating that they move through all the functional projections on the way to DP.

Progovac argues that since SC has no N-to-D movement and no articles, pronouns constitute the only evidence for D in this language. However, pronouns are also rarely modified by adjectives in SC, so it is highly unlikely that there is enough input for the contrast between noun and pronoun to be acquirable by SC children. This must lead to the conclusion that D is universally projected in all languages and it need not be learned.

Moving on to Pereltsvaig (2007), she notes that while the Universal DP Hypothesis and Parameterized DP hypothesis make the same predictions about the structures of nominals in languages with overt articles, they do not agree when it comes to the structure of nominals in article-less languages. Both hypotheses agree that (46) is the structure for an English DP.

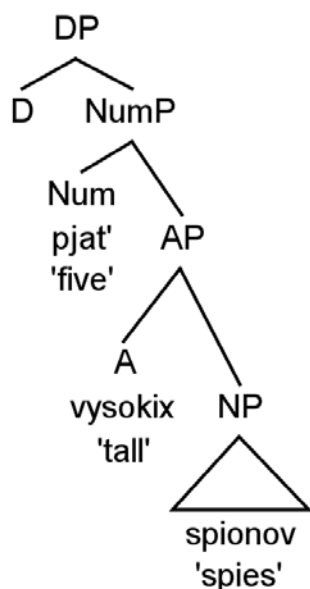
(46)



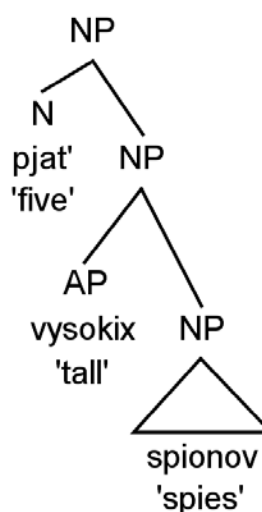
However, a null D will be posited for Russian by proponents of the Universal DP Hypothesis, as in (47a). Proponents of the Parameterized DP Hypothesis will argue that there are

no functional elements above NP, and numerals and adjectives are simply adjoined to NP (see Bošković 2005), as in (47b)¹⁴. Pereltsvaig argues against the adjunction structure and proposes that the Universal DP Hypothesis can account for the Russian data better.

(47) a.



b.



(Pereltsvaig 2007)

Pereltsvaig sets out to rebuke a few of Bošković's (2005) main claims. First, Bošković (2005:6) assumes a freer ordering of adjectives in Russian, and his idea that APs are adjoined to N means that there is not a mechanism in the syntax to constrain the order of adjectives. Pereltsvaig surveyed 34 Russian speakers and 26 English speakers. Each speaker was given 30 pairs of adjectives followed by a noun they can modify. The adjectives were chosen from the first frequency tier, and the matching of the adjectives are based on Scott's (2002:102) hierarchy of adjective types. Some items have two adjectives that are on opposite ends of the hierarchy, and some items have

¹⁴ In (32b), the numeral is a N possibly because they are treated as adjectives in Bošković (2005). Perhaps Pereltsvaig (2007) labelled it as a N because she treats it as a nominal modifier.

adjectives that are closer to each other on the hierarchy. The Russian items were translated into English for the English informants, and the English speakers judged the translated sentences. The findings show that the Russians did not accept more alternative orders than the English speakers. Whenever both the Russian and the English informants gave answers that did not agree with Scott’s hierarchy, it was because the two adjective types are too close to each other on the hierarchy. In other words, it is not true that the relative order of adjectives in Russian is free.

Second, Pereltsvaig shows that in Russian light and heavy modifiers also show different syntactic behaviors. Light modifiers, which are heads, block head movement. Heavy modifiers are in [spec, AP] and they do not block head movement. Approximative inversion¹⁵ in Russian has been argued to be a head movement phenomenon (Pereltsvaig 2006a, 2006b). In (48b-d), approximative inversion is blocked by the light modifier *izvestnyx* ‘well-known’ because it is a head. Movement of the N *specialistov* ‘specialist’ across the light modifier violates the Head Movement Constraint.

- (48) a. specialistov_i desjat’ t_i (po russkomu sintaksisu)
 specialists ten in Russian syntax
 ‘approximately ten specialists in Russian syntax’
- b. *specialistov_i desjat’ izvestnyx t_i (po russkomu sintaksisu)
 specialists ten well-known in Russian syntax
 ‘approximately ten well-known specialists in Russian syntax’
- c. *izvestnyx specialistov desjat’ (po russkomu sintaksisu)
 well-known specialists ten in Russian syntax
 ‘approximately ten well-known specialists in Russian syntax’
- d. *specialistov izvestnyx desjat’ (po russkomu sintaksisu)
 specialists well-known ten in Russian syntax
 ‘approximately ten well-known specialists in Russian syntax’
 (=7 in Pereltsvaig 2007)

¹⁵ Approximative Inversion reverses the order between a cardinal number and a noun. Such an inversion creates the semantic meaning of “approximately X number of N.” See Pereltsvaig 2006 for more.

Heavy modifiers cannot block approximate inversion. This is because they are in [spec, AP]. They are not heads and therefore the Head Movement Constraint does not apply.

- (49) specialistov_i desjat' [_{AP} dovol'nyx svoimi vystuplenijami] (t_i)
 specialists ten satisfied self's_{.INSTR} talks_{.INSTR}
 'approximately ten specialists satisfied with their talks' (= 8a in Pereltsvaig 2007)

The adjunction structure assumed by proponents of the Parameterized DP Hypothesis does not predict a distinction between the two types of modifiers.

Pereltsvaig goes on to argue that demonstratives and pronominal possessives also are not adjectival. They both need distinct functional categories above NP. Trenkic (2004) and Bošković (2005) both treat demonstratives and pronominal possessives as adjectives based on the following grounds:

- (i) exhibit adjectival morphology;
- (ii) can stack up and exhibit a free relative order;
- (iii) can appear in typical adjectival syntactic environments, such as the predicate position in copula constructions, and
- (iv) cannot be modified by another adjective or possessor. (Pereltsvaig 2007)

I refer the reader to Pereltsvaig (2007) to read more about her rebuttal of each of these four claims. I will instead focus on what I think is the strongest argument against Bošković (2005) – Double Adj Left Branch Extraction. Bošković argues that LBE is impossible when there are two adjectives. For example, he marked (50) as ungrammatical.

- (50) *Simpatičnye emu nravjatsja t_i vysokie student.
 Good-looking he.DAT please tall students
 'He likes good-looking tall students.' (Bošković 2005, as cited in Pereltsvaig 2007)

However, Pereltsvaig argues that the sentence can be made grammatical if *Simpatičnye* ‘good-looking’ is contrastively focused and given the right intonational contour. In fact, it is even possible to move the lower adjective over the higher adjective.

- (51) Francuzskij_i my posmotreli **izumit’nyj** t_i fil’m
 French we saw wonderful film
 (a amerikanski - otvratitel’nyj!)
 and American terrible
 ‘As for French films, we saw a wonderful one (and as for American, a terrible one.)’

However, demonstratives and pronominal possessives both block Adj-LBE, as shown in (52) and

(53). This shows that demonstrative and pronominal possessives do not behave like adjectives.

- (52) *Francuzskij_i my posmotreli **ètot** t_i fil’m
 French we saw this film
 ‘As for French films, we saw this one.’

- (53) *Mexovye_i v ètom škafu byli tol’ko devčaćji t_i šapki.
 fur.ADJ in this closet were only girl’s hats
 ‘As for fur hats, there were only {a/the} girl’s hats in this closet.’

3.4 Conclusion

In this section, I summarized some of the previous works on the DP Hypothesis. Abney (1987), Szabolcsi (1987) both assume the subordinating function of D (i.e. turning a predicate into an argument) and a parallelism between clauses and nominals. Longobardi (1994) further assumes that D carries the deictic function. While most generative syntacticians agree that the DP layer exists, not everyone agrees that languages without overt articles should project a DP. The Universal DP Hypothesis assumes that all languages have overt or covert D and there is an extended structure within the DP. The Parameterized DP Hypothesis assumes that DPs only exist in languages with D; and if a language does not have D, then NPs can function as arguments. The Parameterized DP Hypothesis also does not assume extra functional layers above the NP.

4. Overview of the dissertation

4.1 *The goal of this work*

This work aims to fill in the gaps by arguing that there exist extended functional projections above the NP (i.e. evidence for the Universal DP Hypothesis) and that information structure can be found at the left edge of nominal arguments (evidence for DP). I will briefly sketch the proposal in the overview of the chapters below. The central idea is that unpronounced structures can be detected by observing the effects they have on surrounding elements.

4.2 *Chapter overviews*

Chapter 2 presents previous works on the structure of Chinese nominal phrases. A Chinese nominal phrase usually appears in the form of D-Num(eral)-Cl(assifier)-N, as shown in (54):

- (54) a. na yi ben shu
 Dem one CL book
 ‘That one book’
 b. [_{DP} na [_D’ [_{NumP} yi [_{CLP} ben [_{NP} shu]]]]]

While the idea that categories Num and CL head their own projections is rather uncontroversial (Tang 1990, Cheng and Sybesma 1999, Simpson 2005, among others) in the literature on Chinese DP, scholars disagree on whether there is a D in Chinese. In this chapter, I offer new evidence against Cheng and Sybesma’s claim that Cl assumes the role of D in Chinese. The first set of evidence comes from true measures, a class of classifiers that have not been looked into in the literature. True measures like *gongjin* ‘kilometer’ or *limi* ‘centimeters’ must be preceded by numerals and can never be definite in part because they do not individuate. Cheng and Sybesma (1999) assumes that all classifiers occupy the Cl head position and express

definiteness. True measures constitute a set of classifiers that C&S's analysis cannot account for.

The second set of evidence comes from reduplicative classifiers. It is also shown that classifier reduplication in the nominal domain makes use of different functional layers (namely Cl, Num) above NP to create different meanings (plural and universal quantification). In Chinese, several kinds of reduplication can be found in the DP to express different grammatical meanings.

Plural reduplication

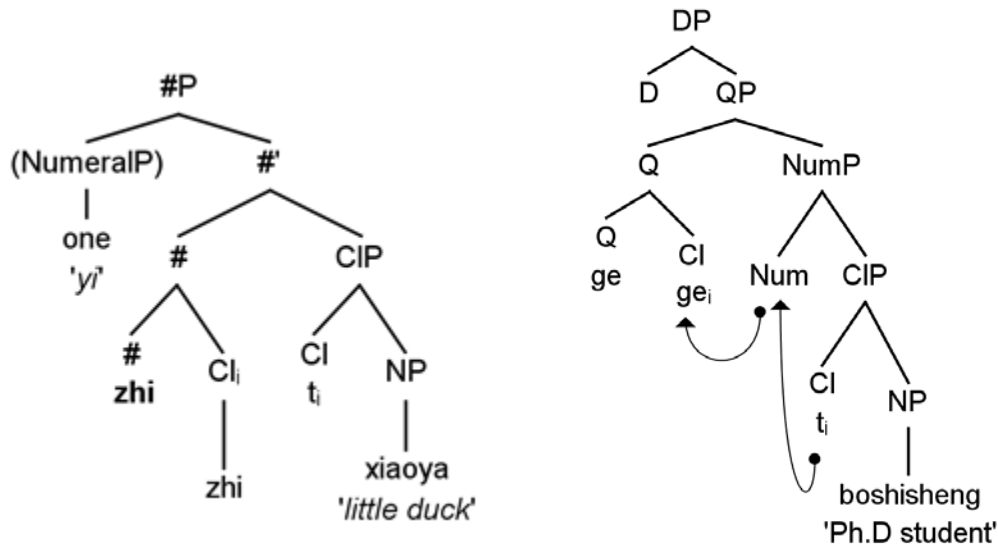
- (55) CL-CL
Tian-shang piao-zhe duo-duo yun.
sky-on float-PROG CL-CL cloud
'Many clouds are floating in the sky.'
(Ulrike 2010:71)

Every/each reduplication

- (56) CL-CL
ji zhi-zhi dou hen fei.
chicken CL-CL DOU DEG fat
'Every one of those chickens is fat.'

I argue that plural reduplication and "each/every" reduplication are both examples of phonological reduplication. Plural reduplication happens at the NUM head by moving CL and adjoining it to Num head. "Each/Every" reduplication happens at Q by moving CL and adjoining it to the Q head.

- (57) a. Plural reduplication b. Each/every reduplication



I argue that reduplication within DP makes use of different functional projections above the NP to create different meanings. This provides further evidence for the existence of NUM, CL, and D heads and supports the Universal DP Hypothesis, which predicts extended functional projections between DP and NP.

Chapter 3 sets the stage for Chapter 4 by proposing that Chinese DPs have topic and focus projections in the DP left periphery, as proposed for other languages by Bernstein (1997, 2001), Aboh (2004), and Haegeman (2004). I first focus on the NP-Num-CL.

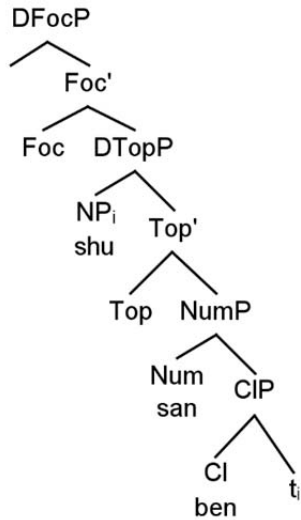
- (58) ta mai-le [bi shi zhi].
 He buy-ASP pen ten CL
 'He bought ten pens.'

I follow Simpson (2005) and Lin (2008) in claiming that the non-canonical NP-Num-CL order is derived by movement of NP to the left periphery. Lin shows that moving the NP to the left periphery allows further movement of this constituent to the clausal left periphery. The findings further corroborate similar claims made by Szabolsci (1994) for Hungarian and Ntelitheos (2003) for Greek.

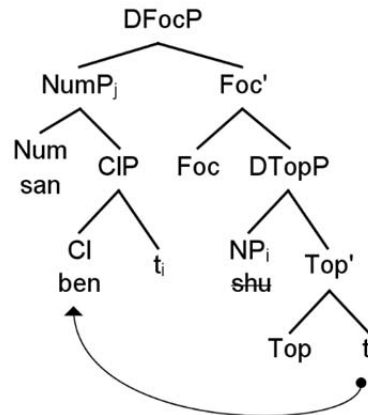
I also argue that nominal ellipsis in DP constitutes evidence for Topic and Focus positions in the DP. I adopt Ntelitheos's (2004) (see also Corver and van Koppen 2009) proposal treating nominal ellipsis as DP-internal topicalization followed by movement of the remnant to [spec, FocusP]. Ntelitheos assumes that the movement to [spec, FocusP] licenses the phonological deletion of the topic. Ntelitheos's approach does not assume that nominal ellipsis deploys a separate set of licensing conditions (e.g. *pro*, agreement). Since verbal ellipsis is assumed to be made possible by semantic or syntactic identity together with discourse functions like contrastive focus (Rooth 1992a, 1992b; Merchant 2001), it is both theoretically and empirically motivated to argue that NP ellipsis also makes uses of discourse-related movements.

- (61) ta du-le wu ben shu, wo ye du-le san ben
 He read-perf five CL book I too read-perf three CL
 shu.
 book
 'He read five books and I read three, too.'

(62) a.



b.



I also argue that this type of PF-deletion is a DP-internal phenomenon. Although Lin (2008) argues that NP can transformationally move from within DP to the clausal topic position, I show

that the moving NP is still subject to island constraints and NP Ellipsis must be a DP-internal phenomenon.

Chapter 4 concerns the positions of modifying constituents and shows how we can analyze the two possible positions for modifying constituents in the Chinese DP if we assume that here are DP-internal topic or focus movements. Modifying constituents, marked by DE, can occur immediately before the noun (low position) or before the demonstrative (high position), defined below:

- (63) a. Low position (between classifier and noun)
 na san ben [ta mai de] shu → (+definite, +/- contrastive)
 DEM three CL he bought DE book
 ‘The book that he bought’
- b. High position (before demonstrative)
 [ta mai de] na san ben shu → (+definite, +specific,
 He bought DE DEM three CL book +contrastive)
 ‘The book that he bought (as opposed to some other books)’

I first review previous analyses of modifying constituents within nominal projections, and show that there is a strict ordering restriction among different types (Cinque 2010, Larson and Takahashi 2007).

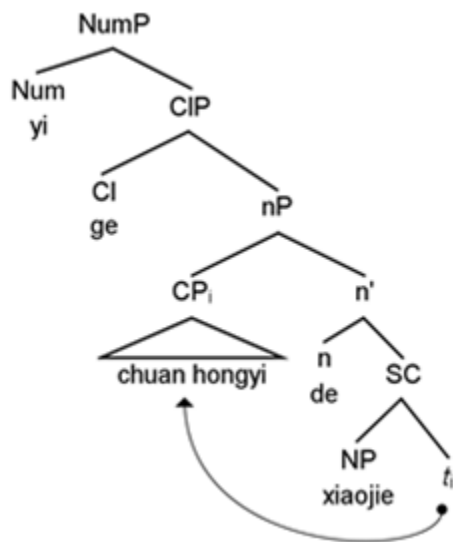
- (64) Grounding AP/RC > Noun Grounding AP/RC > Noun complement CI/PP

This ordering restriction is not predicted by the adjunction approach (Tang 2007), which allows modifying constituents to freely adjoin to any phrasal projections within the DP. The status of DE is also left unaccounted for. It is argued that in Mandarin, DE is the spell out of *n*, DFoc, and DTop. The two DEs have different functions. DE in DTop expresses specificity, definiteness, or genericity. DE in *n* carries a nominalizing meaning. Phrasal constituents are base-generated low

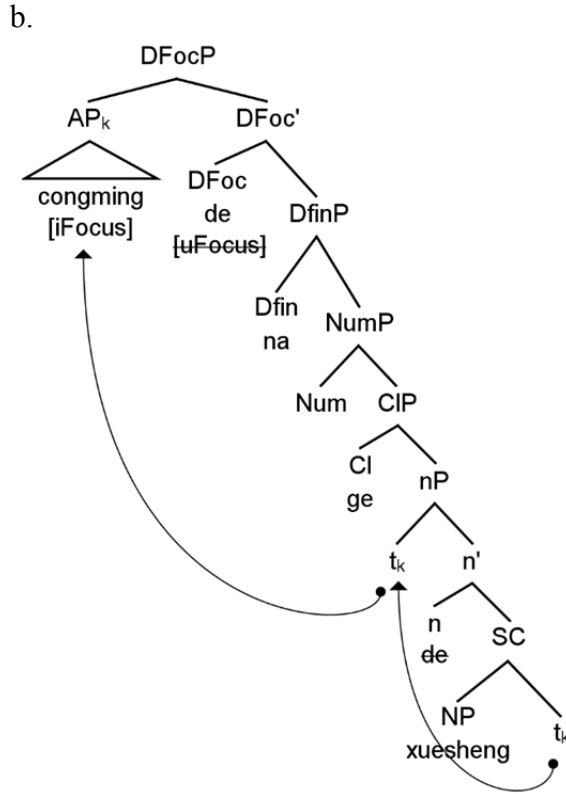
as small clause predicates contained inside *nP*. They move to [spec, *nP*] to check [Nom], as shown in (65). If information structure is involved, they will move further to [spec, DTopP] (for grounding phrasal constituents) or [spec, DFocP] (for non-grounding phrasal constituents), as shown in (66).

- (65) a. yi ge [chuan hongyi de] xiaojie
 yi CL wear red dress DE lady
 ‘a lady who wears a red dress’

b.



- (66) a. [congming de] na ge xuesheng
 Smart DE DEM CL student
 ‘that smart student (as opposed to the not so smart ones)’



Chapter 5 concludes the dissertation.

5. Theoretical framework and assumptions

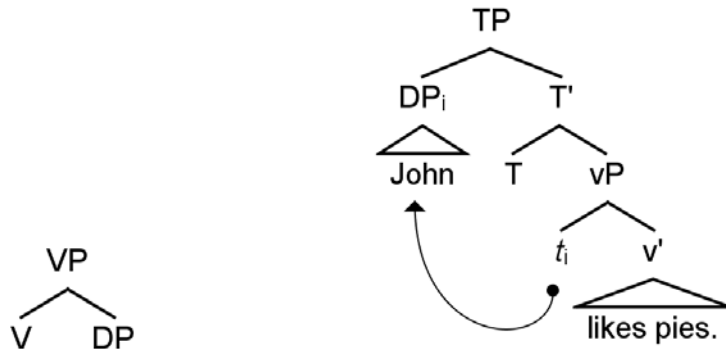
The theoretical framework I assume in this work is the Minimalist Program (Chomsky 1995, 2000, 2001, 2004, 2007, 2008). The main building blocks of a derivation in the Minimalist framework are Internal Merge, External Merge and Agree. Lexical items (feature bundles) selected from the lexicon subsequently undergo the syntactic operations Merge and Agree, which derive the output.

5.1 Merge

The two kinds of Merge, Internal Merge and External Merge, are discussed in Chomsky (2004). External Merge combines two distinct objects into a larger unit. Internal Merge is a movement operation; it combines two objects into a larger unit but one of the objects is already

part of the other object.

- (67) a. External Merge b. Internal Merge



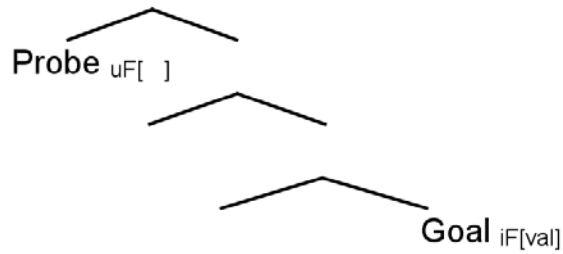
Example (98a) is a case of External Merge because two distinct syntactic objects V and DP are combined to form a larger unit VP. Example (63a) is a case of Internal Merge. The DP *John*, which is already part of T' (i.e. it is the complement of T), moves as a result of the [EPP] feature on T and combines with T' to form a larger TP.

5.2 Agree

The last important building block of the Minimalist Program is Agree. In this work, I assume the standard version of Agree proposed in Chomsky (2000), where an active probe with an uninterpretable (uF) and unvalued ([]) feature searches in its command domain for a goal with identical interpretable (iF) and valued ([val]) feature¹⁶.

¹⁶ F stands for 'feature' and Val stands for 'value'.

(68)



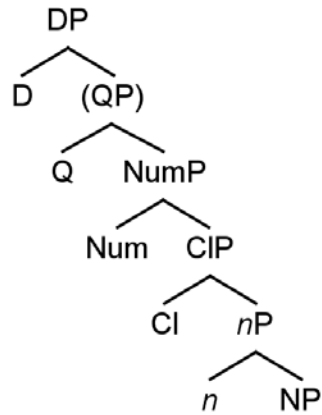
5.3 Functional Projections

I assume the following functional structure for DP in Chinese. It is similar to the proposed structure in Tang (1990) with a few additions. I assume an optional QP for quantifiers and place it under DP, following Watanabe's (2005) analysis of Japanese DPs. This projection will be relevant to our discussion of reduplicative classifiers in Ch.2. Following the works of Cheng and Sybesma (1999) and Simpson (2005), I assume that Cl is a head projecting ClPs¹⁷. I also assume a light *n* between Cl and NP. In Chapter 4, I will argue that *nP* is the position for low modifying constituents. The placement of *n* above NP is uncontroversial given the current assumptions that functional categories are category-defining¹⁸. I will omit the *nP* layer whenever it is irrelevant to the discussion.

¹⁷ However, I do not follow Cheng and Sybesma's (1999) analysis of Cl as D.

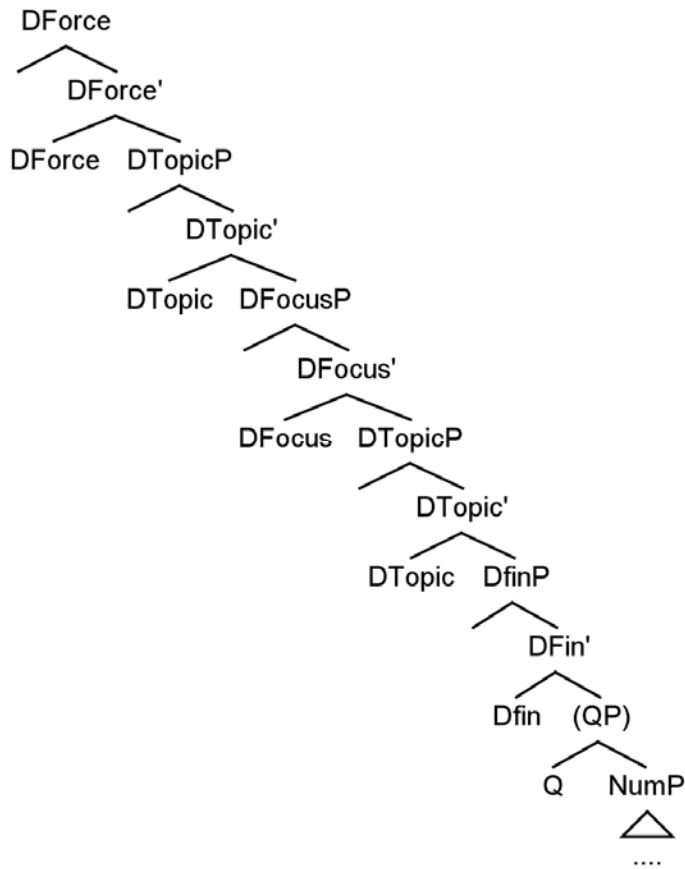
¹⁸ To be precise, this is a standard assumption in Distributed Morphology (Halle and Marantz 1993). L-morphemes (roots) need local c-commanding F-morphemes (equivalent to functional categories) to license and category-define them.

(69)



In Chapter 3, I will introduce the idea of Topic and Focus within DP. I will assume a split-DP structure in (66) that is analogous to Rizzi's (1997) split-CP, though I continue to use the structure in (65) in order to simplify the discussion whenever topic and focus are not relevant.

(70)



5.4 *A note on Phases*

A large body of work has been done on the phasehood of DP (see Matushansky 2005, Bošković 2002, 2014, Citko 2014, Saurov 2017). Although I do not discuss phases in this work because they are not directly relevant to my claims, some of the arguments and data I presented are in favor of the phasehood of DP. It is therefore important to briefly address the notion of phases.

In Chomsky's (2000) original conception, phases are syntactic objects that are independent at the PF and LF interfaces. In other words, phases have propositional properties and have all their theta roles assigned. It is therefore concluded that CPs and transitive, unergative vPs are phases. In light of the similarities between DP and CP (e.g. extraction possibilities, argument structure, and agreement), recent inquiries turn to the phase status of DPs. In particular, scholars are interested in whether DPs are phrases, and whether there are DP-internal phrases. Matushansky (2005) argues that PF diagnostics and LF diagnostics make different conclusions about the phasehood of DP. PF diagnostics like whether DPs can license ellipsis point to the conclusion that DP is a phase, but LF diagnostics like propositionality and ability to serve as landing sites of quantifier raising suggest otherwise. However, Bošković (2002, 2014) challenges propositionality as a property required for phasehood. For example, in Bošković (2014), he challenges Chomsky's idea that only finite clauses (but not ECM infinitives) are phases. However, Bošković argues that the embedded finite clauses in (71b) does not seem to be any more propositional than the infinitive in (71a).

- (71) a. There seemed to have arrived someone
b. It seemed someone had arrived

Citko (2014) argues that the edge of DP can in fact be the target of Quantifier Raising. She argues that in (72) *every city* can take scope over *someone*.

(72) Two politicians spy on someone from every day

In my work, although I do not directly address the issue of phases, some of my data and arguments support the phasehood of DP. Citko (2014) uses the following phasehood diagnostics to argue for DPs as phases¹⁹.

(i) Does movement out of DP proceed through the edge?

My discussion of NP Inversion (the NP-Num-CL order in (73b)) clearly shows that the NP can move through the edges (starting from [spec, DP]) to [spec, CP]. This movement to the edge of DP is only expected if it is a phase.

(73)	Mandarin							
a.	Zhangsan	mai	le	shi	zhi	bi		
	Zhangsan	buy	ASP	ten	CL	pen		
	'Zhangsan bought ten pens.'							
b.	Zhangsan	mai	le	bi _i	shi	zhi	t _i	
	Zhangsan	buy	ASP	pen	ten	CL		
	'Zhangsan bought ten pens.'							
								(Edge of DP)
c.	Zhangsan	bi _i	mai	le	shi	zhi	t _i	
	Zhangsan	pen	buy	ASP	ten	CL		
	'Zhangsan bought ten pens.'							
								(Edge of vP)
d.	bi _i	Zhangsan	t _i	mai	le	t _i	shi	zhi t _i
	Pen	Zhangsan	buy	ASP		ten	CL	
	'As for pens, Zhangsan bought ten.'							
								(Edge of CP)
								(Lin 2008)

¹⁹ Citko (2014) also uses the following diagnostics:

- Is DP a domain for feature valuation?
- Is D the locus of uninterpretable features?
- Is DP a binding domain?
- Can QR target the edge of DP?

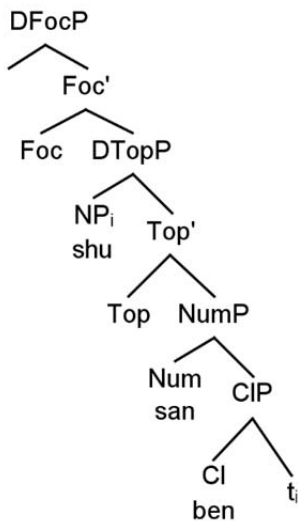
Citko showed that all of these diagnostics support the phasehood of DP. I will not discuss them here as they are not relevant to my work. For a complete discussion of all of these diagnostics, I refer the reader to Citko's work.

(ii) Does D determine Spell-Out/Ellipsis? Can D serve as a probe?

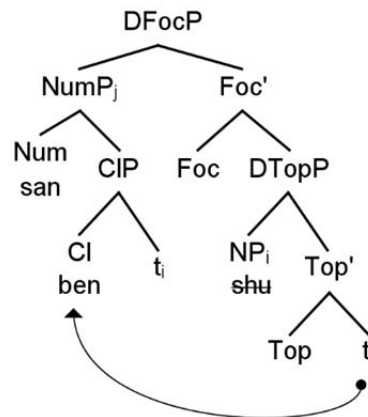
These are two independent questions in Citko's work, but related in mine because of the kind of data and analysis involved. In Chapter 3, I discuss NP Ellipsis. I argue that NP Ellipsis is a kind of PF deletion of [spec, DTopP] that is licensed by a contrastive focus requirement. In other words, the NP moves to [spec, DTopP] first, and then a subsequent remnant movement of NumP to [spec, DFocP] licenses this deletion, as shown in (74).

(74) ta du-le wu ben shu, wo ye du-le san
 He read-perf five CL book I too read-perf three
 ben shu
 CL book
 'He read five books and I read three, too.'

(75) a.



b.



Although I assume a cartographic approach of DP, it is not hard to imagine an alternative that allows D to host [topic] and [focus] features and have multiple specifiers. If we assume that

line of analysis, D will be able to serve as a probe and license PF deletion at the same time. Therefore, my work still supports the claim that D (or some phrasal category in the D region) can license ellipsis and act as a probe.

It has also been proposed that there is a DP-internal phase boundary. Saurov (2017) argues that in Bangla QP is a DP internal phase. In Bangla, it is possible to move the NP across Num-CL to create a definite expression, as shown in (76).

- (76) a. du To lal boi
 two CL red book
 ‘two red books’
 b. lal boi du To
 red book two CL
 ‘The two redbooks’
 c. [DP [NP lal boi]_i du To t_i]

The definite expression in (77b) is compatible with a demonstrative, as (77a) shows. However, it is also possible for the adjective *lal* ‘red’ to move once more across the demonstrative, as shown in (77b). However, (77b) is only grammatical when the adjective is stressed phonetically. If there is no phonetic stress, (77b) becomes ungrammatical.

- (77) a. ei [lal boi] du To t_i
 This red book two CL
 ‘These two red books’
 b. **LAL** ei boi Ta amar pochondo
 red this book Cl my liking
 ‘This red book is of my liking’

Saurov argues that this movement of the adjective across the demonstrative is Focus movement to the left periphery of DP. However, this movement of the adjective is constrained by the low/high distinction of numerals. Saurov argues that in Bangla lower numerals (e.g. 2, 3, 4) are Q heads and higher numerals (e.g. 6, 7, 8) are specifiers of QP. He argues that QP is a DP-

internal phase, and movement of the adjective to the edge of DP is licit if the adjective can stop at [spec, QP] on the way to the left edge.

- (78) [joghonyo_k oi du To/ tin Te/ char Te t_k biskuT]
 Disgusting Dem 2 CL 3 CL 4 CL biscuit
 kheyē amar Soirir kharap lagte laglo.
 Eat.Part I.Gen body bad feel.Inf start.Pst.3
 ‘I started feeling sick eating those disgusting two/three/four biscuits’
- (79) [_{FocP} [_{AdjP} joghonyo_k]...[_{DP}...[_{QP}[_{AdjP} t_k] [_Q 2/3/4 ... [_{aP} [_{AdjP} t_k] [_{NP} biskuT]]]]]

However, a higher numeral will block the intermediate movement to [spec, QP] because higher numerals are in [spec, QP]. Since [spec, QP] is already filled, the adjective cannot use it as an intermediate landing site and it also cannot directly move to the left edge without violating the Phase Impenetrability Condition.

- (80) *[joghonyo_k oi choy Ta/ Sat Ta/ aT Ta t_k biskuT]
 Disgusting Dem 6 CL 7 CL 8 CL biscuit
 kheyē amar Soirir kharap lagte laglo.
 Eat.Part I.Gen body bad feel.Inf start.Pst.3
 ‘I started feeling sick eating those disgusting six/seven/eight biscuits’
- (81) [_{DP}...[_{QP} [7/8/9] [_Q ... [_{aP} [_{AdjP} joghonyo] [_{NP} biskuT]]]]]

In my analysis of Chinese modifying constituents, I propose that there are two positions for phrasal constituents: [spec, DTopP] and [spec, nP]. This pattern seems to mirror the clausal domain in which CP and vP are high and low phase boundaries. I will leave the question of whether nP is a phase for future research.

2. Functional Projections in the Chinese DP

1. Introduction

While the categories NumP and ClP are rather uncontroversial (Tang 1990, Cheng and Sybesma 1999, Simpson 2005, among others) in the literature on Chinese DP, scholars disagree on whether there is a D in Chinese. In this chapter, I present previous literature on noun phrase structure in Chinese and offer new evidence against Cheng and Sybesma's claim that Cl assumes the role of D in Chinese. The first set of evidence comes from true measures, a class of classifiers that have not been looked into in the literature. The second set of evidence comes from reduplicative classifiers. It is also shown that classifier reduplication in the nominal domain makes use of different functional layers (namely Cl, Num) above NP to create different meanings (plural and universal quantification). Our claim is that the structure of DP in Chinese is predicted by the Universal DP Hypothesis, which assumes that nominal arguments are DPs with functional layers between NP and DP.

2. Nominal Structure of Chinese

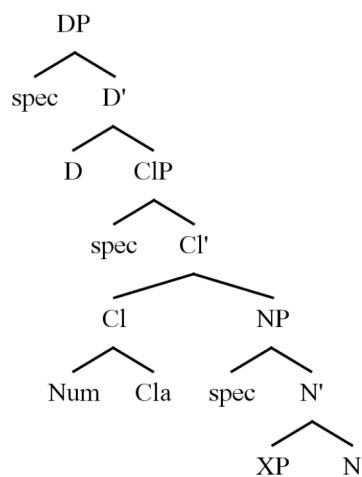
In this section, I present previous literature on noun phrase structure in Chinese. I will also argue against Cheng and Sybesma's (1999) position that Chinese does not project DP because classifiers assume the role of D.

2.1 Tang (1990)

Tang observes that each classifier in Chinese can only co-occur with a specific group of nouns, usually with similar meanings. Many nouns can only be used with certain classifiers, *shu* 'book' for example requires the classifier *ben*, which is used for book-type entities. Other examples

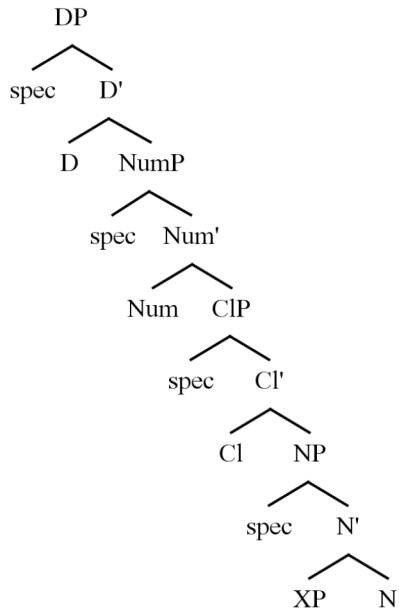
are *ren* ‘person’, which can only be used with the generic classifier *ge*, and *qianbi* ‘pencil’, which can only be used with *zhi*. All of these examples suggest some kind of agreement or selectional relationship between the classifier and the noun. Tang proposed an intermediate functional category Cl which selects an NP. The ClP is in turn a complement of D. This explains the obligatory presence of the classifier between a demonstrative and a noun. In Tang (1990), two possible tree structures are proposed, as shown in (1) and (2):

(1)



In (1), Num and Cla are bundled together to form a classifier head, which selects the NP. It is unclear how the selectional properties between the classifier (Cla in here) and the N can be formed when Cla does not c-command the NP. Tang also proposes a second tree (2) in the same work as an alternative analysis, in which Num and Cl are divided into different heads.

(2)



It is (2) that Tang adopts in later works (see Tang 2007). Either structure can account for the word order of DP in Chinese.

- (3)
- a. na san ben shu
dem three CL book
'those three books'
 - b. *na shu
dem book
'that book'
 - c. san ben shu
three CL book
'three books'
 - d. *san shu
 - e. *ben shu²⁰

Either tree in (1) or (2) can guarantee the pattern in (3). For example, since a demonstrative cannot directly select a noun, (3b) is not possible in Mandarin. (3c-d) shows that a numeral cannot directly select a noun and a classifier must come in the middle. (3e) shows that a classifier must be preceded

²⁰ As we will discuss below, this construction is possible in Cantonese.

by a numeral. Note that (3e) is actually allowed if it is in object position (see footnote 8), but there is an understanding that the numeral ‘one’ is simply unpronounced²¹.

2.2 Li (1998, 1999)

Li (1998) argues that Chinese allows nominal arguments to project either DPs or NumPs. The Number projection was first proposed in Ritter (1991) for Modern Hebrew. Li identified two types of Chinese nominal constructions: quantity-denoting and individual-denoting. She argues that there is a parallelism between DP and CP. For example, in ECM constructions an IP can serve as the complement of the verb. In the DP domain, Li argues that quantity-denoting NumPs can also serve as arguments without being selected by D. She adopts Szabolcsi’s (1987) position that DP is the parallel of CP, and she further argues that NumP is the parallel of IP because they both are intermediate levels. Consider example (4a-b):

- (4) Mandarin
- | | | | | | | |
|----|--|----------|-----|---------|-----------|---------------------|
| a. | *Sange | xuesheng | zai | xuexiao | shoushang | le. |
| | Three+CL | student | at | school | hurt | PERF |
| | ‘Three students were hurt at school.’ | | | | | [=(1) in Li (1998)] |
| b. | You sange | xuesheng | zai | xuexiao | shoushang | le. |
| | Have Three+CL | student | at | school | hurt | PERF |
| | ‘There are three students hurt at school.’ | | | | | (=(3) in Li 1998) |

As (4a) shows, the absence of the existential verb *you* renders the sentence ungrammatical.

²¹ In Mandarin, an indefinite nonspecific [CI+N] argument can appear without a numeral and a demonstrative in object position. This will be discussed in our review of Cheng and Sybesma (1999) in Section 3.3.

- (i) wo xiang mai ben shu
 I want buy CL book
 ‘I want to buy a book.’

However, I would like to address this idea of “unpronounced” *one* here. As captured in the structure in (2), Tang assumes that a classifier must appear with a numeral in Mandarin. The presence of [CL+N] would present a problem for her analysis if she does not assume a silent numeral ‘one.’ However, Cheng and Sybesma (1999:525-526) point out that this analysis cannot be correct as [yi-CL-N] is indefinite but specific, whereas [CI-N] is indefinite and nonspecific. I refer the reader to Cheng and Sybesma’s work to see the actual argumentation there.

appears with definite nouns (7) and proper names (8), but *-men* does not appear with Num-CL (9).

- (7) a. you xuesheng (*-men)
have student -MEN
'There is/are some student(s)'
b. wo qu kan laoshi-men
I go see teacher-MEN
'I am going to see the teachers.'
c. wo qu kan laoshi
I go see teacher
'I am going to see the/some teacher(s).'
- (8) Huang taitai -men mingtian lai gouwu
Huang Mrs. -men tomorrow come shop
'Mrs. Huang and her gang are coming shopping tomorrow.'
- (9) wu ge laoshi (*-men)
Five CL teacher-MEN
'five teachers'

According to Iljic, Num-CL is incompatible with *-men* because the classifier is individualizing while the *-men* is a collective/group marker.

Li (1999) provides four key pieces of evidence to argue that *-men* can also be a plural marker. First, *-men* can be suffixed to singular pronouns to create plural pronouns.

- (10) a. ni -men
you-sg -MEN
'you (pl)'
b. wo -men
I-sg -MEN
'we/us'
c. ta -men
he-sg -MEN
'they (pl), them (pl)'

Second, when a proper name is suffixed with *-men*, in addition to the reading noted in Iljic, there is also a plural reading meaning a number of people with the same name or characteristics.

- (11) Huang taitai -men
 Huang Mrs. -MEN
 ‘Mrs. Huang and her gang’ or ‘the missuses who are all named Mrs. Huang.’

Third, the distributive marker *dou* can appear with *-men*. Li considers this to be an argument against *-men* being a “collective” marker, because the sentence does not mean all the children went to school together (collective reading), but each child went to school separately (distributive reading).

- (12) haizi -men dou shang xue le
 Child -MEN DOU up learn PERF
 ‘The children have all gone to school.’

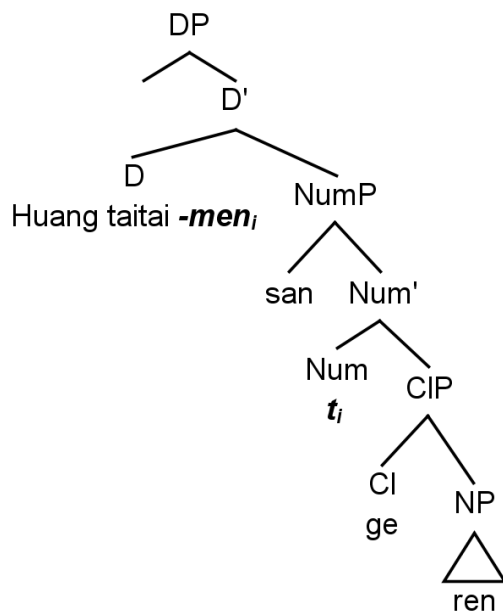
Finally, Li points out that it is not true that NUM-CL is always incompatible with *-men*. A *-men* marked pronoun or proper name can appear before the NUM-CL sequence. The *-men* marked phrase also forms a constituent with NUM-CL, as it can appear in both subject and object positions.

- (13) a. wo quan Huang taitai -men san ge (ren) bie lai le
 I urge Huang missus -MEN three CL person NEG come PERF
 I urged Mrs. Huang and her friends to not come.’
 b. Huang taitai -men san ge (ren) you mai shoudai le
 Huang missus -MEN three CL person again buy handbag PERF
 ‘Mrs. Huang and friends came to buy handbags again.’

Li argues that *-men* is evidence for a NUM head in Chinese. However, *-men* as a plural morpheme must be suffixed to the lexical item filling the D head²², which Longobardi (1994) identifies as the locus of definiteness and referentiality. This explains the definiteness (and human) requirement of *-men* marked phrases. Li proposes the following structure for the *-men* marked nominal phrases in (13).

²² Li contends that this is similar to the plural morpheme *-s/-es* in English. It is attached to the N.

(14)



In (14), *Huang taitai* ‘Mrs. Huang’, being a proper name, is base-generated in D. *-men* is base-generated in Num but it moves to attach to the proper name in D. Note that the numeral *san* ‘three’ is treated as a specifier here so it cannot block movement. The structure in (14) also explains why it is impossible to have a *-men* marked common N preceding or following Num-CL. First, *-men* only attaches to D, so it will never be attached to a N^{23} . This should explain why *-men* cannot appear after NUM-CL. Secondly, when there is a classifier present, N will not be able to move to D to attain definiteness because the movement will be blocked by the CL head. Although Li’s proposal mainly pertains to the Number projection, it can still serve as indirect evidence for DP, as *-men* attaches only to pronouns or proper names in D.

²³ Jiang (2012) points out that this is actually inaccurate. In fact, it is possible to have *-men* suffixed to an N that follows Num-CL. However, the classifier must be a “group classifier.”

- (i) yi qun haizi men
 One group kid -MEN
 ‘a group of kids’

2.3 Cheng and Sybesma (1999)

Based on the distributional patterns and interpretations of Mandarin and Cantonese nominal arguments, Cheng and Sybesma propose that the CI head can perform many of the functions associated with D. The individualizing function of D proposed by Longobardi, which allows D to pick out an instance of the entity described by the NP, is also argued to be the same as the singularizing function of CI in Cheng and Sybesma (1999). In other words, C&S argue that Chinese nominal arguments are CIPs instead of DPs.

Chierchia (1998) argues that all nouns in Chinese are mass and therefore numeral classifiers are required to create units for counting. Cheng and Sybesma depart from Chierchia (1998) by claiming that there is a count/mass distinction in Chinese. They identify two types of classifiers: classifiers and massifiers. Classifiers are used with nouns with built-in semantic partitioning and their function is simply to name that naturally countable unit, as in (15). Massifiers are used with nouns with no semantic partitioning and they therefore create a unit for counting, as in (16).

(15) liang zhi yazi
Two CL duck
'two ducks'

(16) liang tong shui
Two CL:bucket water
'two buckets of water'

Cheng and Sybesma claim that since there is a count/mass distinction in the classifier system, a paradox arises if we consider Chierchia's views that all Chinese nouns are mass. They resolve this question by adopting Doetjes' (1997) classification of nouns. Doetjes classifies nouns as singular

nouns, plural nouns, count mass nouns, and mass mass nouns. Cheng and Sybesma claim that the last two exist in Chinese. Count mass nouns appear with classifiers, and mass mass nouns appear with massifiers²⁴.

2.3.1 Differences between Mandarin and Cantonese

Cheng and Sybesma also present a few syntactic differences between Mandarin and Cantonese bare nouns. In preverbal position, bare nouns can be interpreted as definite and generic, but not indefinite.

(17) Mandarin

- | | | | | | |
|----|--|---------|-------|----------|--------------|
| a. | gou | yao | guo | malu | |
| | dog | want | cross | road | |
| | 'The dog wants to cross the road.' | | | | DEFINITE |
| | NOT: 'A dog wants to cross the road.' | | | | ≠ INDEFINITE |
| b. | Gou | jintian | tebie | tinghua | |
| | dog | today | very | obedient | |
| | 'The dog/dogs was/were very obedient today.' | | | | DEFINITE |
| c. | gou | ai | chi | rou | |
| | dog | love | eat | meat | |
| | 'Dogs love to eat meat.' | | | | GENERIC |

(=2 in Cheng and Sybesma 1999)

In postverbal positional, bare nouns can be indefinite, definite, or generic.

(18) Mandarin

- | | | | | | | |
|----|------------------------------------|-------|--------|-----|-------|------------|
| a. | Hufei | mai | shu | qu | le | |
| | Hufei | buy | book | go | SFP | |
| | 'Hufei went to buy a book (books)' | | | | | INDEFINITE |
| b. | Hufei | he | wan | le | tang. | |
| | Hufei | drink | finish | the | soup | |

²⁴ Note that it is also possible for a massifier to appear with a count mass noun if the unit used for counting is not the natural unit that comes with the count mass noun. For example, the noun 'tangguo' usually is used with the classifier *ke* or *li* 'a token'. However, if we want to talk about a basket of candy, then the massifier *lan* 'basket' is used.

- | | | | | | | | |
|-----|-----------|-------|---------|-----|---------------------|--------|---------|
| (i) | yi | ke | tangguo | ii) | yi | lan | tangguo |
| | One | token | candy | | one | basket | candy |
| | 'a candy' | | | | 'a basket of candy' | | |

	‘Hufei finished the soup.’	DEFINITE
c.	wo xihuan gou. I like dog ‘I like dogs.’	GENERIC

(=1 in Cheng and Sybesma 1999)

The situation in Cantonese is similar, with a few exceptions. First, bare nouns in Cantonese cannot be definite. To convey definiteness, the [CI+N] construction must be used, as shown in (19b) and (20b). This is also why (20a) is ungrammatical. Also, unlike definite bare nouns in Mandarin which are definite and [+/- singular], [CI+N] in Cantonese is always singular.

(19)	Cantonese	
a.	Wufei heoi maai syu Wufei go buy book ‘Wufei went to buy a book/books.’	INDEFINITE
b.	Wufei jam-jyun *(wun) ²⁵ tong la. Wufei drink-finish CL soup SFP ‘Wufei finished drinking the soup.’	DEFINITE
c.	Ngo zungji gau I like dog ‘I like dogs.’	GENERIC

(=3 in Cheng and Sybesma 1999)

(20)	a. *Gau soeng gwo maalou Dog want cross road ‘A dog wants to cross the road.’	INDEFINITE
	b. zek gau gamjat dakbit tengwaa CL dog today special obedient ‘The dog is specially obedient today.’	DEFINITE
	c. Gau zungji sek juk dog like eat meat ‘Dogs love to eat meat’	GENERIC

(=4 in Cheng and Sybesma 1999)

Even though in Cantonese [CI+N] is necessarily definite in preverbal position, it can be definite

²⁵ As we will discuss below, [CI+N] can be definite or indefinite in postverbal position. However, the verb *jam-jyun* ‘finished drinking’ carries perfective aspect and forces a definite interpretation on its object. The postverbal argument can only be definite here.

or indefinite nonspecific in post-verbal position, depending on the verbal predicate. [Cl+N] can never have a generic reading, as (22) shows.

(21) Ngo soeng maai bun syu (lei taai)
 I want buy CL book come read
 ‘I want to buy a book (to read).’ (=5 in Cheng and Sybesma 1999)

(22) a. Zek gau zungji sek juk.
 CL dog like eat meat
 ‘The dog likes to eat meat.’ Not: ‘Dogs like to eat meat.’
 b. Ngo zungji tong zek gau waan.
 I like with CL dog play
 ‘I like to play with the dog.’ Not: ‘I like to play with dogs.’
 (=6 in Cheng and Sybesma 1999)

Finally, Mandarin also allows [Cl+N] to surface in postverbal position, but never in preverbal position. Postverbal [Cl+N] nominals are **necessarily** indefinite.

(23) wo xiang mai ben shu
 I would-like buy CL book
 ‘I would like to buy a book.’ (=7 in Cheng and Sybesma 1999)

The differences between Mandarin and Cantonese can be summarized in (24).

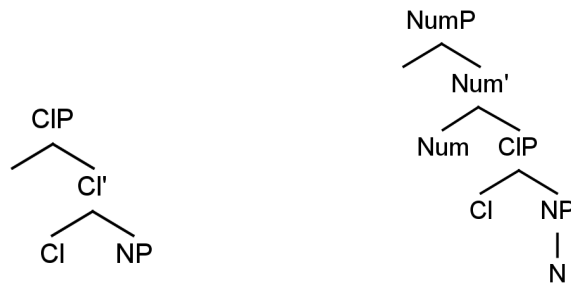
(24)

	Mandarin		Cantonese	
	Bare Ns	Cl+N	Bare Ns	Cl+N
Pre-verbal	definite, generic		Generic	definite
Post-verbal	+/-definite, generic	-definite	-definite, generic	+/-definite

As the data above shows, it appears that in Cantonese (and some other Southern varieties of Chinese), classifiers encode definiteness. In Cantonese, the [Cl+N] sequence can occur in nominal-initial position and receive a definite interpretation. Since D and Cl share

individualizing/singularizing and deictic²⁶ functions, Cheng and Sybesma argue that Cl is equivalent to D in languages like English. Longobardi (1994) argues that bare nouns can receive a definite interpretation via N-to-D movement. Cheng and Sybesma recast this as N-to-Cl movement in Mandarin for a definite/generic reading and Cantonese for a generic reading. As for indefinite nominal arguments, Cheng and Sybesma argue that when Num selects CIP, the resulting NumP is indefinite. This is because the Num head can undo the definiteness in CL.

(25) a. Definite/Generic b. Indefinite



Both Li (1999) and Cheng and Sybesma argue that NumP can be arguments. However, in Li's work argument NumPs are quantity-denoting number expressions. She still analyzes indefinite argument nominals as DPs with an empty D head selecting NumP. In Cheng and Sybesma's work, indefinite argument nominals are NumPs. In fact, their proposed equivalent to DP, CIP, is the complement of the Num head.

²⁶ Cheng and Sybesma clearly assume that D is deictic. In Cheng and Sybesma (1999:513), they write:

“D has an individualizing or singularizing function. [...] This function, we think, is connected to the similar, though not identical, assumption that D has the function of mediating between the description (predication) provided by the NP and whatever specific entity in the real world the description is applied to. This function, perhaps a discourse function, we will refer to as the deictic function of D.”

However, this idea that classifiers are deictic is problematic. Wu and Bodomo (2009) take issue with this claim because D is not usually deictic. Deictic elements are usually demonstratives, not determiners.

2.3.2 Critiques

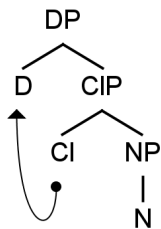
Wu and Bodomo (2009) argue against Cheng and Sybesma's analysis. In particular, they argue that Cheng and Sybesma did not capture the full range of facts. First, according to them, it is incorrect to assume that Cl is equivalent to D when D carries no lexical content and only provides definiteness to its noun. Classifiers, however, clearly have lexical content²⁷ and they also have clear selectional restrictions (e.g. book-type classifiers can only be used with book-type nouns), as we discussed earlier. This type of selectional restriction does not exist between D and N. Furthermore, Wu and Bodomo point out that most of the facts that motivated Cheng and Sybesma's CIP analysis for Chinese argument nominals come from Cantonese. However, in terms of function, there is a clear difference between Mandarin and Cantonese. Most importantly, unlike Cantonese, [Cl+D] (as shown in (24) above) can never be definite in Mandarin unless a demonstrative is inserted before the classifier. Cheng and Sybesma's claim that classifiers have a "deictic" function is therefore called into question. Wu and Bodomo also takes issue with the claim that both D and Cl share a deictic function and therefore are parallel to each other. Crosslinguistically, determiners are usually not deictic. Deixis is usually the function of a demonstrative. Furthermore, even in Cantonese, the definite [Cl+N] is different from [Dem+(one)+Cl+N], as shown below.

- (26) a. Zek gau zungji sek juk.
 CL dog like eat meat
 'The dog likes to eat meat.
- b. go zek gau zungji sek juk.
 DEM CL dog like eat meat
 'That dog likes to eat meat.

²⁷ The first classifiers in Chinese appeared in the Han period. All of them were derived from nouns. Historically, massifiers existed before classifiers. I refer the reader to Peyraube (1991) and Wang (1994) for a detailed discussion.

The former construction is only definite but not necessarily deictic. It is only uttered when the dog being talked about has appeared in the discourse previously, or when both the speaker and the interlocutor can see the dog in question in front of them. In this case, the function of the classifier in Cantonese is similar to *the* in English, suggesting CI-to-D movement (see also Simpson 2005). The latter construction gets its definiteness and deixis from the demonstrative. This shows that classifiers are not inherently definite in Cantonese. They are only definite when there is CI-to-D movement.

(27)



In their response to Wu and Bodomo, Cheng and Sybesma (2012) comment that the structure in (83) proposed by Wu and Bodomo (2009) and Simpson (2005) are actually not that different from the proposal in Cheng and Sybesma (1999). The only real difference is that Cheng and Sybesma believe that classifiers encode definiteness but Wu and Bodomo (2009) and Simpson (2005) believe that definiteness is encoded by the determiner, which is why CI needs to move to D. Cheng and Sybesma (2012) comment that the two analyses are actually very similar and Simpson and Wu and Bodomo postulate D only for the purpose of universality and it is unclear what is gained by doing so. They argue that “it may all be a matter of definition and terminology (p.648)”.

However, in Yip (2008), I identified a class of classifiers that runs counter to Cheng and

Sybesma's claim that classifiers are definite. True measures²⁸ like *gongjin* 'kilogram' and *mi* 'meter' occupy the same slot as classifiers and they exhibit different syntactic behaviors from sortal and mensural classifiers. First, although a classifier-noun sequence can occur in post-verbal position as in (28a), a true measure-noun sequence gives rise to ungrammaticality as exemplified in (84b). However, (28b) can be made grammatical by inserting a numeral before the true measure, resulting in the grammatical (28c). I label true measures as 'TM' in the gloss.

Mandarin

- (28) a. wo xiang mai ba dao.
 I want buy CL knife
 'I want to buy a knife.'
- b. *wo xiang zou li lu.
 I want walk TM road (TM = true measure)
 'I want to walk a mile.'
- c. wo xiang zou yi li lu.
 I want walk one TM road.
 'I want to walk one mile'

Second, true measures cannot undergo Cl-to-D movement in Cantonese.

- (29) a. bui1 caa4 hou2 jit6
 CL:cup tea very hot
 'The cup of tea is very hot'
- b. *cek3 dei6 hou2 gwai3
 TM land very expensive
 'This square foot of land is very expensive.'

Finally, most classifiers in Chinese can reduplicate to create the "each/every" meaning, as in (30a). True measures cannot be reduplicated.

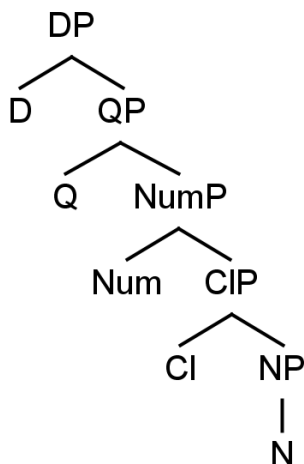
- (30) a. bui1bui1 caa4 dou hou2 jit6
 CL:cup tea all very hot
 'Each cup of tea is very hot'

²⁸ This is Chao's (1968) terminology. 'True measures' are words which represent a unit of measure like dimensions (weight, height, and length), length of time, etc. Other examples of true measures include *jin* 'catty', *limi* 'centimeter', etc.

- b. *cek3cek3 dei6 hou2 gwai3
 TM land very expensive
 ‘This square foot of land is very expensive.’

It is clear from the examples above that true measures must appear with a numeral. Their lack of CI-to-D movement and failure to reduplicate may even suggest that they do not individuate. This is not a problem for Wu and Bodomo and Simpson because they suggest that CI moves to D to attain definiteness, and my data simply shows that not all classifiers can move to D. However, Cheng and Sybesma assume that the CI head is the locus of definiteness, and true measures occupy the CI slot but can never be definite. In other words, true measures present a problem for Cheng and Sybesma as they assume that CI is equivalent to D and there is no CI-to-D movement. To summarize our discussion so far, (31) is the internal structure of DP that I assume. QP is Quantifier Phrase. Following Watanabe (2005), I assume that Quantifier Phrase appear below DP. In Chapter 3, I will argue that there is an extended DP structure and what I show here as DP can be split into several Information Structural layers. However, I will not show these layers for now for the sake of clarity.

(31)



In this section, I presented the major analyses of Chinese nominals. Overall, the Chinese data and arguments presented so far are in favor of the Universal DP Hypothesis. While I do not assume Cheng and Sybesma's (1999) CIP analysis, it is important to also point out that what they are proposing still falls into the realm of the Universal DP Hypothesis, which assumes functional projections above the NP for Chinese. Therefore, it may seem that this whole debate about DP vs. CIP may just be a matter of terminology and definition, as Cheng and Sybesma suggested. However, I seek to show in the next section that something can be gained by assuming a DP layer and that the choice between DP and CIP is not trivial.

3. Reduplicative Classifiers in the Chinese DP

In this section, I strengthen the arguments for the existence of NumP (Li 1999) and DP (Tang 1990, Li 1999, Simpson 2005) in Chinese by discussing reduplication phenomena within the nominal domain in Chinese²⁹. In order to do so, I adopt Travis' (2001, 2003) analysis of reduplication and show how her account can explain the two types of reduplication in Chinese. As I will show, the two types of reduplication make use of different functional heads between D and N. As my analysis will show, the choice between DP and CIP is not a trivial question and definitely not a matter of terminology as Cheng and Sybesma (2012) claim. If we find extended functional projections between D and N, then we can not only provide more support for the NumP and DP layers, but also provide support for the Universal DP Hypothesis³⁰.

²⁹ Reduplication is also found within the adjectival and verbal domains. See Lam (2013) for a discussion of the cross-categorical behavior of reduplication in Cantonese.

³⁰ I am following Pereltsvaig (2007), Despić (2013), and LaTerza (2016)'s interpretations of the Universal DP Hypothesis and the Parameterized DP Hypothesis. The Universal DP Hypothesis posits that all languages (with or without articles) project DPs with functional categories between D and N. The Parameterized DP Hypothesis (represented by works like Williams 1998, 2000, Trenkic 2004, Bošković 2005) maintains that only languages with articles project DP. In other words, languages without articles have NP with no functional categories above it.

In Chinese, several kinds of reduplication can be found in the DP to express different grammatical meanings. (32)-(33) show the data from Mandarin Chinese.

Plural reading

(32) CL-CL

- a. Tian-shang piao-zhe duo-duo yun.
 sky-on float-PROG CL-CL cloud
 ‘Many clouds are floating in the sky.’ (Ulrike 2010:71)

one-CL-CL

- b. wo kanjian yi ge-ge tongxue zou jin jiaoshi.
 1S see one CL-CL classmate walk into classroom
 ‘I saw many classmates walk into the classroom.’

Every/each reduplication

(33) N-N

- a. ta de shi, ren-ren dou zhidao.
 3S POSS matter person-person DOU know
 ‘As for his matter, everyone knows about it.’

CL-CL

- b. ji zhi-zhi dou hen fei.
 chicken CL-CL DOU DEG fat
 ‘Every one of those chickens is fat.’

Reduplication is interesting in regard to the present work as the two types of reduplication I discuss carry different interpretive effects. This may suggest that despite the surface similarities between the types, reduplication targets different functional heads. If that is the case, then reduplication provides us with a window to look into the internal structure the of Chinese DP.

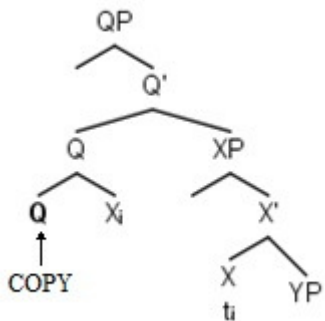
3.1 Framework for reduplication

I will start the discussion of reduplication by presenting the framework of reduplication that I adopt. Travis (2001, 2003) argues that in all cases reduplication is performed by creating copies in

syntactic positions that are already available in the syntax. Morphophonological reduplication always has a syntactic environment as its trigger. Travis identifies three types of reduplication: phonological, syntactic, and contrastive³¹. However, since only phonological reduplication is relevant to the present work, I will only discuss phonological reduplication. I refer the reader to Travis (2001, 2003) for the analyses of the two other types. I retain the notation used in Travis's work. The Q in the trees does not stand for Quantifier (though they could be quantifiers) but it is simply an abstract notation for the reduplicative head.

3.11 Phonological reduplication

(34) a. Phonological



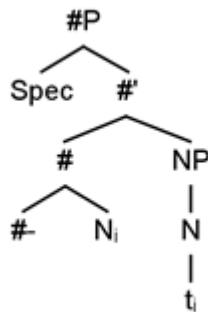
(=1) in Travis 2001)

The most common form of reduplication found in the world's languages is (4a) – phonological reduplication. In (4a) feature-checking of Q is done by head movement, where the sister X of the reduplicative head Q moves and adjoins to it. Travis claims that this kind of head movement predicts that the copy will usually (but not always) be a reduplicative affix as head adjunction of X to Q has provided a phonological host for the affix. Also, nothing can come

³¹ The three types of reduplication makes use of three basic configurations in syntax: spec-head (syntactic reduplication), head-head (phonological reduplication), and modifier-head (contrastive reduplication). Since my data only involves head-to-head copying, I will not discuss the other two types.

between the copy and X. For example, the plural form of *bana* ‘coyote’ is *baabana* ‘coyotes’ in Papago (Moravcik 1978, as cited in Travis 2001). Under Travis’s proposal, the partial reduplication can be accounted for by the structure in (35), if we assume that the Q(uality) feature is hosted by the Number head proposed in Ritter (1991). In (35), the Number projection is the reduplicative head.

(35)



The movement and adjunction of N^0 to $\#^0$ feeds phonological reduplication. The reduplicative head will copy the form of its sister. In the case of Papago, only a subpart of N is copied³².

We will now see how Travis’s analysis can be applied to the Chinese data. By using her analysis, I hope to give further support for the existence of NumP and DP in Chinese. This will strengthen my position that the Universal DP Hypothesis is correct.

3.2 *Plural reduplication*

The first type of reduplication expresses a plural reading. Ulrike (2010) argues that this type of plural is not equivalent to plural constructions in Indo-European languages because of its vague quantity. She uses the term *collective plural* to refer to this kind of plurality. I will follow

³² However, in theory it is also possible for the entire N (and not just a subpart of it) to be copied, so the affixal nature of the copy is not guaranteed.

her proposal and translate these constructions as “*many Ns*”. The examples in (36) show the different possible patterns. In (36a), the reduplicative classifiers appear in the form of CL-CL. In (36b), the numeral one precedes CL-CL.

- (36) CL-CL³³
- a. tian-shang piao-zhe duo-duo yun.
sky-on float-PROG CL-CL cloud
'Many clouds are floating in the sky.' (Ulrike 2010:71)
- one-CL-CL
- b. wo kanjian yi ge-ge tongxue zou jin jiaoshi.
1S see one CL-CL classmate walk into classroom
'I saw many classmates walk into the classroom.'

Ulrike (2010) argues that plural reduplication is morphological reduplication instead of syntactic reduplication, based on the fact that nothing can intervene between the reduplicated CL heads, as shown in (37).

- (37) *yi ge da ge ren
one CL big CL person
Intended meaning: 'many big people'

Furthermore, Ulrike argues that the numeral *yi* 'one' in plural reduplication does not have the function of a numeral. She notes that switching out *one* for any other numeral will render the sentence ungrammatical, as in (38). This leads her to argue that the numeral *one* is a grammatical marker for indefiniteness as this use of the numeral *one* is found cross-linguistically (Dryer 2008, cited in Ulrike 2010).

³³ It must be noted that this use is mainly literary.

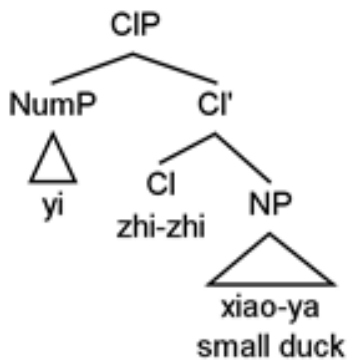
- (38) *Liang zhi zhi xiao-ya zai wo mian-qian guo he.
 Two CL CL little-duck PREP I face-before cross river
 (Ulrike 2010)

Since the numeral *yi* is grammaticalized, its singular meaning gets bleached. This is why *one-CL-CL* still receives a plural reading despite the presence of *one*³⁴. In fact, there are other examples of *yi* being grammaticalized and appearing in a plural context. For example, *yi* can appear with the plural classifier *xie*³⁵.

- (39) yi xie xiao-ya
 one PL little-duck
 ‘some little ducks.’ (Ulrike 2010)

Ulrike proposes the following structure for plural reduplication³⁶. In (40), she argues that the reduplicative classifier *zhi-zhi* is reduplicated lexically and therefore forms a plural lexical item.

(40)



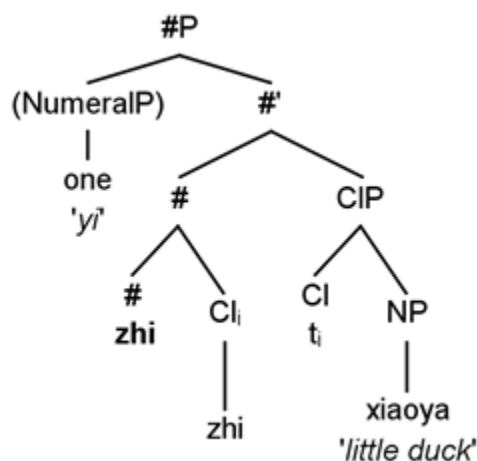
³⁴ “*yi-CL-CL*” is syntactically ambiguous as it could have a vague plural reading (less common) and an iterative ‘one after the other’ reading. As I will argue below, the iterative reading is a case of syntactic reduplication and it comes from “*yi-CL-yi-CL*” with the second *yi* being silent. Here, I am talking about the vague plural reading.

³⁵ The status of *xie* as a plural/group classifier is a contentious issue. While it appears to occupy the classifier slot, it is also quite different from a traditional classifier in that it could only be modified by *yi* ‘one’ to form *yi xie* ‘some.’ It cannot appear with any other numeral. Tang (2007) argues that *yi xie* is a fixed expression. However, Cantonese further makes the status of *xie* even more mysterious as the Cantonese equivalent *di* can undergo CI-to-D movement. I will leave this issue for further research and simply present Ulrike’s views here.

³⁶ Ulrike adopts Cheng & Sybesma’s (1999) CIP analysis in her work.

Ulrike's proposal resorts to a lexical account of reduplication. This type of proposal goes against Travis' (2001, 2003) idea that morphophonological reduplication always has a syntactic trigger. I propose an alternative analysis using Travis' framework for reduplication which can address the shortcoming in Ulrike's analysis. For plural reduplication, the reduplicative head is # (Number). I follow Ritter (1991) and Li (1999) in assuming that #P (Number Phrase) is the locus of number³⁷. Plurality is marked in the # head. I assume that there is an uninterpretable Number feature on the # head which can be checked by CL. Building on this assumption, I argue that reduplication is the result of head movement (and adjunction) of CL to # to check the Number feature, followed by #'s copying of the form in CL. This is a case of phonological reduplication, as proposed by Travis (2001, 2003). Under this proposal, plurality achieved from reduplication is not a strictly lexical process and can be explained by a syntactic operation. This analysis also straightforwardly explains why nothing can intervene between CL-CL.

(41)



³⁷ I use #P to refer to Number Phrase (or NumeralP in Cheng and Sybesma (1999)) to refer to the phrase that hosts numerals.

If this proposal is on the right track, this kind of reduplication targets the Number head and provides support that there is a higher functional category than N. The merit of this proposal is that reduplication takes place at the Number head, which is traditionally related to Number (Ritter 1991), and not the CL head. This way, we retain the traditional idea that the CL head serves to individuate while the Num head serves to mark number. Furthermore, it is unclear how proponents of the Parameterized DP Hypothesis can account for the reduplication if the maximal projection is NP and other NP-internal elements like numeral and classifiers are treated as adjective-like elements. By adopting Travis' analysis, I show that this type of reduplication targets the functional head Num and it has syntactic and semantic repercussions. It explains why nothing can intervene between the two reduplicative classifiers, and also how the structure gives rise to a plural reading. Therefore, I consider this to be an argument against the Parameterized DP Hypothesis.

3.3 The 'each/every' type of reduplication

This section discusses what I call the 'each/every' type of reduplication, which is in the form of Cl-Cl and N-N (only for certain Ns). This type of reduplication creates a universal quantification reading that is usually glossed as "every" (Cheng 2009³⁸). It is different from the previous type in that (i) they are never preceded by a numeral; (ii) they express universal quantification; and (iii) they require the presence of DOU.

- (42) ji zhi-zhi dou hen fei.
 chicken CL-CL DOU DEG fat
 'Every one of those chickens is fat.'

³⁸ Cheng claims that this meaning of "every" does not come from the universal quantifier *mei* or reduplicative classifiers alone. The meaning of "every" is only achieved when they combine with DOU, which is an iota/maximality operator in her analysis.

It is observed that a small number of nouns can also reduplicate in Chinese, as shown in (43). These are nouns like *tian* ‘days’ and *ren*³⁹ ‘person’ which do not need classifiers, as these nouns exhibit both the functions of a classifier and a noun. Lam (2014) argues that these nouns are akin to count nouns in English and are already individuated in the lexicon.

- (43) a. ta de shi, ren-ren dou zhidao.
 3S POSS matter person-person DOU know
 ‘As for his matter, everyone knows about it.’
 b. tamen tian-tian (dou) chi mian-bao.
 they day-day DOU eat bread
 ‘They eat bread every day.’ (Mandarin)

Simpson (2005) claims that these nouns obligatorily undergo N-CL movement, as they carry both the functions of a classifier and a noun. This proposal allows us to maintain that the ‘each/every’ type of reduplication targets just the classifier head, and the Ns that can reduplicate are able to do so by virtue of having undergone N-CL movement.

Unlike plural reduplications, this type of reduplication requires the presence of DOU. Due to the observed similarity in meaning and function between reduplicative classifiers + DOU ‘all’ and the universal quantifier *mei* ‘every’ + DOU constructions, a brief review of the literature on the distribution of DOU is in order. “Each/Every” reduplication also grants reduplicative classifiers the status of being (strong) quantifying expressions, leading us also to the topic of domain restriction of strong quantifiers. My argument is that Cantonese and Mandarin differ in how domain restriction is done in the syntax.

³⁹ The noun *ren* ‘person’ usually appears with the general classifier *ge*. However, in literary language it often appears directly after a numeral without a classifier in between. For example, it is possible to say *yi ren* ‘one person’ without an intervening classifier.

3.3.1 *The data*

In Cantonese and Mandarin, universal (distributive) quantification can be done by using *mei ... dou* (44a) or reduplicative classifiers + *dou* (44b).

- (44) a. **mei** (yi)-ge xuesheng dou lai-le. MEI... DOU
 MEI one-CL student DOU come-PERF
 ‘Every student came.’
- b. Tamen **ge-ge** dou hen congming. REDUPLICATIVE CL... DOU
 they CL-CL DOU very intelligent
 ‘Every one of them is intelligent.’ (Cheng 2009)

However, although both languages allow reduplicative classifiers, Mandarin reduplicative classifiers generally do not begin a sentence. They must be preceded by either a topic or an adverbial, as (45) and (46) show. In Cantonese, DPs with reduplicative classifiers can begin a sentence and can also be optionally preceded by topics or adverbials.

- (45) a. zheli de hua duo-duo dou hen piaoliang
 Here MOD flower CL-CL DOU very beautiful
 Literal: ‘The flowers in here, each one of them is beautiful.’ (Mand)
- b. neitou ke fa tō -tō tou hou læŋ
 Here MOD flower CL-CL DOU very beautiful (Cant)
- c. *duo-duo hua dou hen piaoliang
 CL-CL flower DOU very beautiful
 ‘Each flower is very pretty.’ (Mand)
- d. tō -tō fa tou hou læŋ
 CL-CL flower dou very pretty (Cant)
- (46) a. zhe san ge xiaohair ge-ge dou hen congming.
 DEM three CL child CL-CL DOU very clever
 ‘These three children, everyone of them is very clever.’ (Mand)
- b. ni sam kō sɛilou kō-kō tou hou ts^hoŋmɪŋ
 DEM three CL child CL-CL DOU very clever. (Cant)
- c. *ge-ge xiaohair dou hen congming.
 CL-CL children DOU very clever

- d. 'Every child is very clever.' (Mand)
 kə-kə səiloo too hou ts^hoŋmɿŋ
 CL-CL child DOU very clever. (Cant)

In both languages, it is impossible for reduplicative classifiers to appear post-verbally.

- (47) a. *wo ai ge-ge tongxue
 I love CL-CL classmate
 'I love every classmate.' (Mandarin)
 b. *ŋə ŋəi kə-kə t^hoŋhək
 I love CL-CL classmate
 'I love every classmate.' (Cantonese)

3.3.2 Previous analyses

Ulrike (2010) argues that “Each/Every” reduplicative classifiers “CL-CL” do not exhibit the functions that are typical of a classifier, because they cannot follow demonstratives, quantifiers, or numerals, as shown in (48).

- (48) a. *na zhi zhi xiaoya
 DEM CL CL duck
 '*those every duck'
 b. *mei zhi zhi xiaoya
 every CL CL duck (Ulrike 2010)
 c. *liang zhi zhi xiaoya
 two CL CL duck (Ulrike 2010)

Ulrike claims that CL-CL is a quantificational determiner. She does not offer a structural analysis and assumes that the reduplication is a lexical process. While I agree with her that CL-CL serves the function of a universal quantifier, I find her arguments rather weak. There are structural reasons why (48a-c) are illicit. (48a) and (48b) will follow from the assumption that one of the reduplicative classifiers occupies the D or Q position. (48c) is ruled out because weak quantifiers

like numerals cannot precede (and have scope over) strong quantifiers (i.e. CL-CL) (Gebhardt 2009)⁴⁰. It is indeed true that the CL-CL complex does not have the syntactic distribution of a typical classifier, but I do not agree with Ulrike that this is a morphological process and not a syntactic one. In fact, the individualizing function of CL is what makes classifier reduplication possible⁴¹. Each of the classifiers in the CL-CL complex is still a classifier. As I show later, they have undergone further movements so that they now assume the function of strong quantifying expressions.

Cheng (2009) offers an account of “Each/Every” reduplication which claims that only classifiers in Cantonese reduplicate. She argues that classifiers in Mandarin Chinese do not undergo reduplication. Her arguments come from the observation that reduplicative classifiers in Mandarin can only appear post-nominally. However, in Cantonese, reduplicative classifiers can appear both pre- and post-nominally.

- (49) a. Xuesheng ge-ge dou hen yonggong.
 student CL-CL DOU very work.hard
 ‘The students all work very hard.’
 b. **ge-ge* Xuéshēng dōu hen yònggòng. (Mandarin) (Cheng 2009)
- (50) a. hōksaŋ kə-kə tɔu hoʊ kʰʌnlik
 student CL-CL all very hardworking
 ‘The students are all very hardworking.’
 b. kə-kə hōksaŋ tɔu hoʊ kʰʌnlik
 CL-CL student all very hardworking
 ‘The students are all very hardworking.’ (Cantonese)

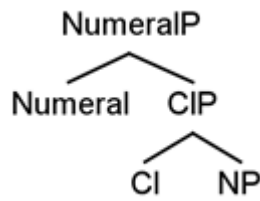
⁴⁰ Gebhardt’s (2009) analysis of Persian argues that Strong quantifiers (e.g. universal quantification) and Weak quantifiers (e.g. numerals) occupy different positions. When a Strong Quantifier Phrase (SQP) is present, it must be higher than a Weak Quantifier Phrase (WQP). He proposes the structure below. KP stands for Case Phrase.

(i) [KP [(SQP) [WQP [CIP [NumP [NP]]]]]]

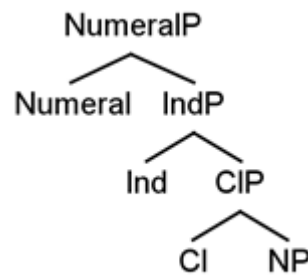
⁴¹ For a discussion of the semantics of classifier reduplication, I refer the reader to Lam (2013). Lam argues that across categories, reduplication exploits “a summation function that adds up arguments (be they object-, event-, or degree- arguments) and return a collection of elements. (p.277)” Lam claims that reduplication targets classifiers because count nouns are characterized by the property of quantization (i.e. the subpart of ‘every X’ cannot have ‘every X’ as its proper subset). Since classifiers individuate and make counting possible, reduplication will target classifiers instead of nouns to create a quantized entity.

Cantonese must undergo head movement to Ind, which is the head that (“Each/Every”) reduplication targets.

(53) Mandarin
a.



Cantonese
b.



(=(41) in Cheng 2009)

I only presented half of Cheng’s analysis of reduplicative classifiers in Cantonese and Mandarin above. Her analysis also makes certain assumptions about DOU, which she claims is an iota/maximality operator. In the next section, I will discuss the status of DOU in more detail and present the second half of Cheng’s analysis.

3.3.3 *DOU-quantification, the leftward condition, and domain restriction of quantifiers*

Cheng’s (2009) adverbial analysis of reduplicative classifiers relies on the assumption that DOU is a DP external domain restrictor adjoined to VP. In order to rebuke her claim that reduplicative classifiers are adverbials, we also want to strengthen our argument by showing that DOU is not a domain restrictor. Recall that that “Each/Every” reduplication always co-occurs with DOU.

(54) Xuesheng *ge-ge* **dou** hen yonggong.
 student CL-CL **DOU** very work.hard
 ‘The students all work very hard.’ (Mandarin) (Cheng 2009)

- (56) a. ta bu xiang qu nar
 He not want go where
 ‘He does not want to go anywhere (in particular).’
 b. ta nar **dou** bu xiang qu
 he where all not want go
 ‘He does not want to go to any (of the) places. (Cheng 2009)
- (57) a. ta bu xiang mai na-ben shu
 He not want buy which-CL book
 ‘He doesn’t want to buy any book (in particular).’
 b. ta na-ben shu **dou** bu xiang mai.
 He which-CL book all not want buy
 ‘He does not want to buy any (of the) books.’ (Cheng 2009)

It is claimed that the presence of DOU introduces a contextually determined set in both (56) and (57). Cheng argues that this is evidence that definiteness and therefore givenness are contributed by the presence of DOU. She argues that DOU is an iota/maximality⁴⁴ operator that takes the maximal member of a given set. Cheng’s proposal therefore differs sharply from Lin (1998) who claim that DOU is distributive. She shows that *yiqi* ‘together’ in (58a) ensures that the subject *tamen* ‘they’ is not interpreted distributively and (58b) cannot mean that pieces of the bridge collapsed.

- (58) a. tamen **dou** yiqi lai
 they DOU together come
 ‘All of them came together.’ (Cheng 2009)
 b. zheng-zuo qiao **dou** dao-xialai-le
 whole-CL bridge DOU fall-down-ASP
 ‘The whole bridge collapsed.’ (Lin 1998, as cited in Cheng 2009)

Perhaps the argument most relevant to the current study in Cheng’s analysis of DOU is her claim that DOU restricts the quantificational domain of *mei* ‘every’. Cheng notes that when DOU

⁴⁴ Iota operators and maximality operators are different operators. However, Cheng argues that DOU serves both functions as DOU always takes the maximal member of a given set. Her claim that it is also an iota operator comes from her idea (to be presented below) that DOU is a definite determiner outside of the DP (and adjoined to VP).

is absent (compare 59a with 59b), the grammaticality of (59b) is degraded for most native speakers. In order to rescue the sentence, native speakers usually add the adverbial *zher* ‘here’, which also serves to restrict the domain of the quantifier.

- (59) a. mei yi-ge chushi **dou** zuo-le yi-dao cai
 mei one-CL chef DOU make-PERF one-CL-dish
 ‘Every chef made a dish.’
 b. ??mei yi-ge chushi zuo-le yi-dao cai
 c. Zher mei yi-ge chushi zuo-le yi-dao cai
 Here mei one-CL chef make-PERF one-CL dish
 ‘Every chef here made a dish.’ (Cheng 2009)

It is often assumed that strong quantifiers need to have some kind of contextual domain restriction (von Stechow 1998, Stanley and Szabó 2000, among others). For example, in (60a) the quantifier *every* does not refer to every student in the entire universe. The domain ‘in my semantics class’ can be optionally spelled out as in (60b).

- (60) a. Every student passed the exam.
 b. In my semantics class, every student passed the exam. (=22 in Giannakidou 2004)
 c. $\forall x$ [student_c] passed the exam. (=23b in Giannakidou 2004)

Giannakidou (2004) argues that domain restriction is always done overtly (in the syntax) and that the restriction can be placed on the quantificational determiner. In Greek, definite determiners cannot be omitted with strong quantifiers. Strong quantifiers must be overtly restricted by the outer layer of the determiner expression.

- (61) The Greek determiner ‘each’ = ‘the + every’
 o kathe
 the_{masc.sg} every

i kathe
the_{fem.sg} every
to kathe
the_{neut.sg} every

(=24 in Giannakidou 2004)

Cheng (2009), following Giannakidou (2004), argues that in Chinese DOU is also a determiner, albeit an external determiner that is outside of the DP. She holds the traditional view that DOU is adjoined to VP. DOU, however, has the status of an external determiner which can contextually restrict a DP⁴⁵. She further claims that this analysis is consistent with her view that Chinese has no DP-internal determiners.

In this section, I summarized Cheng's arguments for DOU as a domain restrictor. This claim is an important one for Cheng because she assumes that the reduplicative classifiers are lexicalized adverbials and do not play any role in domain restriction. She therefore argues that an external determiner (outside of the subject nominal phrase) must exist to contextually restrict the subject. In the following subsections, I criticize her claims and show that postnominal reduplicative classifiers are not adverbials and DOU is not a domain restrictor.

3.4 Arguments against Cheng (2009)

Cheng's claims about post-nominal reduplicative classifiers and DOU being a domain restrictor are highly problematic. I present my arguments against these claims below.

⁴⁵ This claim is inspired by Johnson's (2001) treatment of English determiners like *few* and *no*. Johnson (2001) argues that these determiners can be broken up into two parts, one part acting like the negator *not* and the other part acting like the indefinites (e.g. *many/any*). It is argued that a determiner like *few* is an amalgam of 'negator + *many*', with the negator acting like an adverb outside of the DP and the *many* part acting as an indefinite article.

- (i) a. I have read few books on photosynthesis.
b. I haven't read many books on photosynthesis.
- (ii) a. I have read no books on photosynthesis.
b. I haven't read any books on photosynthesis.

3.4.1 Post-nominal reduplicative classifiers are not adverbials

Cheng's assumption that post-nominal reduplicative classifiers have an adverbial status like *tian-tian* 'every day' is problematic.

Certain nouns (namely those that do not take classifiers) in Chinese have become lexicalized as adverbials. This kind of lexicalized adverbial is what inspires Cheng's analysis that post-nominal reduplicative classifiers are also adverbials.

- (62) Tamen tian-tian (dou) chi mian-bao.
 they day-day DOU eat bread
 'They eat bread every day.' (Mandarin) (= (32) in Cheng 2009)

However, one characteristic that sets reduplicative classifiers (as in (63)) apart from reduplicated nouns that function as adverbials (as in (62)) is that reduplicative classifiers always require the use of DOU in Mandarin⁴⁶, while the adverbials N-N do not.

- (63) Xuesheng *ge-ge* *(dou) hen yonggong.
 student CL-CL DOU very work.hard
 'Students all work very hard.' (Mandarin) (Cheng 2009)

Moreover, post-nominal reduplicative classifiers do not behave like other scope-taking adverbs, which can appear before or after DOU, as shown in (64). Post-nominal reduplicative classifiers can only appear before DOU, as shown in (65). Note that reduplicated Ns that have become lexicalized adverbials behave like other scope-taking adverbs, as shown in (66).

- (64) a. tongxue tongtong **dou** lai le
 student-PL all DOU come PERF
 'The students have all arrived.'
 b. tongxue **dou** tongtong lai le

⁴⁶ I thank Yin Li for noticing and pointing this fact out to me.

- (65) a. tongxue ge-ge **dou** lai le
 student CL-CL DOU come PERF
 ‘The students have all arrived.’
 b. *tongxue **dou** ge-ge lai le
- (66) a. tamen tiantian **dou** chi mianbao
 they every day DOU eat bread
 ‘They eat bread every day.’
 b. tamen **dou** tiantian chi mianbao.

Also, it is not clear how they can appear before the subject *boshisheng* ‘doctoral student’, if they are adverbs rather than classifiers. (67) clearly shows that the reduplicative classifier *ge-ge* appears after the adverbial *zai tushuguan* ‘in the library’ and is part of the subject. Example (67) therefore shows that the postnominal CL-CL must be a reduplicative classifier expressing universal quantification, and not an adverbial.

- (67) zai tushuguan [ge-ge boshisheng] **dou** zai xie lunwen
 in library CL-CL Ph.D student DOU PROG write dissertation.
 ‘In the library, each Ph.D student is writing his dissertation.’

If postnominal reduplicative classifiers in both Mandarin and Cantonese are not adverbials⁴⁷, then Cheng’s (2009) claim about Mandarin and Cantonese nouns being individuated at different levels of the grammar becomes questionable (See example (53)). For example, it is not clear why

⁴⁷ One other example that Cheng uses to show that post-nominal reduplicative classifiers must be adverbials is something like (i). Her argument is that Chinese nouns cannot have two classifiers.

- (i) zhe **xie** hua **duo-duo** dou hen piaoliang
 DEM CL:pl flower CL-CL DOU very beautiful
 Literal: ‘These flowers, each one of them is beautiful.’ (Mandarin)

However, this is not problematic because *zhe xie hua* ‘these flowers’ can be interpreted as an aboutness topic base-generated in the clausal left-periphery, with the meaning “regarding these flowers.” If this is the case, then it simply means that nominal ellipsis has applied in the subject DP [*duo duo ~~hua~~*] ‘every flower.’ I will discuss nominal ellipsis in the next chapter.

Cantonese needs an extra IndividualP to perform the function of individuation when the standard assumption is that this is a function of numeral classifiers (see Cheng and Sybesma (1999) and Simpson (2005)). It seems like an unnecessary stipulation.

3.4.2 *DOU is not a domain restrictor*

The second problem with Cheng’s analysis is the treatment of DOU as a domain restrictor. Recall that in her analysis DOU introduces definiteness/givenness to free choice wh-phrases in (68), and is therefore an iota/maximality operator. However, there seems to be a chicken and egg problem. In (68b), it is not clear whether the givenness is really introduced by DOU. It could also be said that the givenness is introduced by *na-ben shu* by virtue of being an inner-topic⁴⁸ in the sense of Paul (2005) and DOU becomes obligatory there because it appears after strong quantifiers, topics, and definite NPs.

- (68) a. ta bu xiang mai na-ben shu
 He not want buy which-CL book
 ‘He doesn’t want to buy any book (in particular).’
 b. ta na-ben shu **dou** bu xiang mai.
 He which-CL book all not want buy
 ‘He does not want to buy any (of the) books.’ (Cheng 2009)

We have refuted the claim that Mandarin classifiers do not reduplicate. We have also shown that reduplicative classifiers are not adverbs. Cheng claims that “every”-type expressions in Mandarin must be domain restricted by DOU. What is interesting, then, is that Cheng’s analysis

⁴⁸ Paul (2005) argues for a low TopP between IP and vP. For example, (68b) could be analyzed as:

(i) [IP ta [Int.TopP [na ben shu]_i [vP [dou bu xiang mai t_i]]]]

This since topics are associated with old information, another explanation for (68b) would be that the topic status of *[na ben shu]* ‘that book’ introduces a given set.

of DOU as a domain restrictor actually predicts that (69a) should be grammatical. In other words, if *dou* served the role of domain restrictor in both languages, then the difference between Cantonese and Mandarin shown in (69) would be unexpected. It is therefore surprising that (69a) is ungrammatical in Mandarin, if DOU is functioning as a domain restrictor for the quantifying expression⁴⁹.

- (69) a. *ge-ge xiaohair dou hen congming.
 CL-CL children DOU very clever
 ‘Every child is very clever.’ (Mand)
- b. kə-kə səiloo too hou ts^hoŋmɿŋ
 CL-CL child DOU very clever. (Cant)

Yet, we have shown many times that adding a topic or an adverbial is the only way to save (69a), as the topic provides a given set and serves as the domain restrictor.

- (70) zhe san ge xiaohair ge-ge dou hen congming.
 DEM three CL child CL-CL DOU very clever
 ‘These three children, everyone of them is very clever.’ (Mand)

3.5 *The present analysis*

The present analysis retains the idea that domain restriction applies to “Each/Every” reduplication. Unlike Cheng (2009), I argue that both Mandarin and Cantonese have “Each/Every” reduplication. As shown before, Mandarin [CL-CL-N] arguments are pragmatically restricted. There must be a topic or an adverbial before the reduplicative classifiers.

- (71) a. zai tushuguan, ge-ge boshisheng dou zai xie lunwen
 in library CL-CL Ph.D student DOU PROG write dissertation.
 ‘In the library, each Ph.D student is writing his dissertation.’
- b. *ge-ge boshisheng dou zai xie lunwen
 CL-CL Ph.D student DOU PROG write dissertation.
 ‘every Ph.D student is writing his dissertation.’ (Mandarin)

⁴⁹ Cheng (2009) of course rules (62a) out simply by saying that *ge-ge* is an adverb, but I think I have presented solid evidence against this claim.

In the Cantonese data (72), we see a very different pattern. (72a) shows that Cantonese allows an adverbial at the beginning of the clause, before the subject with the reduplicative classifiers. This is the same as the Mandarin data. (72b) shows, however, that the adverbial does not need to be there. In fact, (72b) can have the universal reading of every cat in the universe being expensive or a domain restricted reading that means each cat in some location only known to the speaker and his interlocutor is very expensive.

- (72) a. ts^hoŋma:k tɪm jɿpmin, tsek tsek maʊ tɔʊ hoʊ kwɛɪ
 pet store inside CL CL cat DOU very expensive
 ‘Each cat in the pet store is expensive.’
 b. tsek tsek maʊ tɔʊ hoʊ kwɛɪ
 CL CL cat DOU very expensive
 ‘Every cat (in the universe) is very expensive.’ OR
 ‘Each cat in the pet store (or some unknown place) is very expensive.’ (Cantonese)

Interestingly, Giannakidou (2004) claims that domain restriction is done covertly at LF for languages without articles but for languages with overt determiners, domain restriction is often done overtly and the locus of the restriction is in D. As we have discussed in chapter 1, one major difference between Mandarin and Cantonese is that Cantonese has Cl-to-D movement (Simpson 2005, Wu and Bodomo 2011).

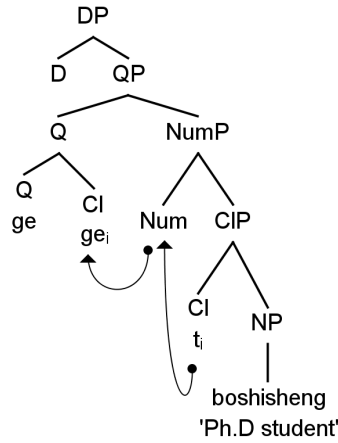
- (73) a. pʊn sy hoʊ kwɛɪ
 CL book very expensive
 ‘The book is very expensive.’
 b. [DP pʊni [CLP t_i [NP sy]]] hoʊ kwɛɪ

If Giannakidou’s claim is correct, then Cantonese satisfies the requirement of having an “overt” determiner, owing to the movement of Cl to D. In this case, domain restriction is done overtly in D in Cantonese, which is why (71b) is grammatical. Mandarin lacks an overt determiner, and

therefore must resort to restricting the contextual domain pragmatically (by adding a topic or an adverbial). I will spell out the analysis for Mandarin and Cantonese below.

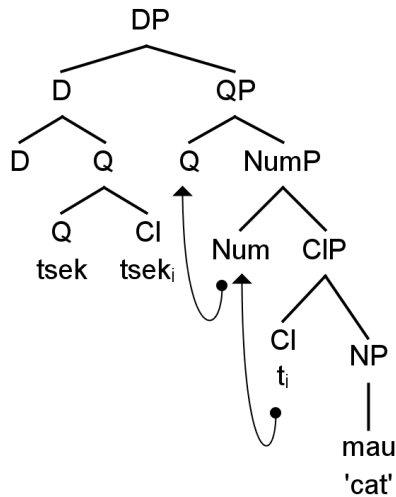
I will begin with Mandarin. I argue that like plural reduplication, “Each/Every” reduplication is also a kind of phonological reduplication. I propose that reduplication happens because Q has an uninterpretable Q feature which can be checked by CL. CL will undergo head-to-head movement to Q, and subsequently Q copies the form of CL. Note that in (74) there is no overt D to contextually restrict the CL-CL quantifier.

(74)



For Cantonese, similar derivations take place. However, in Cantonese, D attracts the CL head to D. Therefore, after CL moves and adjoins to Q and Q copies the form of CL, Q (now containing CL) will have to move once more to D. This movement allows overt domain restriction to happen, which explains why Cantonese reduplicative classifiers do not have to appear with sentence-initial adverbials or topics.

(75)



Our analysis straightforwardly explains why Cantonese reduplicative classifiers behave differently than Mandarin reduplicative classifiers. Assuming Giannakidou's (2004) claim that D is a domain restrictor, Cl-to-D movement creates an environment in which D is filled by the moved classifier and therefore domain restriction can happen without sentential topics or adverbials. In Mandarin, because there is no Cl-to-D movement, D will never be "overt" and domain restriction must be done by introducing a sentential topic or an adverbial.

4. Conclusion

In this chapter, I presented previous literature on noun phrase structure in Chinese and offered new evidence against Cheng and Sybesma's claim that Cl assumes the role of D in Chinese. The first set of evidence comes from true measures. True measures must be preceded by numerals and can never be definite, in part because they do not individuate. Cheng and Sybesma (1999) assume that all classifiers occupy the Cl head and express definiteness. True measures constitute a set of classifiers that C&S's analysis cannot account for. The second set of evidence comes from

reduplicative classifiers. It is shown that classifier reduplication in the nominal domain makes use of different functional layers (namely Cl, Num) above NP to create different meanings. First, plural reduplication moves a Cl to NUM and creates a copy of it at NUM head. Second, the “Each/Every” type of reduplication in Cantonese can occur without a preceding sentential topic or adverbial because of CL-to-D movement. The moved classifier takes on the function of a determiner and becomes an outer layer of restriction for the quantifier following it. This also corroborates my thesis that the DP layer exists in Chinese. The reduplication facts shown in this chapter also demonstrate that extended functional layers exist above the NP. This suggests that the Universal DP Hypothesis is correct.

Chapter 3. Topic and Focus in DP

1. Introduction

The existence of a DP-internal left periphery is well-attested in the literature (Bernstein 1997, 2001, Aboh 2004, Haegeman 2004) and is found in many languages. However, the idea that information structural layers exist in the Chinese DP is still a new idea. To date, only Lin (2008), Yip (2009), and Hsu (2012) have argued for the existence of a DP-internal left periphery in Chinese, even though Simpson (2005) also suggested the existence of Focus in DP without providing an analysis. In this chapter, I review existing literature on DP-internal topic and focus movements in Chinese and provide additional evidence for these authors' claims. I focus on three main kinds of evidence: the non-canonical NP-Num-CL word order, *de-* vs. *de-*-less modification, and nominal ellipsis. Simpson (2005), Lin (2008), and Hsu (2012) all discussed the non-canonical NP-Num-CL order. However, an alternative analysis treating [Num-CL] as secondary predicates has been proposed in Tang (1993). I will address the problems of Tang's analysis and argue for Lin's (2008) DP-internal topicalization analysis. I will also show that Ntelitheos' (2003) analysis of nominal ellipsis for Greek can be straightforwardly adapted for Chinese.

The chapter is organized as follows. Section 2 reviews previous works on DP-internal topic and focus. It is demonstrated that cross-linguistically DP topic and focus positions are attested. It is shown that a DP topic may license a clausal topic, and that nominal ellipsis is DP-internal topicalization followed by movement of the remnant FocusP (Ntelitheos 2003). Section 3 reviews similar evidence for Chinese, with special attention to the NP inversion, *de-* vs. *de-*-less modification, and NP ellipsis. The goal of this chapter is to show the existence of topic and focus projections in the left periphery of the Chinese DP. Much of this chapter serves to lay the groundwork for the next chapter on *de-*-modification in Chinese, as I will also adopt a topic and

focus approach to account for the different positions of phrasal modifiers. Although this chapter is mostly a review of existing work on DP-internal topic and focus, I am doing more than just a literature review. I review two competing analyses (Lin's (2008) topic-movement approach and Tang's (1996) secondary predicate approach) to NP Inversion and offer new arguments against Tang. Furthermore, I apply Ntelitheos' analysis of NP Ellipsis for Greek to Chinese. Finally, I also show that NP Ellipsis is deletion at the left edge of DP but not deletion at the left edge of CP. This conclusion is reached by combining findings from both Lin (2008) and Ntelitheos (2003).

2. Background

One of the core claims of Chomsky (1970) is that there exists some parallelism in internal structure across phrasal categories. Pioneering works on the DP hypothesis (Szabolsci 1983, and Abney 1987) have opened up new questions about the symmetry between nominal and clausal structures. In particular, Abney (1987) argues that DP is the nominal counterpart of CP; and similarly to C, D functions as a subordinator. Szabolsci (1983) shows that agreement between a subject and a verb in Hungarian is mirrored in that between a possessor and its possessed noun in the nominal domain. Rizzi's (1997) proposal of the fine structure of the left periphery led to a new direction for research. Rizzi's proposal is that there exists a split CP where information structural positions are located in the left periphery. If there is structural parallelism between CP and DP, we should expect to also see parallelism in information structures between the two domains. In other words, the main goal of this chapter is to argue that DP-internal topic and focus positions exist across languages.

2.1 DP-Internal Topic

Pragmatic effects in DP-internal word order variations have long been observed. Ihsane and Puskas (2001) proposed that the DP-internal Topic Phrase is the locus of specificity (see also Enç

(FP in (3a)) must move to [spec, NumP] first to check number features, and subsequently be attracted to Top to check the [specific] feature, as shown in (3a). This, according to him, is analogous to Campbell's (1996) proposal that in (3b) there exists a specificity operator in English that serves as the DP-internal topic, which refers to a referent in the previous discourse.

- (3) a. [DP [D [TopP [FP távò_i] [Top⁰ ló [NumP t_i [Num l'é [FP t_i]]]]]]]]
 b. [DP [TopP Op_i [Top⁰ the [FP [ec]_i thief_i]]]]
 (=15 in Aboh 2004)

2.2 DP-Internal Focus

There is also an abundance of data supporting the existence of a DP-internal focus projection across languages. Aboh (2004) reports that in Gungbe, a question phrase ('Q-phrase') is formed by attaching a question marker to a noun phrase.

- (4) a. [Nú-té] wè Kòfí xò?
 Thing-Q FOC Kofi buy
 'What (thing) did Kofi buy?'
 b. [Fí-té] wè Kòfí yì?
 Place-Q FOC Kofi go
 'Where did Kofi go?'
 (=16 in Aboh 2004)

The NP and the question word can be separated by other elements like adjectives. This seems to suggest that Q heads a phrase and it is the NP that appears to the left of Q that occupies its specifier position.

- (5) [Távò xóxó té] wè Kòfí xò?
 Table old Q FOC Kofi buy
 'Which old table did Kofi buy?'
 (=17a in Aboh 2004)

Aboh argues that the question marker *té* is the nominal parallel of *wè*, the clausal focus marker. In the clausal domain, focused NPs (as in 6a) must move to the left of *wè*, and so do question words in (6b). Example (6c) shows that it is not possible to have both a question word, which should

receive a focus interpretation, and another focused constituent before the FOC marker *wè* in the interrogative clause.

- (6) a. [[àkwékwè] wè] Kòfí xò
 Banana FOC Kofi buy
 ‘Kofi bought BANANA(S).’
 b. [[é-té] wè] Kòfí xò?
 3SG-Q FOC Kofi buy
 ‘What did Kofi buy?’
 c. *é-té Kòfí wè xò?
 3SG-Q Kofi FOC buy
 ‘What KOFI bought?’ (=*19* in Aboh 2004)

Aboh argues that the Q marker *té* is the focus head within the DP and it attracts an NP to its specifier position. This analysis draws a nice parallel between the C-system in the clausal domain and the D-system in the nominal domain.

- (7) a. [_{FocP} XP_[F] [_{FOC} wè [_{FinP...}t_{XP...}]]] (clausal domain)
 b. [_{FocP} XP_[F] [_{FOC} té [_{NumP...}t_{XP...}]]] (nominal domain)

Moving on to examples of Focus, in languages like English and Albanian, where there is a fixed order of adjectives, it has been noted that the hierarchical order can be altered if one of the adjectives is emphasized or contrastively focused. Scott (2002) argues that the nationality adjective in (8) can violate the order hierarchy if it receives contrastive focus.

- (8) a. an alleged English baron
 b. *an English alleged baron
 c. an ENGLISH alleged baron (Scott 2002: 113)

Similar arguments have been made for Albanian in Giusti (1996). In Albanian, adjectives generally appear postnominally (as in (9a) and (9b)) and follow a fixed order, but they can appear prenominal if they are focused. When focused, the reverse order is also possible.

- (9) a. gruaja tjetër e bukur
 woman-DET other the nice
 ‘the other nice woman’
- b. *gruaja e bukur tjetër
 woman-DET the nice other
- c. tjetra grua e bukur
 Other-Det woman the nice
 ‘the OTHER nice woman’
- d. e bukura grua tjetër
 the nice-DET woman other
 ‘the NICE other woman’
- Giusti (1996: 112)

Saurov (2017) also shows that there is DP-internal Focus movement in Bangla. In Bangla, it is possible to move the NP across Num-CL to create a definite expression, as shown in (10).

- (10) a. du To lal boi
 two CL red book
 ‘two red books’
- b. lal boi du To
 red book two CL
 ‘The two redbooks’
- c. [DP [NP lal boi]_i du To t_i]

The definite expression in (10b) is compatible with a demonstrative, as (11a) shows. However, it is also possible for the adjective *lal* ‘red’ to move once more across the demonstrative, as shown in (11b). However, (11b) is only grammatical when the adjective is stressed phonetically. If there is no phonetic stress, (11b) becomes ungrammatical.

- (11) a. ei [lal boi] du To t_i
 This red book two CL
 ‘These two red books’
- b. **LAL** ei boi Ta amar pochondo
 red this book Cl my liking
 ‘This red book is of my liking’

Saurov argues that this movement of the adjective across the demonstrative is Focus movement to the left periphery of DP.

2.3 Ellipsis and Information Structure

Previous analyses of Nominal Ellipsis attributed it to formal licensing conditions like head-government (Lobeck 1995), partitivity (Sleeman 1996), D-linking (Lopez 2000), and phasehood (Bošković 2014). Lobeck (1995) analyzes the phenomenon using the empty category *pro*, which must be properly head governed by a head with strong agreement. It is argued that numerals and quantifiers are specified for strong agreement as they share the feature [+number].

- (12) a. *Although John doesn't like that air conditioner that he bought at Sears, he likes this ~~air conditioner~~ that Mary got at K-mart.
b. John calls on these students because he is irritated with those ~~students~~.
(=27 in Ntelitheos 2004)

The difference in grammaticality in (12a) and (12b) is attributed to the presence and absence of [+plural]. The demonstrative *this* is not specified for [+plural], and therefore NP ellipsis is barred. Lobeck (1995) further argues that for nominal ellipsis to take place, the feature specification on the head of the DP must be [+possessive], [+plural], and/or [+partitive]. However, the idea that rich morphological agreement licenses nominal ellipsis is not without problems. For example, Chinese does not have rich agreement, but NP ellipsis still exists.

- (13) ta yao mai liang ben shu, wo yao mai yi ben ~~shu~~.
He wants buy two CL book I want buy one CL book
'He wants to buy two books. I want to buy one.'

The French example in (14) shows that rich morphology on the head is not a necessary condition for nominal ellipsis, and example (15) shows that not all French adjectives with rich inflection license ellipsis.

- (14) De ces robes, je préfère la robe verte foncé
 Of these dresses, I prefer the dress green deep
 ‘Of these dresses, I prefer the deep green one.’
 (Sleeman 1996:14, as cited in Ntelitheos 2003)

- (15) (*In the morning an interesting lecture and some less interesting ones were given*):
 *Malheureusement je n’ai pas entendu l’intéressante
 Unfortunately I NEG-have NEG heard the interesting
 ‘Unfortunately I have not heard the interesting one.’
 (Sleeman 1996:14, as cited in Ntelitheos 2004)

Sleeman (1996) finds that [+partitive] seems to be the only feature relevant for nominal ellipsis in French. Sleeman (1996) still assumes Lobeck’s idea of the elided NP being pro, but he argues that the empty category “must be governed by a functional head (or its specifier) marked as [+partitive]” (Sleeman 1996:39), like a determiner, a quantifier, or an adjective with a partitive meaning. Sleeman argues that this condition captures the fact that elided NPs are subsets of previously mentioned NPs. López’s (2000) D-linking condition claims that “Elided constituents are licensed if they are associated with a discourse-linking functional category” (p.187). Eguren (2010) argues that Sleeman’s partitivity condition and López’s D-linking condition are really “one and the same condition” (p.441). They both assume a subset in a contextually given set. It is argued that the partitivity/D-linking relation observed in NP-Ellipsis is a side effect of the contrastive focus condition that began with Ntelitheos (2004) and Corver and van Koppen (2005). In these works, NP ellipsis is only licensed when the phonetically pronounced material is moved to [spec, DFocP]. More recently, Bošković (2014) argues that only phases and phase complements can undergo ellipsis⁵¹, however, Manlove (2016) correctly points out that this proposal is highly problematic for NP Ellipsis as it is possible to elide units smaller than the complement of a phase head.

⁵¹ It must also be noted that Bošković also argues that the maximal projection of a lexical category (VP, PP, AP, DP) is a phase. This is different from Chomsky’s (2000) original conception.

- (16) I'll feed [DP these [NumP two [NP ducks]]] and you can feed [DP those [NumP three [NP ducks]]].
(Manlove 2016)

In my work, I will adopt Ntelitheos' (2004) idea that NP Ellipsis requires contrastive focus. For more on NP Ellipsis and Focus, I refer the reader to Corver and Koppen (2005), Eguren (2010), and Manlove (2016). Ntelitheos provides a unified proposal for nominal ellipsis and discontinuous DPs, cases where a prenominal or post-nominal modifier is separated from the NP by other material. For example, (in 17b), the numeral *ena* 'one' has moved to the left edge of CP, so the numeral and the NP are separated. Ntelitheos argues that NP Ellipsis and Discontinuous DPs are sister operations which have traditionally been analyzed as distinct phenomena, as they both involve movement to the DP left-periphery.

- (17) a. o Petros agorase ena.vivlio
the Petros bought one book
'Petros bought one book.'
- b. ena_i⁵² o Petros agorase t_i vivlio
one the Petros bought book
'Petros bought one book.'

Ntelitheos's proposal is that nominal ellipsis and discontinuous DPs are two sides of the same coin. He argues that ellipsis is derived via topicalization followed by PF-deletion of the topicalized element, and the licensing condition for the deletion is the focalization of the remnant. For discontinuous DP, the focused remnant further moves to the clausal Focus position, and PF deletion does not take place. This proposal ellipsis is related to discourse-related projections is in part inspired by Johnson (2001) who argues that VP ellipsis is licensed by VP Topicalization.

- (18) José Ybarra-Jaegger should have eaten rutabagas, and ~~eaten rutabagas~~ Holly should have t_{VP}, too.

⁵² It must be noted that in Ntelitheos' work, Numerals are phrasal specifiers and he considers them modifiers. It is not clear if there is independent evidence to support this treatment of numerals in Greek. I am simply using his terminology and examples here.

Ntelitheos arrives at the following generalization:

- (19) *Phonological deletion targets elements that have moved to some sort of discourse-related projection, usually a topic phrase. (=9 in Ntelitheos 2004)*

For nominal ellipsis, Ntelitheos claims that the NP must be topicalized within the DP, followed by focus movement of the remnant modifier FP (e.g. NumP). In (20b), the NP moves to [spec, DTopP]. Next, the remnant modifier FP moves to the higher [spec, FocusP]. This is the licensing condition that allows the PF-deletion of the topicalized NP in (20e).

- (20) a. o Giannis agorase tria vivlia kai o Petros agorase
 the Giannis bought-3SG three books and the Petros bought
 ena ~~vivlio~~
 one book
 ‘John bought three books and Petros bought one.’
 b. [XP [TopP [FocusP [TopP [DefP...[FP **ena**... [NP **vivlio**]]]]]]]
 c. [XP [TopP [FocusP [TopP [NP **vivlio**] [DefP...[FP **ena**...tNP]]]]]]]
 d. [XP [TopP [FocusP [FP **ena**...tNP] [TopP [NP **vivlio**] [DefP...tFP]]]]]
 e. [XP [TopP [FocusP [FP **ena**...tNP] [TopP [NP ~~vivlio~~] [DefP...tFP]]]]]

Ntelitheos argues that the Focus movement of the remnant is motivated by the fact that nominal ellipsis often involves contrastive focus, as (21a) shows. It is argued that there needs to be a contrastive focus condition for ellipsis to take place. For example, NP ellipsis within the second DP in (21b) is ungrammatical as its modifier is the same as the modifier of the first DP, i.e. there is no contrast.

- (21) a. i Maria forese to [BLE]_F fustani ke i Eleni
 The Maria wore-3SG the blue dress and the Eleni
 forese to [PRASINO]_F ~~fustani~~
 wore the green dress
 ‘Maria wore the blue dress and Eleni wore the green one.’
 b. *i Maria forese to ble fustani ke i Eleni
 The Maria wore-3SG the blue dress and the Eleni
 forese to ble ~~fustani~~
 wore the blue dress

The focus condition on nominal ellipsis is also defended by Corver and van Koppen's⁵³ (2005) proposal for Frisian and Dutch. Ntelitheos further argues that Discontinuous DPs involve the same derivations. Discontinuous DPs refer to cases where a modifier⁵⁴ is separated from its nominal head because the modifier has moved to the clausal left periphery, as in (22).

- (22) a. o Petros agorase ena.vivlio
the Petros bought one book
'Petros bought one book.'
- b. o Petros agorase [XP [TopP [FocusP [TopP [DefP...[FP **ena**... [NP **vivlio**]]]]]]]
- c. o Petros agorase [XP [TopP [FocusP [TopP [NP **vivlio**] [DefP...[FP **ena**...tNP]]]]]]]
- d. o Petros agorase [XP [TopP [FocusP [FP **ena**...tNP] [TopP [NP **vivlio**] [DefP...tFP]]]]]]]
- e. [FocusP [FP **ena**...tNP] [CP o Petros agorase [XP [TopP [FocusP tFP [TopP [NP **vivlio**] [DefP...tFP]]]]]]]]]

In (22), it is shown that Discontinuous DPs involve exactly the same derivations in the nominal ellipsis example in (10). The derivations in (20b-d) and (22b-d) overlap. The only difference between them is that in Discontinuous DPs, there is no PF-deletion of [Spec, TopP] as the remnant FP moves from the DP-internal focus position to the focus phrase in the clausal left periphery. In (22), we see again that focus fronting within the DP can license subsequent movement of the same phrase to the clausal Focus position.

Most importantly, Ntelitheos's approach does not assume that nominal ellipsis deploys a separate set of licensing conditions (e.g. *pro*, agreement). Since verbal ellipsis is assumed to be made possible by semantic or syntactic identity together with discourse functions like contrastive focus (Rooth 1992a, 1992b; Merchant 2001), it is both theoretically and empirically motivated to argue that NP ellipsis also makes uses of discourse-related movements.

⁵³ Corver and van Koppen (2006) has a slightly different take. They propose that what deletes is the entire complement of the Focus head. This is because in their analysis there is no topic movement.

⁵⁴ I am using the word "modifier" rather loosely here. Numerals are typically not treated as modifiers but since both numerals and modifiers participate in movement to [spec, FocusP], I will just refer to both of them as "modifiers" for convenience.

2.4 Licensing of clausal topic by DP topic

Aboh (2004) claims that there may be interaction between a DP topic and a CP topic. Topicalization of an adjunct is a case in point. In Gungbe, locative adjuncts cannot be topicalized while temporal adjuncts can. The clausal topic marker *yà* requires that the element to its left refer to a specific member of an established set in the discourse, Aboh argues that *Gbòjé* ‘holiday’ can be referential because it is shared knowledge. However, *xò kpá* ‘room beside’ is not specific because it is not clear which room is being talked about.

- (23) a. [Gbòjé m̀è] yà Kòfí ná sá s̀èn dó xò
 Holiday POST_[inside] TOP Kofi FUT put paint PREP room
 ló
 DET_[+spec,+def]
 ‘As for during the holidays, Kofi will paint the room.’
- b. *[Xò kpá] yà Kòfí ná zà flén gbáú
 room POST_[beside] TOP Kofi FUT sweep there indeed
 ‘As for beside the room, Kofi will sweep there!’

Interestingly, the addition of the [+specific, +definite] determiner (also DP topic marker) *ló* in (24) allows topicalization of the adjunct in (25).

- (24) [PP<sub>[D_{TopP} [Xò]_i [D_{Top} ló] [NP t_i]]] kpá⁵⁵
 Room DET beside</sub>

Aboh suggests that by virtue of being a DP topic, *Xò* ‘room’ is now specific and it can therefore license the topicalization of the locative adjunct at the CP level as a result of the interaction of D and C at the interface level.

- (25) [Xò ló kpá] yà Kòfí ná zà flén gbáú
 room DET POST_[beside] TOP Kofi FUT sweep there indeed
 ‘As for beside the aforementioned room, Kofi will sweep there!’

⁵⁵ There is no structure given in the original paper. I am assuming that this is the head of PP since it’s a postposition.

That movement to the left edge of DP allows subsequent extraction to the left periphery is not a new idea. Szabolcsi (1994) claims that dative possessor constructions in Hungarian are derived through DP-internal topicalization. In Hungarian, there are two positions for a possessor to appear in. When the possessor appears after the definite determiner, it receives nominative case. However, it can also move to the edge of DP, which Szabolcsi assumes to be a DP-internal topic position, where it can be assigned DAT case.

- (26) a. [DP [D' a Mari kalap-ja]]
 the Mari-NOM hat-POSS
 ‘Mari’s hat’
 b. [DP Mari_i-nak [D' t_i a kalap-ja]]
 Mari-DAT the hat-POSS
 ‘Mari’s hat’ (Szabolcsi 1994, as cited in Ntelitheos 2003)

This movement in (27b) is argued to be the precursor to subsequent extraction to the clausal topic position in (27a). Example (27b) shows that the same happens to wh-possessors.

- (27) a. [CP [TopP Mari-nak_i [FocP Peter látta [IP [DP t_i a kalap-ja]]]]]
 Mari-DAT Peter saw the hat-POSS
 ‘Peter saw Mari’s hat.’
 b. [CP [FocP kinek_i látta [IP Kati [DP t_i a kalap-ja]]]]]
 whose-DAT saw Kati the hat
 ‘Whose hat did Kati see?’ (Szabolcsi 1994, as cited in Ntelitheos 2003)

In this section, I offered a summary of some previous works on DP-internal topic and focus cross-linguistically. In the next section, I review similar arguments which have been made for Chinese. I argue that evidence for a split-DP system can be found in the non-canonical [NP-Num-Cl] order, DE-modification, and nominal ellipsis.

3. Evidence for a split-DP system in Chinese

3.1 NP Inversion

Recall that the canonical order of a nominal phrase in Chinese is (DEM)-Num-CL-NP.

- (28) shi zhi bi
 ten CL pen
 ‘ten pens’

However, it is known that the inverted order NP-Num-CL also exists when the DP is indefinite and not in the subject position⁵⁶. (29a-b) illustrate such cases.

- (29) a. ta mai-le bi shi zhi.
 He buy-ASP pen ten CL
 ‘He bought ten pens.’
 b. Zhangsan chi le pingguo shi ge, lizi qi ge,
 Zhangsan eat ASP apple ten CL pear seven CL
 xiangjiao wu tiao...
 banana five CL
 ‘Zhangsan ate ten apples, seven pears, five bananas, etc.’

The NP-Num-CL order is cross-linguistically attested in a lot of languages spoken in Southeast Asia. Simpson (2005) has noted that the [NP-Num-CL] linear sequence is the basic word order in a lot of languages in Southeast Asia, like Thai. In languages like Vietnamese, Chinese, and Indonesian, both linear orders are possible and the non-canonical order is often used in lists or buying/ordering situations. (30) is an example from Indonesian.

- (30) a. Saya mau beli dua kilo beras
 I want buy two kilo rice
 ‘I want to buy two kilos of rice.’
 b. Saya mau membeli beras dua kilo
 I want buy rice two kilo
 ‘I want to buy two kilos of rice.’ (=22 in Simpson 2005)

Simpson (2005: 8) discusses in passing that the derivation of the non-canonical order is driven by what he calls “presentational focus”, although no analysis is given:

⁵⁶ The reason why these DPs never appear in the subject position is because DP subjects in Chinese must be definite.

Lin also points out that DP-internal topics can undergo further movement to the topic position in the CP domain.

- (32) Mandarin
 bi Zhangsan mai le shi zhi
 pen Zhangsan buy ASP ten CL
 ‘As for pens, Zhangsan bought ten.’ (= 4 in Lin 2008)

There are indications that the clausal topic in (28) is moved from within the DP. Wu (1998) has shown that island effects are observed in NP topicalization of NP in the clausal domain, as shown in (33 a-b):

- (33) Mandarin
 a. *bi_i Lisi juede bu gaoxing yinwei Zhangsan mai
 pen Lisi feel not happy because Zhangsan buy
 le shi zhi t_i
 ASP ten CL
 ‘Lisi felt unhappy because Zhangsan bought ten pens.’
 b. *bi_i Lisi bu xiangxin Zhangsan mai le shi zhi t_i
 pen Lisi NEG believe Zhangsan buy ASP ten CL
 de shuofa
 DE claim
 ‘Lisi doesn’t believe the claim that Zhangsan bought ten pens.’ (Wu 1998)

In (33a) the topic moves from an adjunct island and in (33b) it moves from a complex NP island, and island effects are observed. This suggests the NP ends up at [spec, TopP] in the clausal domain by movement, and since movement out of islands is not possible, the ungrammaticality of (33a-b) can be explained. Notice that if the clausal topic is base-generated at [spec, CP], the ungrammaticality of (33a-b) is unexpected.

Lin also points out that unlike topicalization of a whole nominal phrase, the gap formed by this type of NP topicalization cannot be filled by resumptive pronouns.

- (34) a. shi zhi bi, wo mai-le tamen.
 Ten CL pen I buy-perf them
 ‘Pens, I bought ten of them.’
 b. *bi, wo mai-le shi zhi tamen.
 Pen I buy-perf ten CL them
 ‘Pens, I bought ten of them.’

If we assume base-generation of the clausal topic at [spec, CP], the clausal topic will have to be co-indexed with a null category that is the complement of Cl. The status of this null category is unclear, however. Little *pro* could be one possibility, but since *pro* gets case and typically appears in the subject position of a finite clause, it should be treated as a full DP. It seems to me that an NP trace left by movement is the only null category that can survive in that position, as shown in (35). This is why *tamen* is not licit in (34b), because resumptive pronouns are full arguments and not constituents of arguments.

- (35) [CP [NP bi] [C' wo mai-le [DP shi zhi t_i]]
 Pen I buy-perf ten CL
 ‘Pens, I bought ten of them.’

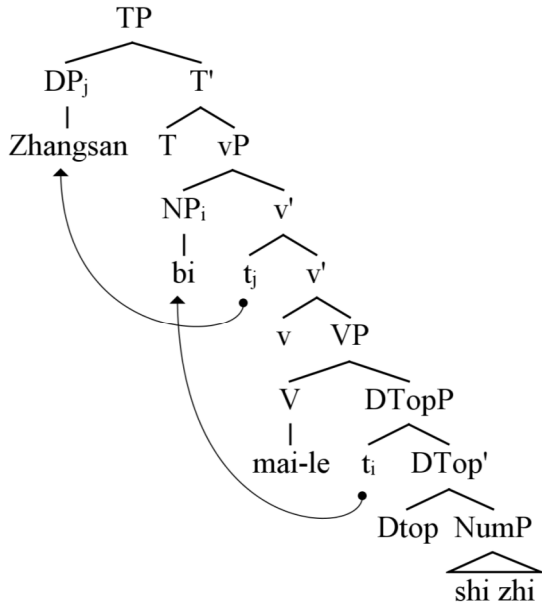
Assuming that the DP internal topic in (33) is moved to [spec, CP] successive cyclically, this would predict that it will stop at the edge of vP. Lin shows that this prediction is in fact borne out with an example like (36)⁵⁸, represented as (37). In (37), the DP topic in [spec, DTopP] moves out of the DP and stops at [spec, vP] to check the edge feature in v, resulting in example (36).

⁵⁸ This is, of course, not the complete story. Yi-An Lin (personal communication), following Paul (2005), assumes low IP topic and focus projections. The DP topic does not just stop at [spec, vP]. It will be moved to the topic or focus projections lower than IP and higher than vP. The different landing sites will create different interpretations.

- (i) Zhangsan, bi ne, mai le shi zhi.
 Zhangsan pen Top buy ASP ten CL
 ‘As for pen, Zhangsan bought ten.’ (Lin -- verbal communication) ← Low IP topicalization
 (ii) Zhangsan bi mai le shi zhi, shu mai le qi ben.
 Zhangsan pen buy ASP ten CL book buy ASP seven CL
 ‘Zhangsan bought ten pens and seven books.’ ← Low IP contrastive Focus

- (36) Mandarin
 Zhangsan bi mai le shi zhi
 Zhangsan pen buy ASP ten CL
 ‘Zhangsan bought ten pens.’

(37)



(=12 in Lin 2008)

Moreover, if the clausal TopP also has an edge feature, the NP will end up in [spec, TopP], resulting in the example in (33). This proposal corroborates Aboh’s (2004) work on Gungbe where he also argued that a DP topic may license a CP topic⁵⁹.

Further support for NP inversion (the non-canonical NP-Num-CL order) being related to information structure comes from Hsu (2012). She reports that when giving a list of items, the inverted NPs serve as DP-internal contrastive topics, while the NumPs are focused.

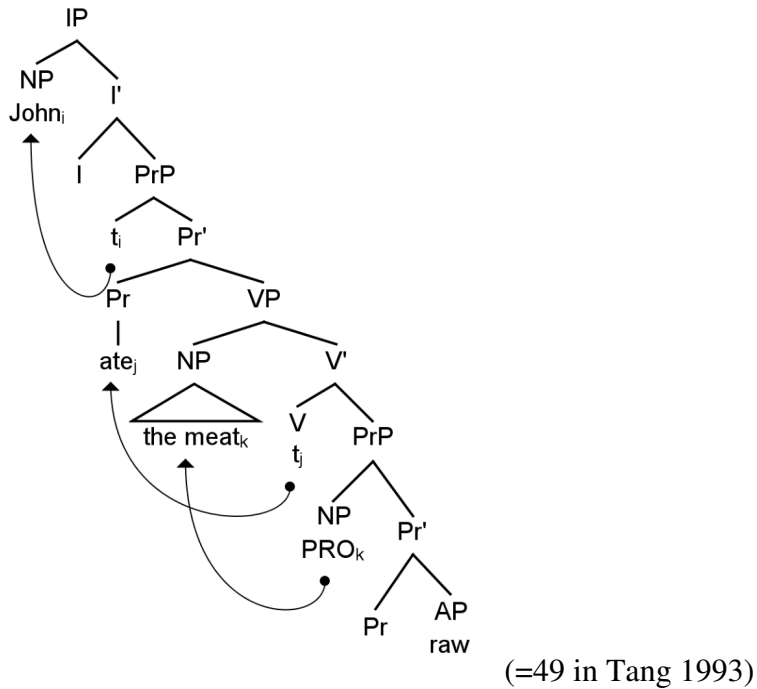
⁵⁹ Licensing here refers to moving to the DP edge a topicalized constituent which can undergo subsequent movement to the clausal left periphery. In Gungbe, Aboh argues that a DP topic (which is referential) allows topicalization of the PP containing the DP to take place, as we discussed above. Lin’s version of licensing is that the DP-internal topic NP can undergo further movement and become the clausal topic.

- (38) A: **How many pieces** of chinaware do we need to prepare for tonight's party?
 B: Qing zhunbei [[panzi]_{Top} [sishi ge]_{Foc}], [[wan]_{Top} [ershi ge]_{Foc}],
 Please prepare plate 40 CL bowl 20 CL
 [[bei]_{Top} [ershi ge]_{Foc}
 Cup 20 CL
 'Please prepare: (as for) plates, 40 of them, (as for) bowl, 20 of them, and (as for) cups, 20 of them.'

According to Hsu, the preposed NPs contrast the different types of *chinaware*, which has been established in the previous discourse. The NumPs answer the WH-questions and should therefore receive a focus interpretation.

However, an information structural approach to NP inversion is not the only possible analysis. In fact, NP inversion in Chinese was first studied by Tang (1996), who proposes a non-movement analysis to account for the non-canonical order. This analysis assumes Bower's (1993) theory of predication, which argues for a Larson (1988) style bipartite structure for what is traditionally considered VP-internal predicates. This theory can also be extended to the analysis of small clauses. In (39), we see a bipartite structure for the higher predicate *eat the meat raw*, which is dominated by the higher Pr(edication)P. Another function of PrP is that it is responsible for predication in small clauses, as shown by the lower PrP *the meat raw*.

(39)



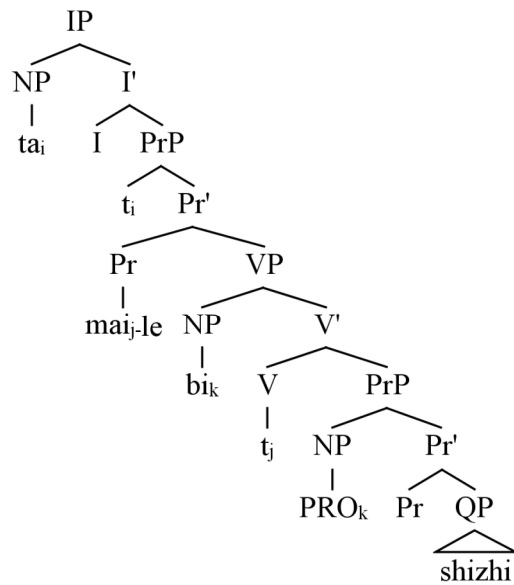
Tang adopted this analysis and applied it to the data in (40a), represented in (40b) below. In (40b), the verb takes the QP⁶⁰ *shizhi* ‘ten-CL’ as its lowest argument and the object NP *bi* as its higher argument. The higher argument *bi* ‘pen’ is claimed to be base-generated in [spec, VP]. QP is predicated on PRO⁶¹ in [spec, PrP], which is controlled by *bi* ‘pen.’

- (40) a. ta mai-le bi shi zhi.
He buy-ASP pen ten CL
‘He bought ten pens.’

⁶⁰ Tang (1993) treats all NumeralPs as QPs.

⁶¹ Tang (1993) leaves open the possibility that instead of having PRO, what appears in [spec, PrP] could be an NP trace.

b.

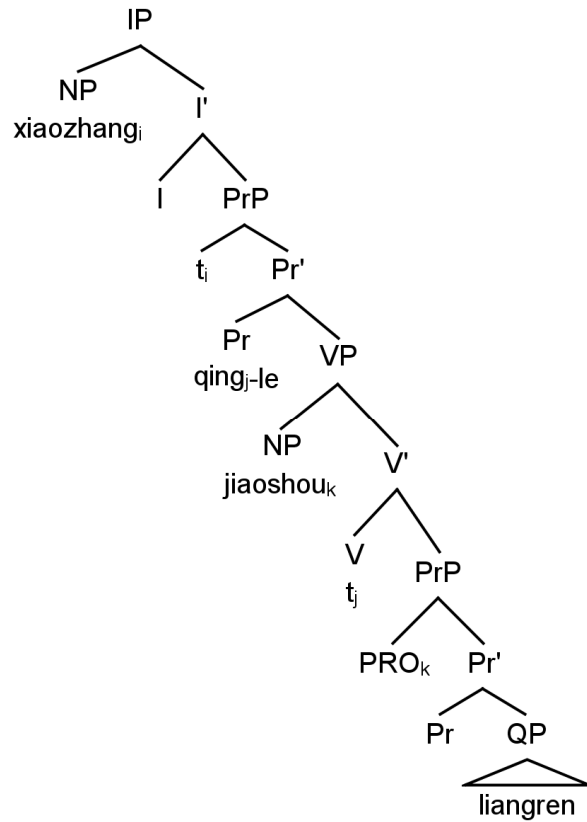


(=50 in Tang 1996)

Although this analysis can account for the fact that the non-canonical order can only appear in object position but not subject position, it incorrectly predicts that nominals with preposed NPs must be clause-final. It fails to account for the fact that these nominals can enter into object control. The secondary predicate analysis in (40) simply cannot accommodate an embedded CP and predict the grammaticality of (41).

- (41) xiaozhang zhaoping le jiaoshou liang ren lai jiao
 Principal employ PERF professor two person come teach
 yuyanxue
 linguistics
 'The principal hired two professors to teach linguistics.'

(42)



Part of Tang's motivation for proposing the secondary predicate analysis is because she wants to ensure that the NP with non-canonical order will be clause-final. This is how she explains why this type of NP cannot appear in a subject position. However, if *jiaoshou liangren* 'two professors' can enter into object control, then two problems arise. First, the embedded CP cannot be fit into the structure in (42). Second, the fact that *jiaoshou liangren* can control PRO in the embedded clause means that it must be an argument DP, as in (43):

(43) [xiao Zhang zhaoping le [DP jiao shou liang ren]_i [CP PRO_i lai jiao yu yanxue]]

Another problem with Tang's proposal is that her analysis cannot explain an issue which she uses as evidence against the movement approach. Tang argues that NP cannot be preposed when it is modified by an AP.

- (44) *wo mai-le pingguo hong de.
 I buy-PERF apples red DE
 'I bought red apples'

However, her analysis also runs into the exact same problem. Small clauses in other languages typically allow AP predicates. Tang's analysis fails to explain why AP predicates are not allowed in these small clauses. However, it is very possible that there are independent reasons that prevent this type of NP inversion. As I show in section 3.2 and also in the next chapter, the use of DE has discourse effects. In Chinese, DE usually serves as a linker element (Den Dikken & Singhapreecha 2004) that connects the modifier and the modified. NP Ellipsis is the only environment in which DE can appear without a modified NP following it. I argue that this is because in NP Ellipsis the adjective + DE sequence is focused. It may simply be that adjective+DE must appear with a modified NP when it is not focused. I will discuss NP Ellipsis in section 3.3.

3.2 *Modifier placement*

Modifier placement is another type of evidence for information structure, and it will be the topic of the next chapter. I will, however, discuss two pieces of data from Hsu (2012). Although most complex, di-syllabic modifiers in Chinese require DE (45c-d), simple monosyllabic adjectives can be DE-less (46a-b).

- (45) a. hong shan
 Red shirt
 'red shirt'
 b. hong de shan
 red DE shirt
 'red shirt'
 c. *hongse shan
 red color shirt
 'red shirt'

- d. hongse de shan
 red-color DE shirt
 ‘red shirt’

When more than one *de*-less AP modifies an NP, their relative order is rigid.

- (46) a. yi ke [NP xiao hong qiu]
 One CL small red ball
 ‘a small red ball’
 b. *yi ke [NP hong xiao qiu]
 one CL red small ball
 ‘Intended meaning: one red ball that is small’ (=4 in Hsu 2012)

However, when a DE-marked modifier co-occurs with a DE-less modifier, the DE-marked modifier always precedes the DE-less one⁶². Hsu argues that DE-marked modifiers receive a focus interpretation. This phenomenon mirrors the data in Scott (2002), who states that a focused adjective can violate the relative order of adjectives. In English, an adjective that expresses an opinion like *alleged* always comes before adjectives of nationality. Example (47a) shows the canonical order. It is ungrammatical to place the adjective of nationality before *alleged* without phonetic stress. However, when there is phonetic stress it is possible to place *English* before *alleged*.

- (47) a. an alleged English baron
 b. *an English alleged baron
 c. an ENGLISH alleged baron (Scott 2002: 113)

In (46), we showed that size adjectives must come before color adjectives in Chinese when there is no DE. However, when DE-modification is involved, the order of the adjectives can be switched, as in (48). This suggests that adding DE creates a discourse effect and it allows the color adjective

⁶² The reader may be aware that Duanmu (1998) argues that DE-less adjectives actually form a compound with the N they modify. This also can explain why DE-marked modifiers must appear before DE-less modifiers. Paul(2005c) argues at length that DE-less modifiers are not part of a compound. In fact, she argues that DE-less modifiers give the permanent quality of the N, whereas DE-ful modifiers give an intersective reading and suggest a contrast with other modifiers e.g. *red shirt vs. green shirt*.

xiao to come before the size adjective.

- (48) a. yi ke [NP hong-de xiao qiu]
 One CL red small ball
 ‘one small ball that is red’
- b. *yi ke [NP xiao hong-de qiu]
 One CL small red ball
 ‘one small ball that is red’
- (=5 in Hsu 2012)

Hsu, who also argues that NP-inversion is related to DP-internal information structure, uses DE-modification as evidence that there are not only Topic and Focus layers in the left edge of DP, but also in the nominal internal domain.

- (49) a. Nominal periphery: [TopP Topic [FocP Focus [Dem...]]]
- b. Nominal internal domain: [...CL [TopP Topic [FocP Focus [NP N]]]]

This idea is not novel. In the next chapter I will present an analysis of modifying constituents of Chinese using a modified version of Predicate Inversion presented in Den Dikken and Singhapreecha (2004). D&S also claim that the motivation for predicate inversion is information structure. However, according to them, DE- marked modifying constituents are interpreted as ‘old information’. We will discuss their analysis in the next chapter.

3.3 NP Ellipsis within DP

As we discussed earlier, Ntelitheos (2004) and Corver and van Koppen (2006) showed that NP Ellipsis makes use of DP-internal topicalization and focalization. As it turns out, NP Ellipsis in Chinese is also related to information structure. I will show that Ntelitheos’ analysis can be straightforwardly adopted for Chinese.

(52) NP Ellipsis:

a. ta du-le wu ben shu, wo ye du-le san
He read-perf five CL book I too read-perf three
ben ~~shu~~
CL book

‘He read five books and I read three, too.’

b. ta du-le wu ben shu, yinwei wo du-le si
He read-perf five CL book because I read-perf four
ben ~~shu~~
CL book

‘He read five books, because I read four.’

ii) Both VP Ellipsis and NP Ellipsis can take place in an embedded finite (tensed) clause.

(53) VP Ellipsis:

Zhangsan hui qu gongyuan, wo juede Lisi ye hui ~~qu~~
Zhangsan will go-to park I think Lisi too will go-to
~~gongyuan~~
park.

‘Zhangsan will go to the park, and I think that Lisi will, too.’ (=55 in Wang 2012)

(54) NP Ellipsis:

tongxue-men xihuan zhe ben shu, wo juede wo zui xihuan na
classmate-PL like this CLbook I think I most like that
ben ~~shu~~.
CL book

‘My classmates like this book. I think I like that one the most.’

iii) Both kinds of ellipsis obey the Backward Anaphora Constraint⁶⁴ (BAC) (Goldberg 2005, Hankamer and Sag 1976, Langacker 1969, Postal 1972, Ross 1967, 1969, Sag 1976). In the (a) examples, the clauses containing the elided VP/NP are fronted adverbials that could be reconstructed to their base positions (lower than the pronounced antecedent). However, the (b) examples are ungrammatical because the elided elements are linguistic antecedents that appear in the first conjunct of the sentences.

⁶⁴ Backward Anaphora (Guasti and Chierchia 2000) refers to an anaphor that refers to a DP that appears later. For example, (i) is a case of backward anaphora.

(i) When he_i fell down, John_i covered his head.

(55) VP Ellipsis

- a. buguan ta hui bu hui canjia ~~_____~~ bisai, wo ye
regardless he will not will participate race I still
hui canjia bisai.
will participate race
'Regardless of whether he will or not, I will still participate in the race.'
- b. *ta hui canjia ~~_____~~ bisai dan wo ye hui canjia
he will participate race but I too will participate
bisai
race
'He will but I will participate in the race too.'

(56) NP Ellipsis

- a. suiran Zhangsan de ~~shu~~ na-le wenxue jiang ,
although Zhangsan DE book take-perf literature award
Lisi de shu hai shi xiaoliang di yi
Lisi DE book still is sales rank one
'Although Zhangsan's received a literary award, Lisi's book is still number one in sales.'
- b. *Zhangsan de ~~shu~~ na-le wenxue jiang, erqie Lisi
Zhangsan DE book take-perf literature award and Lisi
de shu xiaoliang di yi.
DE book sales rank one.
'Zhangsan's received a literary award, and Lisi's book is number one in sales.'

iv) Both kinds of ellipsis can occur across utterance boundaries (Williams 1977)

(57) VP Ellipsis

- A: Zhangsan keyi kai che dai wo qu
Zhangsan may drive car take me go
'Zhangsan may drive me there.'
- B: Lisi ye keyi ~~kai che dai wo qu.~~
Lisi too can drive car take me go
'Lisi can, too.'
- (=57 in Huang 2012)

(58) NP Ellipsis

- A: Zhangsan, ni yao youqu de shu hai shi chenmen
Zhangsan, you want interesting DE books or COP boring
de shu?
DE books
'Zhangsan, do you want interesting books or boring books?'
- B: Wo yao _{DP}[youqu de]!
I want interesting DE
'I want the interesting ones.'

v) Both kinds of Ellipsis can violate the Complex NP Constraint⁶⁵ (Lobeck 1995:25, Ross 1967, Williams 1977)

(59) VP Ellipsis

Haoduo	nianqing	ren	dou	bu	yuanyi qu	nongcun,
many	young	people	all	not	willing go	rural area
danshi	qieshi	you	jige	[yuanyi	qu — nongcun	de ren]
but	really	have	several	willing	go	rural area DE people

‘Many young people do not like going to rural areas but there are several people that would like to.’
(=58 in Huang 2012)

(60) NP Ellipsis

dabufen	tongxue	nian-le	ji	ben	shu.	Na	ge	[yi
majority	classmate	read-perf	several	CL	book.	That	CL	one
ben	shu	ye	mei	you	nian	de]	tongxue	can-le .
CL	book	even	not	have	read	DE	classmate	miserable-Asp

‘The majority of students read several books. That one classmate who did not even read a single one is in trouble.’

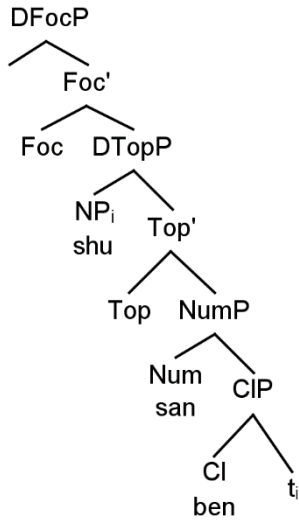
We have observed from the examples above that Chinese NP Ellipsis and VP Ellipsis exhibit the typical properties expected of ellipsis phenomena. Now that we have established that the missing NP is a case of NP Ellipsis, I will show that Ntelitheos’ (2003) analysis of NP Ellipsis for Greek can be straightforwardly applied to the Chinese data.

In Ntelitheos’s account, the elided NPs must undergo DP-internal topic movement. We expect the contrastive focus condition proposed by Ntelitheos to also hold in Chinese. In other words, like Greek, the NP being elided must first move to [spec, DTopP]. The contrastive focus condition drives the movement of the remnant NumP to [spec, DFocusP]. PF-deletion subsequently targets the specifier of DTopP and deletes the NP *shu*. The derivation of (61) is shown in (62).

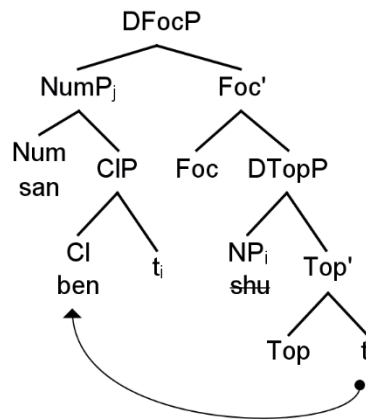
⁶⁵ The Complex NP (DP in current theory) Constraint was formulated by Ross (1967), who argues that “No element contained in an S dominated by an NP with a lexical head noun may be moved out of that NP by a transformation. (p.70)” In other words, an NP contained within a modifying clause or a complement clause dominated by a DP cannot move out of the clause that it belongs to.

- (61) ta du-le wu ben shu, wo ye du-le san
 He read-perf five CL book I too read-perf three
 ben shu
 CL book
 ‘He read five books and I read three, too.’

(62) a.



b.



3.3.1 NP Ellipsis is not deletion at [spec, CP]

In order to prove the existence of DP-internal Information Structure, we need to show that NP Ellipsis is indeed a DP-internal phenomenon. We need to make sure that it is not what Huang (1984) refers to as ‘Topic-drop’ in the clausal domain, and it is not PF-deletion at the clausal level.

We will begin with topic-drop. The topic-drop phenomenon can account for empty pronouns in discourse oriented⁶⁶ languages like Chinese, which allow a relatively free distribution

⁶⁶ A discourse-oriented language is a language that has a topic-comment structure. The topic constitutes old information and the rest of the sentence (comment -- new information) is understood as what is said about the topic. In such a language, subjects are usually topicalized. There are cases in which the topic does not equate the subject, for example:

- (i) Meiguo, xuexiao duo.
 U.S.A, schools many
 ‘As for the U.S.A., there are a lot of schools.’

of empty pronouns (including object positions), unlike *pro-drop* which only targets the subject position. Topic-drop is said to be a parameter exclusive to discourse-oriented languages. The embedded object empty category may refer to someone in the discourse (represented by the base-generated empty pronoun) as in (59), or be co-indexed with an overt topic, as in (60). Since I am using Huang’s examples, I will keep the notation e , which is an empty category and is equivalent to *pro*.

(63) Mandarin
 [Top e_i], [Zhangsan shuo [Lisi bu renshi e_i]]
 Zhangsan say Lisi not know
 ‘[Him]_i, Zhangsan said that Lisi didn’t know e_i .’ [= (34) in Huang 1984a]

(64) Mandarin
 neige ren_i, Zhangsan_j shuo [Lisi bu renshi $e_{i/*j}$]
 that man Zhangsan say Lisi not know
 ‘That man_i, Zhangsan said Lisi didn’t know e_i .’ [= (31) in Huang 1984a]

(64) is only grammatical when the empty category is coindexed with a topic, but not the matrix subject. In (63), the empty category in the object position cannot refer to either *Zhangsan* or *Lisi*; it can only refer to the zero topic. This shows us that the empty category must be A’-bound but not A-bound. This zero topic, according to Huang, will be co-indexed with an appropriate preceding topic at LF’ (discourse grammar), a module following LF. Hence, the zero topic will receive an interpretation in the discourse grammar. Although Topic-drop and NP Ellipsis look somewhat similar on the surface, they are different in that Topic-drop is a phenomenon at the clausal level. For Topic-drop, there is an empty topic in the clausal [spec, TopP] that is co-indexed with a *pro* (=DP) in any argument position. NP Ellipsis is a DP-internal phenomenon that moves

English, on the other hand, is a subject prominent language and overt morphological markings can be seen via agreement between the verb and subject.

an NP -- a constituent of DP -- to the left edge, and subsequently deletes it at PF.

We also need to make sure that NP-Ellipsis happens at the left edge of DP, but not CP. Let us consider once again Lin's (2008) work on DP-internal topicalization. It was argued that a DP internal topic can transformationally become a CP topic. In other words, the following derivations are all transformationally related to one another.

- (65) a. wo yao [_{DTopP} bi_i shi zhi t_i]
 I want pen ten CL
 'I want ten pens.'
 b. wo bi_i yao [_{DtopP} t_i [_{NumP} shi zhi t_i]]
 c. bi_i wo [_{vP} t_i yao [_{DtopP} t_i [_{NumP} shi zhi t_i]]]

If the NP can move to the clausal left periphery, we need to provide evidence that in example (66) NP-Ellipsis happens at the left edge of DP (=63b) but not at the left edge of CP (=66c).

- (66) a. wo yao shi zhi (bi). ← NP UNPRONOUNCED
 I want ten CL (pen)
 'I want ten pens'
 b. wo yao [_{DTopP} bi_i shi zhi t_i]
 I want pen ten CL
 'I want ten pens.'
 c. *bi_i wo [_{vP} t_i yao [_{DtopP} t_i [_{NumP} shi zhi t_i]]]

Example (67) clearly shows that movement from the DP-internal topic position to a CP topic position must obey the Complex NP Constraint. As (67a) shows, attempting to move the NP out of the complex DP causes an island violation. Therefore, the fact that (67b) is grammatical shows that deletion must have happened inside the DP.

- (67) a. *shu na ge [yi ben ~~shu~~ ye mei you
 book that CL one CL book even not have
 nian de] tongxue can-le
 read DE classmate miserable-Asp
 ‘(As for) books, that one classmate who did not even read a single one is in trouble.’
- b. na ge [yi ben ~~shu~~ ye mei you
 that CL one CL book even not have
 nian de] tongxue can-le
 read DE classmate miserable-Asp

We therefore conclude that NP Ellipsis cannot happen at the left-edge of CP and is therefore a phenomenon independent of Topic-drop. NP Ellipsis is a DP-internal phenomenon that relies on contrastive focus condition and PF deletion.

4. Conclusion

In this chapter, I argued that there are DP-internal topic and focus movements in Chinese. I focused on three main kinds of evidence: the NP-Num-CL construction, the use of DE in adjectival modification and its discourse effects, and nominal ellipsis.

I followed Simpson (2005), Lin (2010), Hsu (2012) in claiming that the non-canonical NP-Num-CL order is derived through movement of NP to the left periphery of DP. I showed that the competing analysis presented by Tang (1996), which argues that the NP and [Num-CL] are in a predication relation, is problematic. In particular, that analysis predicts that [NP Num-CL] sequences only appear in clause-final position. I showed that this prediction is not borne out.

I also adopted Ntelitheos’ (2003) (see also Corver and van Koppen 2006) proposal and treats nominal ellipsis as DP-internal topicalization followed by movement of the focused remnant XP. This proposal resolves the shortcomings of empty category approaches to ellipsis like Lobeck (1995), while making the case that nominal ellipsis involves discourse-related projections just like verbal ellipsis (Johnson 2001). I showed that NP Ellipsis in Chinese is also PF deletion of [spec,

DTopP] at the left edge of DP. However, since Lin (2010) has shown that NP can transformationally move to [spec, CP] from inside the DP, it was also important to show that the PF deletion of NP happens at the left edge of DP, and not CP. Consequently, I showed that NP-Ellipsis happens at the left edge of DP by demonstrating that movement of NP to the left periphery is subject to the Complex NP Constraint. The above arguments offer clear evidence that there are information structure related positions in DP.

Most importantly, showing that topic and focus projections exist in the left periphery of DP serves two goals. First, it presents just another similarity shared by the subordinators C and D. Second, it shows that even in a determiner-less language like Chinese, these discourse-related movements generally assumed to be in the left periphery of D still exist. This is indirect evidence for a full DP structure in Chinese, contra Cheng and Sybesma (1999)'s CIP analysis of the Chinese nominal phrase.

Ch. 4 Phrasal constituents within the Chinese DP

1. Introduction

This chapter discusses phrasal constituents (relative clauses, modifiers, noun complement clauses, and possessors) within the Chinese DP and how the concept of topic and focus developed in the previous chapter can help us explain the two structural positions for phrasal constituents and their interpretations. Section 2 discusses the two possible positions for phrasal constituents in Chinese. Section 3 introduces the different types of phrasal constituents and the ordering restrictions among them. It shows that there are strict ordering restrictions on multiple phrasal constituents, and this restriction must be observed across the entire DP domain, which leads to the conclusion that phrasal constituents appearing before the demonstrative must be derived by movement. An interim summary will be given in Section 4. Section 5 offers a literature review of previous works on relative clauses in Chinese. However, the status of modifier marker DE is a controversial issue and I dedicate Section 6 entirely on this issue. Section 7 presents the current analysis, which argues for two different functional positions that can host DP-internal phrasal constituents. Modifying constituents that appear before N are generated low in [spec, nP]. However, after the movement to [spec, nP] they can subsequently move to [spec, DTopP] or [DFocP] if information structure is involved. This again reinforces my claim that the DP is split into different information structure projections just like the left periphery of the clause, and it also lends more support to the DP hypothesis. Section 8 addresses some dialectal differences between Cantonese and Mandarin. Section 9 concludes the chapter.

2. Phrasal constituent positions

A widely discussed fact about modifying constituents in Chinese is that they mainly occur in two positions, as shown in (1) below:

- (1) a. Low position (between classifier and noun)
na san ben [ta mai de] shu → (+definite, +/- contrastive)
DEM three CL he bought DE book
‘The book that he bought’
- b. High position (before demonstrative)
[ta mai de] na san ben shu → (+definite, +specific,
He bought DE DEM three CL book +contrastive)
‘The book that he bought (as opposed to some other books)’

Chao (1968) and Hashimoto (1971) point out that there are descriptive (non-restrictive⁶⁷) and restrictive readings for phrasal constituents in Chinese. A phrasal constituent that appears in the high position before the demonstrative necessarily has a restrictive reading. Similarly to restrictive relative clauses with a definite determiner in English, these phrasal constituents are definite and contrastive. On the other hand, a phrasal constituent that appears in a low position (i.e. after a demonstrative) can be restrictive or descriptive. Instead of choosing the traditional terms “restrictive” vs. “descriptive”, I will adopt the terms “high” and “low” positions to respectively refer to the position that hosts phrasal constituents appearing before the demonstrative and the position for phrasal constituents immediately before the noun.

However, in the literature, one other surface position for phrasal constituents in Chinese has been discussed. I will argue that there is not a third position for phrasal constituents. This kind of phrasal constituent actually appears in the high position without the demonstrative being present. Nonetheless, since they have been treated as a distinct type by Sio (2006), I will label them as

⁶⁷ Even though Yue-Hashimoto and Chao seem to believe that these descriptive RCs are non-restrictive, Del Gobbo (2003) argues that Chinese RCs are consistently restrictive. Therefore, the term “descriptive” is mildly misleading as it is similar to the concept of “non-restrictive” RCs in English. It has been argued by Del Gobbo (2003, 2004, 2005) that non-restrictive relative clauses (“appositives”) do not exist in languages with prenominal relative clauses, although Del Gobbo (2009) later changes her position and claims that appositive RCs do occur in Chinese when the head noun is a proper name or a pronoun. I leave the topic of restrictive and non-restrictive relative clauses for further research, as they are unrelated to the core claims of this chapter.

[+specific] phrasal constituents for convenience, but they are actually high phrasal constituents. [+specific] phrasal constituents appear before numerals. They are not compatible with demonstratives and therefore never appear after one. As far as I know, Sio (2006) is the first work that has extensively studied phrasal constituents of this type. I argue that this type of phrasal constituent is only specific but not definite. In light of this, Sio argues for a Specificity Phrase (SP) directly above the Classifier Phrase, a proposal that I will not adopt. For example, (2) could be uttered when a teacher knows that two students arrived late but has no idea who they are.

- (2) “Specific” high phrasal constituents
 wo yao zhao [chidao de] liang ge xuesheng → (-definite,
 I need find late DE two CL student +specific)
 ‘I need to find two students who are late.’

As discussed above, [+specific] phrasal constituents are incompatible with demonstratives, as shown in (3a-b), but note that this does not mean that a new position needs to be postulated. They are high phrasal constituents without demonstratives following them, and therefore they make a DP indefinite specific, and not definite specific like other high phrasal constituents that precede demonstratives. Furthermore, since they are [+specific], they are not felicitous in existential sentences (see Enç 1991) like (3c).

- (3) a. *wo yao zhao na [chidao de] liang ge xuesheng
 I need find DEM late DE two CL student
 ‘I need to find two students who are late.’
 b. *wo yao zhao xiaozhang shuo de na [chidao de]
 I need find principal mentioned DE Dem late DE
 liang ge xuesheng
 two CL student
 ‘I need to find two late students who the principle mentioned.’
 c. *huoche shang you [chidao de] liang ge xuesheng
 train on have late DE two CL student
 Intended meaning: There are two late students on the train.

Finally, there appears to be one additional position for phrasal constituents that is only available in Mandarin but not in Cantonese. As far as I know, this type has never been discussed in the generative literature. I will simply present the data here but will not discuss this position in this work again for reasons that will be clear shortly.

A phrasal constituent carrying a negative connotation can appear between demonstrative and the numeral.

- (4) Between Demonstrative and Numeral
 na [bu zhi lianchi de] yi ge ren (+definite, +specific, +focus)
 DEM not know shame DE one CL person
 ‘That shameless person’

There are clear indications that phrasal constituents in this position exhibit different syntactic behaviors than the other types of modifying phrasal constituents discussed above. First, they are not as productive as the other types and are mainly used in written Chinese. Second, a possessor DP or a noun complement clause cannot appear in this position.

- (5) *na [Zhangsan tuixiu DE] yi ge xiaoxi
 DEM Zhangsan retire DE one CL news
 ‘The news that Zhangsan retired’

Third, the relative clause or adjective clause in this position always carries a negative connotation.

- (6) *na [you limao de] yi ge ren
 DEM have manners DE one CL person
 ‘That guy with good manners’

Furthermore, phrasal constituents in this position do not work well with a numeral other than ‘one’.

- (7) *na [bu zhi lianchi de] san ge ren
 DEM not know shame DE three CL person
 ‘Those three shameless people’

They also do not appear with another phrasal constituent.

- (8) a. *na [bu zhi lianchi de] yi ge [jiazhou lai de]
 DEM not know shame DE one CL California come DE
 ren
 person
 ‘That shameless person from California’
- b. *na [bu zhi lianchi de] [jiazhou lai de] yi ge
 DEM not know shame DE California come DE one CL
 ren
 person
 ‘That shameless person from California’

For these reasons, we will leave this type of phrasal constituent for future research. (9)

summarizes our discussion so far.

(9) Possible surface positions for phrasal constituents

Before demonstrative	Before numeral	Before N
HIGH	HIGH	LOW

It is important for any account of Chinese modifying constituents to explain where the high and low positions are located in the DP and what they can tell us about the internal structure of Chinese DPs. For example, are phrasal constituents adjuncts or specifiers? It is equally important to analyze the relationship between the high and low positions. Are the phrasal constituents in the high position derived through movement from the low position? Or are they unrelated? These are the three possible scenarios:

- (10) a. -Phrasal constituents are base-generated in two separate adjoined positions.
 -The two phrasal constituent positions within the DP are unrelated to one another.
- b. -Phrasal constituents are base-generated in two separate specifier positions.
- c. -Phrasal constituents are base-generated in one or more specifier positions and subsequently undergo movement to higher positions (Kayne 1994, Simpson 2001, 2002, 2003, 2005, den Dikken & Singhapreecha 2004).

I argue (10c) is correct for Chinese phrasal constituents -- phrasal constituents appearing before demonstratives are derived by movement and phrasal constituents are not adjoined to the phrases that they precede. This is a possibility that has not been explored in previous analyses of Chinese phrasal constituents, in part because it is often believed that there is no ordering restriction among different types of phrasal constituents (Li and Aoun 2003, Cinque 2010, Cheung 2012). I will show in the following subsections that there are a number of phrasal constituent-types in Chinese, and there are strict ordering restrictions among the types, and within the DP the ordering restrictions on phrasal constituents must be obeyed even when some phrasal constituents appear in the higher position while others remain low. This is a phenomenon that an adjunction analysis cannot account for without unnecessary stipulations. Furthermore, this movement analysis supports our thesis that there are distinct DP-internal information structure positions because phrasal constituents can move to the DP left periphery for topic/focus interpretation.

3 Stacking, ordering, and interpretation

3.1 *Types of Phrasal constituents*

Unlike modifying clauses in English which are relative clauses or noun-complement clauses that follow the head noun they modify, phrasal constituents in Chinese encompass relative clauses, noun-complement clauses, Possessor DPs, and adjective phrases that always appear before the head noun they modify. Phrasal constituents in Chinese are always marked with DE. We will return to the status of DE later. (11) shows the different types of phrasal constituents in Chinese.

- (11) a. wo de shu → Possessor DP
 my DE book
 ‘my book’

- b. wo mai de shu → Relative clause
 I buy DE book
 ‘The book I bought’
- c. youqu de shu → Adjective phrase
 interesting DE book
 ‘an interesting book’
- d. Zhangsan da le Lisi de xiaoxi → Noun-complement clause
 Zhangsan hit PERF Lisi DE news
 ‘The news that Zhangsan hit Lisi’

3.2 Stacking

Stacking is only possible for modifiers (i.e. relative clauses and adjective phrases). It is possible to have more than one relative clause or adjective phrase although it is generally not preferred by native speakers. The examples in (12) show stacking of relative clauses and the examples in (13) show stacking of adjective phrases:

- (12) a. [ta ding de] [wo bu xihuan de] shu
 he order DE I NEG like DE book
 ‘That book he ordered that I don’t like’
- b. [wo bu xihuan de] [ta ding de] shu
 I NEG like DE he order DE book
 ‘That book I don’t like that he ordered’
- (13) a. yi ge [youshan de] [gaogui de] xiaojie
 one CL nice DE elegant DE lady
 ‘A nice elegant lady’
- b. yi ge [gaogui de] [youshan de] xiaojie
 one CL elegant DE nice DE lady
 ‘An elegant nice lady’

However, stacking of more than one Possessor DP or noun-complement clause is not possible, as shown in (14) and (15):

- (14) a. *[Xiaoming de] [Jinyong de] mao
 Xiaoming DE Jinyong DE cat
 ‘*Xiaoming’s Jinyong’s cat’
- b. [Xiaoming de] [Jinyong (de)] xiaoshuo
 Xiaoming DE Jinyong DE novel

‘The novel of Xiaoming by Jinyong’

- (15) *[Zhangsan da Lisi de] [Lisi shoushang de] xiaoxi
 Zhangsan hit Lisi DE Lisi hurt de news
 ‘*The news that Zhangsan hit Lisi that Lisi got hurt’

The example in (14a) shows the stacking of two Possessor DPs, which results in ungrammaticality. When two Possessor DPs appear before nouns like *xiaoshuo* ‘novels’ as in (14b), the second Possessor DP is always interpreted as the author but not the possessor of the noun. Example (15) shows that stacking of noun-complement clauses is also impossible, which could be due to a selectional restriction, assuming that one noun only selects a single complement.

3.3 Ordering between the four types of phrasal constituents

3.3.1 The basic order

As mentioned above, there are four types of phrasal constituents in Chinese: Possessor DPs, relative clauses, adjective phrases, and noun-complement clauses. Theoretically, it is possible for the four types of modifying constituents to co-occur, although examples like that are generally impossible to find because native speakers tend to prefer DPs with fewer phrasal constituents as they are easier to parse. However, when different types of phrasal constituent co-occur, ordering restrictions certainly exist.

In Chinese, noun-complement clauses must be directly adjacent to the noun or directly adjacent to the demonstrative⁶⁸, as shown in (16). Nothing can appear in between.

- (16) a. wo tingdao de Zhangsan da Lisi de xiaoxi
 I heard DE Zhangsan hit Lisi DE news
 ‘The news that Zhangsan hit Lisi which I heard’
 b. *Zhangsan da Lisi de wo tingdao de xiaoxi
 c. wo tingdao de Zhangsan da Lisi de nei tiao xiaoxi
 I heard DE Zhangsan hit Lisi DE DEM CL news

⁶⁸ As shown in (32b), a noun complement clause can also appear directly before a numeral. I will argue that this is a type of [+specific] phrasal constituent which is a phrasal constituent in the high position.

- d. 'The news that Zhangsan hit Lisi which I heard'
 *Zhangsan da Lisi de wo tingdao de nei tiao xiaoxi

Relative clauses or Adjective phrases must appear after Possessor DPs, as shown in the following:

- (17) a. wo de piaoliang de meimei
 1SG DE pretty DE little-sister
 'My pretty little sister'
 b. *piaoliang de wo de meimei
 c. wo de ai chi tangguo de meimei
 my DE love eat candy DE sister
 'My sister who loves eating candy'
 d. *ai chi tangguo de wo de meimei

Therefore, the data in (16-17) suggest that the Possessor DP must appear before the relative clause and the adjective phrase, which in turn are followed by the noun-complement clause, giving the "basic" order in (18):

- (18) Possessor DP > Demonstrative > NumP > CIP > Adjective phrase/Relative Clause > Noun complement Clause > N

3.3.2 Ordering between stage-level and individual-level phrasal constituents

However, while (18) captures the ordering between the four types of phrasal constituents, the picture is actually more complicated than this. As shown in (19) relative clauses and adjective phrases seem to show no ordering restrictions.

- (19) a. Zhangsan xihuan de youqu de xiaoshuo
 Zhangsan like DE interesting DE novel
 'The interesting novel that Zhangsan likes'
 b. youqu de Zhangsan xihuan de xiaoshuo
 interesting DE Zhangsan like DE novel
 'The interesting novel that Zhangsan likes'

However, Larson and Takahashi (2007) show that there exists an ordering restriction between stage-level and individual-level relative clauses and adjective phrases. The distinction

between stage-level and individual-level goes back to Carlson (1973), who notes that a predicate that is stage-level is only true of a certain temporal stage of its subject DP – it is no longer necessarily true outside of that particular temporal stage. An individual-level predicate is true for an individual at any point in time during the individual’s lifetime.

Bolinger (1967) observed a difference in interpretation between prenominal and postnominal adjectives:

- (20) a. the visible stars (include Capella, Betelguese, and Sirius)
b. the stars visible (include Capella, Betelguese, and Sirius) (Larson 1998)

In (19a), the prenominal adjective gives the intrinsic quality of the stars, i.e. their brightness making it possible for our eyes to see them. (19b), however, refers to the stars that the speaker happened to be able to see at the time of speaking.

Larson (1998) points out that the contrast is not related to linear order, but relative closeness to N. For example, it is possible to have more than one occurrence of *visible*:

- (21) a. The visible stars visible include Capella.
b. The visible visible stars include Capella. (Larson 1998)

Both examples in (20) refer to the stars that are intrinsically visible which the speaker happens to be able to see at the time of speaking. In both cases, Larson argues that the closer adjective gives the intrinsic quality (individual-level) and the adjective further away from the N expresses a quality that is only true temporarily (stage-level). Citing Chierchia (1995), who proposes that individual level predicates (“inherent generics” according to him) come with an eventuality variable that is bound by a generic quantifier Γ , Larson argues that the generic quantifier is located close to N and can find adjective phrases close to the noun. Stage-level predicates are not bound by the generic quantifier.

- (22) [AP [Γe [AP N]] AP]
 s-level i-level s-level (Larson 1998)

The significance of Larson’s proposal is that the ordering restriction he observed indicates a more complex noun phrase structure that supports the DP-hypothesis. According to him, individual-level predicates are NP phrasal constituents and stage-level predicates are DP-phrasal constituents⁶⁹. Furthermore, (22) also predicts that English-type post-nominal modifying clauses express s-level properties, whereas pre-nominal phrasal constituents in East Asian languages may express either i-level or s-level properties based on their proximity to the head N. This prediction is in fact borne out.

It has been discussed in previous literature that the semantic content of attributive adjectives in English exhibit ordering restrictions (Cinque 2010) that are not found in their relative clause counterparts (Dixon 1977, Hetzron 1978, Sproat and Shih 1991). For example, size adjectives precede material adjectives in English.

- (23) a. the [large] [stone] building
 b. *the [stone] [large] building (Larson and Takahashi 2007)

- (24) a. the building [that was large] [that was made of stone].
 b. the building [that was made of stone] [that was large].
 (Larson and Takahashi 2007)

(24) is particularly interesting because there seems to be a relatively free ordering between the two relative clauses that their corresponding adjectives do not share. Since the relative clauses in (24) are both stage-level predicates, the free order can be straight-forwardly explained.

Returning to Chinese, Del Gobbo (2007) also shows that “descriptive” (i.e. non-restrictive reading) RCs/AdjPs are individual-level phrasal constituents, whereas RCs receiving a restrictive

⁶⁹ It will be shown later that s-level phrasal constituents cannot be DP-phrasal constituents because they can appear after NUM-CL, which means that they have to be below CIP.

reading are stage-level predicates.

The following examples (25-27) are taken from Larson and Takahashi (2007). The reader can see that AdjPs/RCs expressing individual-level properties that are not temporally anchored can be ordered freely among themselves, as in (25). Stage-level RCs expressing episodic properties can also be ordered freely, as in (26). However, as shown in (27), an individual-level AdjP/RC must be closer to the N than a stage-level RC.

(25) Individual-level RCs

- a. [RC hui shuo yidaliyu de] [RC xihuan qu yinyuehui de]
 can speak Italian DE like go concerts DE
 ren shi Zhangsan.
 person COP Zhangsan
 ‘The person who speaks Italian who likes to go to concerts is Zhangsan.’
- b. [RC xihuan qu yinyuehui de] [RC hui shuo yidaliyu de]
 like go concerts DE can speak Italian DE
 ren shi Zhangsan.
 person COP Zhangsan
 ‘The person who likes to go to concerts who speaks Italian is Zhangsan.’

(26) Stage-level RCs

- a. [RC Cong Yidali huilai de] [RC wo zuotian kanjian
 from Italy return DE I yesterday meet
 de] ren shi Lisi.
 DE person COP Lisi
 ‘The person who returned from Italy who I met yesterday is Lisi.’
- b. [RC wo zuotian kanjian de] [RC cong Yidali
 I yesterday meet DE from Italy
 huilai de] ren shi Lisi.
 Return DE person COP Lisi
 ‘The person who returned from Italy who I met yesterday is Lisi.’

(27) Stage-level RC, Individual-level RC

- a. [RC wo zuotian kanjian de] [RC xihuan qu
 I yesterday meet DE like go
 yinyuehui de] ren shi Lisi.
 Concerts DE person COP Lisi
 ‘The person I met yesterday who likes to go to concerts is Lisi.’
- b. *[RC Xihuan qu yinyue hui de] [wo zuotian kanjian de] ren shi Lisi.

Upon closer examination, however, it appears that Stage-level RCs can appear low in the structure.

This goes against the claim made by Larson and Takahashi that Stage-level RCs must be D-modifiers.

- (28) a. wo yishi le san fen [RC ni zuotian song lai
 I lose PERF three CL you yesterday deliver come
 de] [_{POSS DP} Zhangsan de] wenjian⁷⁰
 DE Zhangsan DE document
 ‘I lost three documents of Zhangsan’s that you delivered here.’
 b. *wo yishi le san fen [_{POSS DP} Zhangsan de] [RC ni zuotian song lai de]
 wenjian

What (28) also shows is that stage-level RCs can appear after the classifier. This indicates that stage-level RCs in Chinese can appear lower than CIP and are not DP-phrasal constituents as suggested by Larson (1998). In other words, both stage-level and individual-level phrasal constituents can appear in the low position.

Ming and Chen (2011) conducted a corpus study and found numerous counterexamples to Larson and Takahashi’s proposal. They found many examples where a stage-level relative clause can follow an individual-level relative clause.

⁷⁰ The placement of the Possessor DP in (28) may seem rather curious at first, because possessors are generally assumed to be high in the structure. For example, in English Possessor DPs receive genitive case in [spec, DP] (Biber et. al 1999: 292). However, in (28) the possessor clearly follows a classifier, indicating that it is low in the structure. I would like to argue that this type of possessor is not a real possessor; it is actually a RC with the main verb *shuyu* ‘belong’ omitted. (i) below is what (28) really means. If I am on the right track, then the “possessor” in (28) is really a stage-level RC.

- (i) wo yishi le san fen [RC ni zuotian song lai
 I lose PERF three CL you yesterday deliver come
 de] [RC shuyu Zhangsan de] wenjian
 DE belong Zhangsan DE document
 ‘I lost three documents belonging to Zhangsan that you delivered here.’

This is not as surprising as it sounds. Another example of RCs having the appearance of a possessor is when we talk about books and their authors.

- (ii) wo mai le yi ben [Zhangsan (xie) de] shu
 I bought PERF one CL Zhangsan write DE book
 ‘I bought a book written by Zhangsan’

In (ii), the main verb *xie* ‘write’ is frequently omitted, but it is obvious to the hearer that Zhangsan is not the owner of the book. He is the author.

- (29) a. na ge [wo renshi de] [xie le yi ben shu de]
 DEM CL I know DE write PERF one CL book DE
 xuesheng hen congming⁷¹
 student very smart
 ‘The student whom I know who wrote a book is very smart.’
- b. ??na ge [xie le yi ben shu de] [wo renshi de]
 DEM CL write PERF one CL book DE I know DE
 xuesheng hen congming
 student very smart
 ‘The student whom I know who wrote a book is very smart.’
 (Example adapted from (7) in Ming and Chen (2011))

Furthermore, there seems to be an ordering restriction between relative clauses that share the same properties. For example, in (30), both RCs are individual-level RCs, but the (b) example is considerably degraded.

- (30) a. na ge [wo renshi de] [xihuan changge de]
 DEM CL I know DE like sing DE
 xuesheng hen youhao
 student very friendly
 ‘The student whom I know who likes to sing is very friendly.’
- b. ??na ge [xihuan changge de] [wo renshi de]
 DEM CL like sing DE I know DE
 xuesheng hen youhao
 student very friendly
 ‘The student who likes to sing whom I know is very friendly.’
 (Example adapted from (8) in Ming and Chen (2011))

Ming and Chen argue that the ordering between relative clauses is governed by information flow (Fox and Thompson 1990). Following Fox and Thompson, Ming and Chen claim that only referents should be made relevant to the speaker and hearer in a discourse. Referents must be related to a referent that is in the hearer’s focal consciousness (“grounded”) in order to have their existence justified, if their relevance has not been established through previous mention or situation (Fox and Thompson 1990). They distinguish two types of RCs: grounding RCs and non-

⁷¹ *Hen congming* ‘very smart’ is predicative here.

grounding RCs. Grounding RCs ground a referent (the head NP) by associating it with an identifiable referent or locative⁷² in the relative clause. Non-grounding RCs do not provide any grounding. Grounding RCs must precede non-grounding RCs as given information tends to be deployed before new information. For example, in both (29) and (30) *wo renshi de* ‘I know DE’ can ground the head NP *xuesheng* ‘student’ because it associates the noun with an identifiable referent *wo* ‘I’. Therefore, Ming and Chen’s findings show that stage-level RCs generally precede individual-level RCs because they usually provide the information (locative, temporal expressions, etc.) that make them grounding RCs, but it does not mean that an individual-level RC containing the necessary information for grounding cannot precede a stage-level RC.

Summing up, the ordering restrictions between phrasal constituents in Chinese in (18) should be revised as (31).

- (31) Possessor DP > Demonstrative > NumP > CIP > **Grounding AP/RC > Non-Grounding AP/RC > Noun complement clause/PP > NP**⁷³ (shaded = low position)

However, once we consider the high position (including [+specific] phrasal constituents that occur above NUM), it will be clear that the same ordering restrictions are observed across the high and low positions in the DP domain. For example, when there is one phrasal constituent in the high position and one in the low position, the grounding RC always appears before the non-grounding phrasal constituent.

- (32) a. (na ge) [ni kanjian de] [hen pang de] ren shi Joe.
 (Dem CL) 2SG see DE very fat DE person COP Joe.
 ‘The fat person that you saw is Joe.’

⁷² I assume that this includes temporal expressions.

⁷³ As I will discuss below, this is simply the “basic” order before movement. Modifiers (RCs, APs) and noun-complement clause can appear before the demonstrative via movement.

- b. [ni kanjian de] na ge [hen pang de] ren shi Joe.
 2SG see DE Dem CL very fat DE person COP Joe.
 ‘The fat person that you saw is Joe.’
- c. *[hen pang de] na ge [ni kanjian de] ren shi Joe.
 very fat DE Dem CL 2SG see DE person COP Joe.
 ‘The fat person that you saw is Joe.’
- d. [ni kanjian de] [hen pang de] na ge ren shi Joe.
 2SG see DE very fat DE Dem CL person COP Joe.
 ‘The fat person that you saw is Joe.’
- e. *[hen pang de] [ni kanjian de] na ge ren shi Joe.
 very fat DE 2SG see DE Dem CL person COP Joe.
 ‘The fat person that you saw is Joe.’

In (32a), the grounding phrasal constituent appears before the non-grounding phrasal constituent in the low position. (32b-c) shows that when one phrasal constituent appears in the high position and the other one appears in low position, the phrasal constituent that appears in high position must be the grounding modifier. (32 d-e) shows that the same ordering restriction holds when both phrasal constituents appear in the high position.

- (33) a. wo yao zhao [zuotian chidao de] liang ge [pifu hen
 I need find yesterday late DE two CL skin very
 bai de] xuesheng
 pale DE student
 ‘I need to find two students with pale skin who were late yesterday.’
- b. *wo yao zhao [pifu henbai de] liang ge [jintian chidao de] xuesheng.

The ordering restriction holds even when phrasal constituents appear in two different positions. In (34a), both the RC and the noun complement PP following it appear in the low position. (34b-c) show that when one phrasal constituent is in the high position, it has to be the s-level (also grounding) RC. (34d-e) show once again that the noun complement PP cannot precede the RC when both phrasal constituents are in the higher phrasal constituent position.

- (34) a. wo zai zhao san fen [Zhangsan xie de] [guanyu

- I LOC find three CL Zhangsan write DE about
xuanjü DE] baogao
election de report
‘I am looking for three reports about the election that are written by Zhangsan.’
- b. wo zai zhao [Zhangsan xie de] san fen [guanyu
I LOC find Zhangsan write DE three CL about
xuanjü DE] baogao
election de report
‘I am looking for three specific reports written by Zhangsan about the election.’
- c. *wo zai zhao [guanyu xuanjü de] san fen
I LOC find about election DE three CL
[Zhangsan xie de] baogao.
Zhangsan write DE report
- d. ?wo zai zhao [Zhangsan xie de] [guanyu xuanjü
I LOC find Zhangsan write DE about election
DE] san fen baogao
de three CL report
‘I am looking for three specific reports about the election that are written by
Zhangsan.’
- e. *wo zai zhao [guanyu xuanjü de] [Zhangsan xie
I LOC find about election DE Zhangsan write
de] san fen baogao.
DE three CL reports

3.3.3 Summary of proposal

That ordering restrictions are observed across the high and low positions within the DP domain is significant for the study of modification structure. One important question is how the syntax maintains the ordering restrictions. Looking through the data, two options emerge – base-generation and movement. It is possible that different types of phrasal constituents are base-generated in different projections within the DP, perhaps in a cartographic structure similar to the one proposed by Cinque (1994). For example, Larson (1998) proposes that stage-level phrasal constituents are DP phrasal constituents and are therefore located in positions adjacent to D. However, this is not borne out in Chinese because we have shown in (28) that stage-level phrasal constituents can appear below CIP, which suggests that stage-level phrasal constituents are base-generated low just like other types of phrasal constituents. Furthermore, stage-level modifiers do

not always precede individual modifiers. The order of modifiers in the low position is determined by information flow. A grounding RC/AP that can ground its head NP will always come before a non-grounding modifier. We can assume that the prenominal position refers to a projection XP (or a set of XPs) that appears directly above the NP, but it is not higher than ClP. This position hosts phrasal constituents and is the locus of den Dikken's (2003) predicate inversion. In section 7, I argue that this projection is most likely *nP*. If phrasal constituents are base-generated low, then the most logical explanation for high phrasal constituents is that they are derived by movement. I will review previous literature on the issue of movement vs. base-generation (or adjunction) in Section 5, and provide more arguments for a movement analysis.

4. Interim conclusion and discussion

Summarizing the previous sections, I first argued that there is an ordering restriction among different types of phrasal constituents in the low position. The order is repeated below.

(35) Grounding AP/RC > Non-Grounding AP/RC > Noun complement clause/PP

It is assumed that (35) represents the basic order of phrasal constituents in the prenominal position, a position which I argue that all phrasal constituents are base-generated in. Phrasal constituents can undergo movement and appear higher in the DP but the order among phrasal constituent types must still be respected. Although there are only two phrasal constituent positions (low and high) in Chinese, the high position can appear with different neighboring elements, giving us the illusion that there are three possible surface positions for phrasal constituents.

(36) Possible surface positions for phrasal constituents

Pre-demonstrative	Pre-numeral	Prenominal
-------------------	-------------	------------

HIGH	HIGH	LOW
------	------	-----

Since the pre-numeral and pre-demonstrative positions are in complementary distribution, with the former being [+specific, -definite] and the latter being [+specific, +definite], I will claim in Section 7 that these two surface positions are actually the same – pre-numeral and pre-demonstrative phrasal constituents are both derived through movement to the DP left periphery (i.e. the high position). The presence or absence of a demonstrative contributes to the difference in definiteness.

I have argued at length that different types of phrasal constituents can co-occur. When there are multiple phrasal constituents, they can all appear in their base positions or the DP left periphery. However, it is also possible for some phrasal constituents to appear in the DP left periphery while the others remain in their base positions. When that happens, the phrasal constituents still have to obey the ordering in (35). Only a movement analysis can account for the strict order of phrasal constituents without further stipulations. This is because an approach that assumes that modifying constituents can be adjoined to either the high or low position does not explain why phrasal constituents follow a fixed order. For example, if a noun complement clause is in the high position, no other phrasal constituents can appear in the low position. However, a movement analysis can straightforwardly explain this fact. We will discuss this in more detail in section 5.

5. Previous Analyses of Relative Clauses

When it comes to the derivation of relative clauses across languages, there are two main opposing approaches in the literature: Matching and Promotion (Raising). The Matching analysis (Chomsky 1977) and the Promotion analysis (Schachter 1973, Vergnaud 1974, Kayne 1994) typically differ in how the head NP is identified with the gap in the relative clause, i.e. whether the external head

originates within the relative clause. Under the Promotion (Raising) Analysis, the relativized head is derived from movement and can be reconstructed (i.e. the head NP is interpreted in the initial trace position). Under the Matching Analysis, there is movement of a WH-operator within the relative clause, and the moved operator bears a predication (or agreement) relation with a base-generated NP, which is the head of the relative clause (i.e. the head NP is interpreted outside of the relative clause). However, more recent proposals (Bhatt 2002, Aoun and Li 2003, Sauerland and Hurley 2006) argue that restrictive relative clauses are ambiguous between the two structures, and therefore, both Promotion and Matching strategies are used across languages.

5.1 *The Promotion Analysis*

The first kind of analysis that has been adopted to analyze Chinese relative clauses is the promotion analysis. The promotion analyses are grounded in the tradition of Brame (1968), Schachter (1973), and Vergnaud (1974) but it is really Kayne's (1994) Antisymmetry approach to phrase structure that has sparked a renewed interest in the promotion analysis. Kayne's promotion analysis involves a complementation structure. In Kayne's proposal, D selects a CP as its complement and the NP⁷⁴ within the CP raises to [spec, CP]:

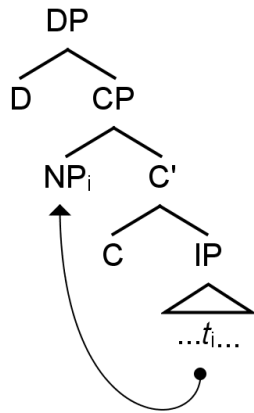
- (37) a. [DP D[CP NP_i[C [IP...t_i...]]]]

⁷⁴ Kayne claims that for non-wh-relatives, the external head is a NP but for wh-relatives it is a DP. Borsley (1994) takes issue with the claim that an NP can move to [spec, CP] because it suggests that NP can function as an argument. For example, if the trace in (i) is an NP, then (ii) should also be grammatical.

- (i) [DP the [CP [picture_i] [CP that Bill liked t_i]]]
(ii) *Bill liked picture. (=9 in Borsley 1994)

The ungrammaticality of (ii) motivated Bianchi (2000) to modify Kayne's proposal in her response to Borsley. The revised version claims that the moved relative head is a DP.

b.



Evidence for the promotion analysis comes from the availability of reconstruction in binding, scope, and idiom chunks. Since idiom chunks must be generated and interpreted as a unit, we expect the relativized head *headway* to be able to undergo reconstruction to its underlying position.

Example (38b) shows that a *wh* relative pronoun blocks reconstruction.

(38) Idiom chunk

- a. The headway_i [that Mel made *t_i*] was impressive.
- b. ?? The headway which Mel made was impressive. (Aoun and Li 2003:98)

The same difference is also exhibited in scope interaction and binding. In (39), it is pointed out that the construction without a *wh* relative pronoun in (39a) allows a distributive reading where every doctor examines two different patients. This reading is not possible in (39b), which contains a *wh* relative pronoun.

(39) Scope

- a. I phoned the two patients (that) every doctor will examine tomorrow.
- b. I phone the two patients who every doctor will examine tomorrow. (Aoun and Li 2003)

The examples in (40) show that the presence of a *wh* relative pronoun makes reconstruction less acceptable. In both examples, the reflexive *himself* needs to be reconstructed to the object position

of *paint* in the relative clause. Again, we see that the wh-relative pronoun blocks reconstruction (or makes it less acceptable) in (40b).

- (40) Binding
- a. The picture of himself_i that John_i thinks Mary painted in art class is impressive.
 - b. ??The picture of himself_i which John_i thinks Mary painted in art class is impressive.
(Aoun and Li 2003)

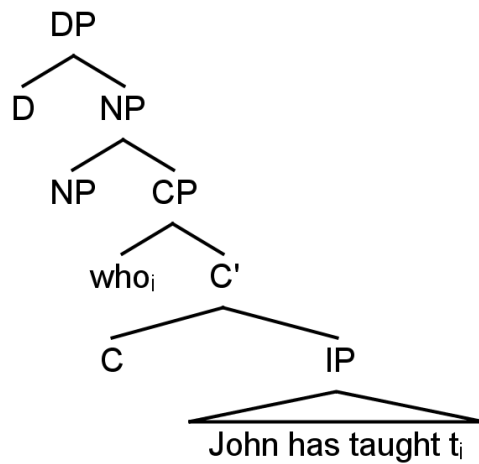
5.2 The Matching Analysis

Based on the similarities between relatives and wh-interrogatives, Chomsky (1977) argues that relative clauses are derived through movement in the same way as WH-questions. Both constructions contain a gap, which is related to an operator (empty or WH-operator) which can be moved across clause boundaries. This movement is also subject to island conditions. For example, the movement of *who* in (41b) is illicit because of a WH-island. The long distance movement in (41c) is possible because there is no island violation.

- (41) a. The boy_i [who_i John has taught t_i].
b. *The boy_i [who_i I wonder why John has taught t_i]. (=11c in Aoun and Li 2001)
c. The boy_i [who_i I know John has taught t_i].

Under the matching analysis, the moved operator bears a predication or agreement relationship with the base-generated external head *boy* and is therefore interpreted as such. Since this structure does not assume any raising of the NP (but only the WH- or empty operator), it is expected that no reconstruction of the head within the relative clause should occur.

(42)



5.3 Unified Analysis

Sauerland and Hurley (2006) show that restrictive relative clauses are ambiguous between both Matching and Raising structures. Example like (43) show that the idiom interpretation requires that the Head be interpreted inside the complement of *make* (i.e. raising). Example like (44a) show that the absence of Condition C effect, which is not predicted by the raising structure in (44b), is predicted by the Matching structure in (44c).

- (43) a. John was satisfied by the amount of headway that Mary made.
 b. John was satisfied by the λx Mary made the $_x$ amount of headway. (=3 in S&H 2006)
- (44) a. Which is the picture of John $_i$ that he $_i$ likes?
 b. the λx . he $_1$ likes the $_x$ picture of John $_1$
 c. the picture of John λx . he $_1$ likes the $_x$ picture of him $_1$ (=7 in S&H 2006)

We will discuss more about the Unified Analysis in our review of Aoun and Li (2003).

5.4 Previous Analyses of Chinese Relative Clauses

In the last sub-section, I reviewed the three main approaches to modifying clauses in the literature.

However, in my discussion of past literature of Chinese relative clauses, I will focus more on the question of whether Chinese relative clauses involve adjunction (typically associated with the Matching Analysis) or complementation (typically associated with Raising). We will see that some of the previous literature on Chinese modifying constituents sidesteps the question of raising vs. matching and only situates the discussion on whether the constituents are adjuncts or raised complements (Pan 2000, Cheung 2012). Some scholars favor a more unified approach to modifying clauses (Aoun and Li 2003). Finally, there are proposals like Den Dikken and Singhapreecha (2004) that do not straightforwardly fall into either the Matching Analysis or Raising Analysis category. As the reader will see, it is Den Dikken and Singhapreecha's approach that I will adopt. I therefore leave the question of Raising vs. Matching for further research.

5.4.1 Pan (2000)

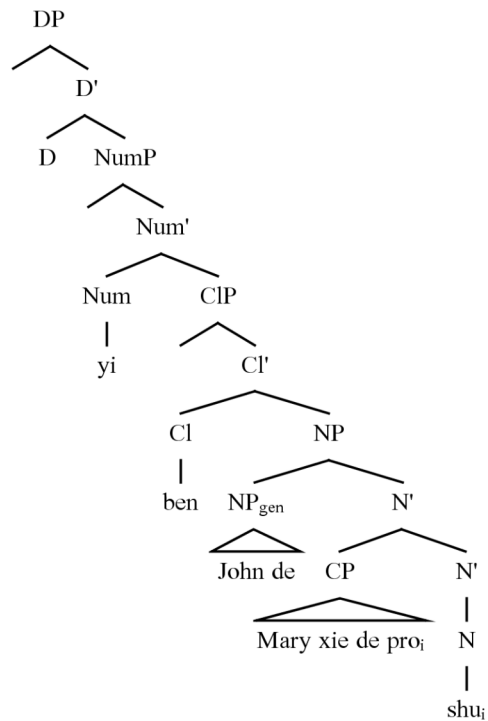
In light of the ordering constraints between different phrasal constituent types, Pan (2000) offers an adjunction analysis to derive the correct order of phrasal constituents. However, as we will see, there are a number of problems with his proposal. He claims that Possessor DPs are base-generated in [spec, NP]; AP and relative clauses are adjoined to N'; and noun-complement clauses are adjoined to N⁰. The reasoning for this proposal can be illustrated in (45):

- (45) Mandarin
 yi ben John de Mary xie de shu
 one CL John DE Mary write DE book
 'a book of John's that Mary wrote.' (=16 in Pan 2000)

When (45) is represented in a tree, as shown in (46), the Possessor DP must appear below the classifier phrase. It is assumed that genitive case is assigned in [spec, NP], hence possessors are base-generated in this position. Since AdjP and relative clauses come after Possessor DPs, they

must be adjoined to N' in order to get the correct order. The adjunction of noun-complement clauses to N⁰ also follows from the fact they must appear after relative clauses.

(46)



However, as straightforward as Pan's proposal is, adjunction to N⁰ creates a complex N head. Moreover, if complement clauses are adjoined to N⁰, then they are not true 'complements' as adjuncts, being optional elements, cannot also be selected complements of a head noun. That also allows the possibility of multiple adjunction of noun complements at the N⁰ site, as in (47), which is not licensed.

(47) Mandarin

*Zhangsan da Lisi de Lisi shou Shang de xiaoxi
 Zhangsan hit Lisi DE Lisi hurt de news

‘*The news that Zhangsan hit Lisi that Lisi got hurt’

While this account explains the ordering restrictions of modifying clauses in the low position (the immediate prenominal position), it sheds little light on the modifying clauses in the higher position. Furthermore, recent theoretical developments do not allow genitive case to be assigned by a lexical category like N (Abney 1986, Ritter 1991). In the clausal domain, case is assigned by functional categories like v and T. It is not clear why in the nominal domain genitive case is not assigned by D or some other functional categories⁷⁵. Finally, the status of *de* remains a mystery in this analysis. In tree (46), the modification marker *de* shows up mysteriously with the modifying clauses, which is an important loose end that needs to be tied up.

Last, but not least, is the questionable status of N^0 -adjunction. Following the current theory, merger of elements from the numeration is expected to return a phrasal syntactic string. Following Chomsky (1995), first merge simply will not allow N^0 -adjunction as first merge will always linearize as head-complement.

5.4.2 Cheung (2012)

Cheung (2012) studies the interpretational properties and distributional patterns of adjectival modification with DE and argues that adjectival modification makes use of adjunction structures. Cheung shows that, unlike English, Chinese does not follow the universal adjective ordering restriction in Cinque’s (1994) sense. (48) is a simplified example of the universal adjective ordering restriction, with examples showing that English obeys the ordering restriction in (49) and a tree structure showing that adjective + DE phrases have to occupy specifiers of different functional projections, which are ordered according to the universal adjective ordering

⁷⁵ Chomsky 2000, 2001 assume that genitive case is assigned by possessive D.

restriction.

(48) Universal adjective ordering restriction

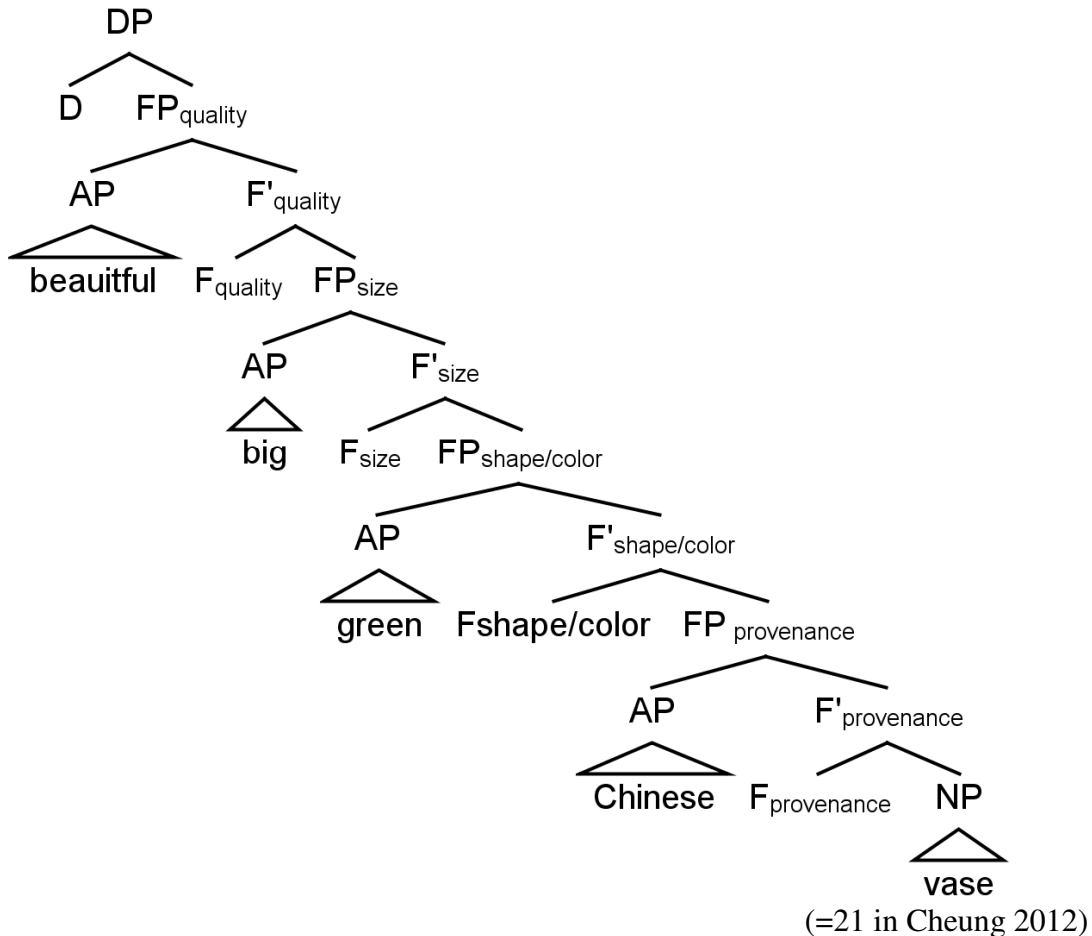
$Adj_{quality} > Adj_{size} > Adj_{shape/color} > Adj_{provenance}$

(Cheung 2012)

- (49) a. the beautiful big green Chinese vase
 b. *the beautiful Chinese big green vase
 c. *the beautiful big Chinese green vase
 d. *the big beautiful green Chinese vase
 e. *the big beautiful Chinese green vase
 f. *the green beautiful big Chinese vase
 g. *the green beautiful Chinese big vase
 h. *the Chinese beautiful big green vase
 i. *the Chinese big green beautiful vase

(Cheung 2012)

(50)



However, while English follows the universal adjective ordering restriction, there is a free ordering among Chinese Adj + DE phrases, as we discussed in previous sections. In Chinese, multiple

adjacent Adj + DE phrases can either give a hierarchical reading (derived by c-command) or a conjoined reading. All the examples in (51) are well-formed even though the adjectives with DE describing quality, size, and color can be freely reordered.

- (51) a. $Adj_{quality} > Adj_{size} > Adj_{color}$
 piaoliang de juda de bilü de shitou
 pretty DE huge DE verdure DE stone
 (i) ‘pretty huge verdurous stone’ (hierarchical reading)
 (ii) ‘pretty, huge and verdurous stone’ (conjoined reading)
- b. $Adj_{quality} > Adj_{color} > Adj_{size}$
 piaoliang de bilü de juda de shitou
 pretty DE verdure DE huge DE stone
 (i) ‘pretty verdurous huge stone’ (hierarchical reading)
 (ii) ‘pretty, verdurous and huge stone’ (conjoined reading)
- c. $Adj_{color} > Adj_{quality} > Adj_{size}$
 bilü de piaoliang de juda de shitou
 verdure DE pretty DE huge DE stone
 (i) ‘verdurous pretty huge stone’ (hierarchical reading)
 (ii) ‘verdurous, pretty and huge stone’ (conjoined reading)
- (Cheung 2012)

The reordering of the adjectives does not matter much for the conjoined reading as conjunction simply conjoins two AdjPs. However, in the hierarchical reading, a higher adjective has scope over a lower one. Although this suggests a c-command relation between the adjectives, Cheung claims that there are not different functional projections hosting different types of adjectives in their specifier positions, based on the fact that adjectives can be reordered. She takes this to mean that Adj+DE phrases are adjoined to the structure and her proposal supports Aoun and Li’s (2003) claim that relative constructions in Chinese make use of the adjunction structure (to be discussed in the next sub-section).

While Cheung has convincingly shown that the universal adjective ordering restriction does not hold for Chinese, her conclusion that adjectival modification makes use of adjunction is a hasty one. Adjective + DE phrases can still appear in specifier positions if one adopts a promotion

analysis similar to Simpson (2001, 2002, 2003, 2005) and den Dikken's (2004) predicate inversion analysis, which will be discussed in the next sub-section. Once again, the status of DE is left unaccounted for in this work.

5.4.3 Aoun and Li (2003)

Aoun and Li's (2003) discussion of restrictive relatives argues that different types of relative constructions within and across languages can be accounted for using both matching and promotion strategies. Their position differs from some previous works (Carlson 1977, Grosu and Lanman 1998, among others) which argue that only one strategy is sufficient to account for relative constructions in any given language. In fact, their approach falls under the unified analysis (Sauerland and Hurley 2006). They note that if the external head of a relative construction can be reconstructed, it is derived by movement (i.e. promotion). If the head cannot be reconstructed, then it is base-generated outside the clause and there is operator movement within the relative clause (i.e. matching). For example, it is argued that English relatives with *wh* relative pronouns make use of operator movement, whereas relatives without *wh* relative pronouns are derived by head raising. This difference leads to the difference in acceptability between the two examples in (38), repeated as (52), with the idiom chunk *to make headway*. I also used these examples to introduce the promotion analysis in Section 5.1.

- (52) a. The headway_i [that Mel made *t_i*] was impressive.
b. ?? The headway which Mel made was impressive. (Aoun and Li 2003:98)

Since idiom chunks must be generated and interpreted as a unit, we expect the relativized head *headway* to be able to undergo reconstruction to its underlying position. Example (52b) shows that a *wh* operator blocks reconstruction.

The same difference is also exhibited in scope interaction and binding. In (53), it is pointed

out that the construction without a *wh* relative pronoun in (53a) allows a distributive reading where every doctor examines two different patients. This reading is not possible in (53b), which contains a *wh* relative pronoun. The examples in (54) show that the presence of a *wh* relative pronoun makes reconstruction less acceptable in (54b).

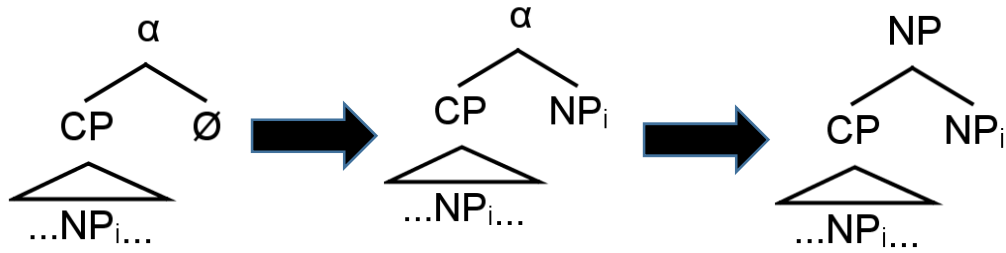
- (53) a. I phoned the two patients (that) every doctor will examine tomorrow.
 b. I phone the two patients who every doctor will examine tomorrow.
 (Aoun and Li 2003)
- (54) a. The picture of himself_i that John_i thinks Mary painted in art class is impressive.
 b. ??The picture of himself_i which John_i thinks Mary painted in art class is impressive.
 (Aoun and Li 2003)

Traditionally, reconstruction requires a complementation structure as it implies movement from within the relative clause to a position outside of the clause. However, Aoun and Li argue that Chinese relatives should be formed by adjunction since Chinese adjectives, which are often treated as a relative clause, do not show an ordering restriction⁷⁶, an observation we have shown in Section 3 to be inaccurate. However, adjunction implies that there is operator movement within the relative clause and base-generation of the head outside of the relative clause. If relative clauses are adjoined to NP, that would mean that the head NP is not raised from within the relative clause, as any movement from within an adjunct will constitute a violation of the adjunct island constraint. Aoun and Li's solution to the problem is to unify substitution and adjunction processes, contra Chomsky's (1995, 190-191) account which claims that adjunction does not extend its target. They argue that NP raising from adjuncts will be licit if it happens in the following fashion:

⁷⁶ An example that shows that there is no ordering restriction between adjective is as follows:

- (i) hong de xiao de chezi
 Red DE small DE car
 'A red small car'
- (ii) xiao de hong de chezi
 Small DE red DE car
 'A small red car'

(55)



In (55), the relative CP is generated first. After that, it is merged with an empty \emptyset which can later be substituted for by the NP_i inside the CP. Finally, since it is NP that projects, CP is an adjunct⁷⁷. This proposal is different from other accounts as they assume a raising analysis but the moving NP originates in an adjunct instead of a complement.

Aoun and Li (2003) argue that relative constructions in Chinese only make use of the adjunction structure, and that the relativized head is an NP, and not a DP. Their main arguments come from reconstruction and conjunction facts.

We begin with reconstruction facts. Unlike the systematic reconstruction results in English shown in (52) - (54), reconstruction in Chinese yields conflicting results. Reconstruction is available for binding, as in (56)

- (56) a. wo jiao Zhangsan quan mei-ge-ren_i kai ziji_i
 I ask Zhangsan persuade every-CL-person drive self
 de chezi lai
 DE car come
 ‘I asked Zhangsan to persuade everyone to drive self’s car over.’

⁷⁷ For this derivation to work, Aoun and Li must adopt a definition of c-command in the sense of May (1985) and Chomsky (1986), which make use of the notion of segments. They also assume the Minimal Link Condition discussed in Chomsky (1995), which claims that trees are built up step by step and conditions on movement are checked derivationally.

- b. [[wo jiao Zhangsan quan mei-ge-ren_i kai t
 I ask Zhangsan persuade every-CL-person drive
 lai de] ziji_i de chezi]
 come DE self DE car
 ‘Self’s car that I asked Zhangsan to persuade everyone to drive over’
 (Aoun and Li 2003)

However, scope reconstruction is unavailable when the external head is a QP interacting with another QP inside a relative clause. In (57b), only the wide scope reading of *san ben shu* ‘three books’ is available. This is curious because *san ben shu* in its non-relative counterpart in (57a) allows both wide scope and narrow scope readings. The absence of narrow scope reading indicates that the external QP head *san ben shu* cannot be reconstructed within the relative clause to interact with the other QP.

- (57) a. ta xiwang mei-ge-ren hui kan san-ben shu
 he hope every-CL-person will read three-CL book
 ‘He hopes everyone will read three books.’
three > every
every > three
- b. wo hui zhengli [[ta xiwang mei-ge-ren hui
 I will arrange he hope every-CL-person will
 kan t de] san-ben shu
 read DE three-CL book
 ‘I will put the three books that he hopes that everyone will read in order.’
three > every
 **every > three*
 (Aoun and Li 2003)

As for idiom chunks with a relativized idiomatic head, reconstruction is available but base-generation is also possible. Reconstruction allows the relativized idiomatic head to be related to the relative clause, as in (58a). Base-generation creates a reading where the relativized idiomatic head is related to the matrix clause, as in (58b).

- (58) a. [[ta chi t_i de] cu_i] bi shei dou da
 He eat DE vinegar compare who all big

‘Literal: The vinegar he eats is greater than everyone else’s.’
‘Idiomatic: His jealousy is greater than anyone else’s.’

- b. ta laoshi ai chi [[rang ren shou-bu-liao de] cu]
he always like eat let people receive-not-complete DE vinegar
‘Literal: He always likes to eat vinegar that cannot be put up with.’
‘Idiomatic: He always likes to be jealous to such a degree that is beyond what can be put up with.’

(Aoun and Li 2003)

Aoun and Li argue that the conflicting reconstruction results can be explained if what is being reconstructed in Chinese is a NP. This explains why scope reconstruction is not possible because an NP does not contain a position for numerals or other quantifiers. It also explains why the relativized head of idiom chunks are non-referential because what is reconstructed is not a DP. By using conjunction facts, they argue that the projection containing a relative clause and the relativized head has to be an NP. Chinese uses different conjunctions to connect different phrasal categories. Below is Aoun and Li’s summary:

- (59) a. *Jian* connects two properties of a single individual or two activities performed by one individual. In terms of categories, *jian* can connect NPs or VPs.
b. *He/gen* connects two individual-denoting expressions (i.e., two DPs), which can be proper names, pronouns, expressions containing demonstratives, or expressions containing number + classifier expressions.
c. *Erqie* connects two nonnominal categories, including clauses, adjective phrases, and VPs not expressing dual properties/activities of one individual.
d. These connectives are not interchangeable. (Aoun and Li 2003)

In example (60), what is being conveyed is that the same person is a teacher and principal. These are two properties of the same person. The conjunction *jian* is therefore used to connect two NPs expressing two properties of the same individual. The conjunction *gen* cannot be used here because what are being connected are not two individual-denoting expressions (DPs). On the other hand, in example (61), the speaker sees two individuals and therefore the conjunction *gen* must be

used. *Jian* cannot connect two individual-denoting expressions.

- (60) a. ta shi yi-ge laoshi **jian** xiaozhang
 He COP one-CL teacher and principal
 ‘He is a teacher and principal.’
 b. *ta shi yi-ge laoshi **gen** xiaozhang
- (61) a. wo kanjian yi-ge laoshi **gen** yi ge xiaozhang
 I see one-CL teacher and one CL principal
 ‘I see a teacher and a principal.’
 b. *wo kanjian yi-ge laoshi **jian** yi ge xiaozhang

Aoun and Li continue to show that it is possible to add modifying phrases to each property-denoting NP connected by *jian* in (62). Since both NPs are headed by a classifier in (61a), they take this to be evidence that modifiers are adjoined to NP, as classifiers select NPs in their work. If one assumes the promotion strategy⁷⁸ (Kayne 1994, Simpson 2001, 2002, 2003, 2005), then relative clauses would be treated as CPs and the conjunction *erqie* should be used as in (61c), but (62b) shows that this is not borne out.

- (62) a. Ta shi yi-ge [[congming de laoshi] **jian** [jinze
 He COP one-CL smart DE teacher and responsible
 de xiaozhang]]
 DE principal
 b. *Ta shi yi-ge [[congming de laoshi] **erqie** [jinze de xiaozhang]]
 c. [CP ta hen congming] erqie [CP ta hen jinze]
 3SG very smart and 3SG very responsible
 ‘He is smart and he is responsible.’

However, I disagree with Aoun and Li’s conclusion that the relativized head must be an

⁷⁸ Kayne (1994) assumes a complementation structure where D takes a CP as its complement, and the external NP head is raised from within the relative clause. For example, the structure of the picture that Bill liked is shown below:

(i) [DP the [CP [picture]_i] [CP that Bill liked *t*_i]]

NP. The use of *jian* as a conjunction does not necessarily mean that the phrasal constituent is an adjunct. It also does not immediately suggest that it is adjoined to NP. It just means that phrasal constituents can be generated low. As I discuss later, the basic (low) position for phrasal constituents is *nP*.

5.4.4 Simpson (2001, 2002, 2003, 2005)

Simpson's approach is a raising approach to modifying constituents, which means that modifying constituents involve a complementation structure. The central claim of Simpson's approach to Chinese modifying clauses has to do with head directionality. It is commonly assumed that DP/NP are head final in Chinese, while other categories like VPs, PPs, and IPs are all head-initial, which appears to be a mismatch. Furthermore, the existence of head-final categories is also challenged by Kayne's (1994) Antisymmetry approach. To deal with the unpleasant inconsistency between DPs and the rest of the system, Simpson adopts the Kaynean approach to relativization and Simpson (2001, 2003) proposes that *de* is the D head which selects a CP. The derivation proceeds as follows.

- (63) Mandarin
- a. qu meiguo de nei ge ren
 go U.S.A DE DEM CL person
 'The person who went to the United States'
- b. [de [XP nei-ge [CP [NP ren]_i [IP *t*_i qu meiguo]]]]
- c. [[IP *t*_i qu meiguo]_k [de [XP nei-ge [CP [NP ren]_i *t*_k]]]]

The derivation starts with (63b). In (63b), the subject of the IP moves to [spec, CP], followed by remnant movement of the IP to [spec, DP]. The movement of IP to [spec, DP] is said to be caused by the enclitic nature of *de*⁸¹.

⁸¹ The status of XP is not specified in Simpson (2001). In Simpson and Wu (2002), it is mentioned that when the demonstrative-classifier sequence is present, it could be base-generated in the specifier of a FocusP lower than D. When the demonstrative-classifier unit precedes a relative clause, it is argued to move to a head higher than D,

As for noun-complement clauses, they are created by having D (*de*) selecting an NP which has a VP complement. The derivation proceeds as follows.

- (64) Mandarin
- a. Deng Xiao-ping shishi de xiaoxi
 Deng Xiao-Ping pass-away DNews
 ‘The news that Deng Xiao-Ping passed away.’
- b. [DP de [NP xiaoxi [VP Deng Xiao-ping shishi]]] (=70 in Simpson 2003)
- c. [DP [VP Deng Xiao-ping shishi]_i [D de [NP xiaoxi t_i]]] (=71 in Simpson 2003)

Again, the movement of the VP to DP is also driven by the enclitic nature of *de*. This analysis correctly predicts that noun-complement clauses must follow relative clauses and APs, as the head noun in a noun-complement clause is base-generated at N⁸². (65) shows how the derivation would proceed if there were a modifying clause and a noun-complement clause within the DP.

- (65) Mandarin
- a. Wo zuotian tingdao de Deng Xiao-Ping shishi de xiaoxi
 I yesterday hear DE Deng Xiao-Ping pass-away DE news
 ‘The news I heard yesterday that Deng Xiao-Ping passed away.’
- b. [DP de [NP xiaoxi [VP Deng Xiao-ping shishi]]] (=70 in Simpson 2003)
- c. [DP [VP Deng Xiao-ping shishi]_i [D de [NP xiaoxi t_i]]] (=71 in Simpson 2003)
- d. [DP de [CP[DP D-X-P shishi de xiaoxi]_m [IPWO zuotian tingdao t_m]]] (=73 in Simpson 2003)
- e. [DP[IP WO ZUOTIAN TINGDAO t_m]_p [D de [CP[DP D-X-P shishi de xiaoxi]_m t_p]]] (=74 in Simpson 2003)

(65 b-c) involve the same derivation as (64 b-c). We create the noun-complement clause first. The head noun *xiaoxi* selects the VP, and then the VP is moved to [spec, DP] due to the enclitic nature

possibly QP just like quantifier movement in English.

(i) [DP [IP qu meiguo] [D' de [FocP nei-ge [Foc' [CP ren]]]]
 ‘The person who went to the United States’

⁸² Simpson also follows Fu (1994) in claiming that process nominals like *piping* are syntactically derived from underlying VPs. In the following derivation, the verb *piping* is moved and adjoined to N⁰, before the VP moves to [spec, DP].

(i) Zhangsan dui Lisi yanli de piping.
 Zhangsan to Lisi harsh DE criticism

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

(iii) [DP de [NP [N piping]_i [VP Zhangsan dui Lisi yanli t_i]]

(iv) [DP [VP Zhangsan dui Lisi yanli t_i]_k de [NP [N piping] t_k]]]

- (68) a. fang de zhuozi
 square DE table
 'square table'
- b. *zhuozi fang
 table square
 'square table'
- c. zhuozi shi fang de
 table be square DE
 'The table is square.'

Tang (2006) also points out that phrasal constituents marked with DE can express different kinds of semantic roles and may not carry a propositional meaning with their modifiees. For example, Tang argues that (69) does not mean 'the newspaper is yesterday' or 'yesterday has the newspaper.'

- (69) zuotian de baozhi⁸⁴
 yesterday DE newspaper
 'yesterday's newspaper'

Tang also challenges Simpson's idea of DE being in D, of which the argument is entirely based on Classical Chinese data. It is known that ZHI used to be a demonstrative.

- (70) zhi er chong you he zhi
 These two worm again what know
 'And what do these two worms know?' (Zhuangzi 1.10, as cited in Tang 2006)

Simpson claims that ZHI later on underwent syntactic change and was reanalyzed as a modification marker that is synonymous to DE today.

- (71) [you ren] zhi xing, [wu ren] zhi qing
 Have human ZHI appearance lack human ZHI feeling
 '(lit) with the form of a human being and yet without the substance of a human being'
 (Zhuangzi, as cited in Tang 2006)

Tang questions the validity of Simpson's claim based on three grounds. First, the modification marker DE (and its equivalents in other varieties of Chinese) in modern Chinese does not carry

⁸⁴ This example is a simplified version of (61a) in Tang 2006.

(in)definiteness. Furthermore, Tang argues that even if DE is related to ZHI, it should be diachronically linked to the modification marker ZHI and not demonstrative ZHI since the modification marker appears later⁸⁵. Finally, it is unclear how we can parameterize the Chinese D, which does not mark (in)definiteness, and the English type D, which does.

In addition to the problems raised by Tang above, I also take issue with Simpson's analysis as it leaves the ordering between a Possessor DP and a relative clause (or AP) unexplained. Treating the demonstrative and the classifier as one unit contradicts the general assumption and Simpson's (2005) own assumption that demonstratives, numerals, and classifiers are in different functional projections (see Chapter 2). Finally, although in Kayne's (1994) treatment, restrictive relative clauses and non-restrictive relative clauses have the same narrow syntax, he assumes that non-restrictive relative clauses are derived through movement of IP to [spec, DP]. This is exactly the same movement Simpson proposes for all phrasal constituents in Chinese, which implies that all relative clauses in Chinese are non-restrictive, an issue that has been under a lot of discussion in the literature (see Chao 1968, Yue-Hashimoto 1971, Huang 1982, Del Gobbo 2001, 2003, Zhang 2001, among others). I will not delve into the problem of restrictive vs. non-restrictive relative clauses in this work since it is not central to my claim. However, I would like to refer the reader to Del Gobbo (2001, 2003), where she argues that Chinese relatives are consistently restrictive. In Del Gobbo (2009), it is claimed that only relative clauses modifying proper nouns and pronouns can be non-restrictive.

5.4.5 The Predicate Inversion Analysis

Den Dikken and Singhapreecha (2004) (henceforth D&S) propose a predicate-inversion

⁸⁵ In fact, the claim that ZHI is the predecessor of DE has been challenged in the literature. For example, Aldridge (2017) shows that the historical antecedent of DE is a lower functional head (*n*) ZHE.

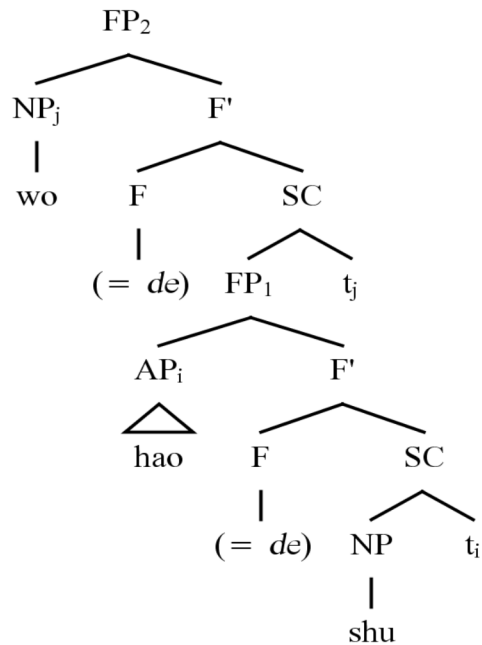
analysis to explain the distribution of linkers cross-linguistically. This analysis does not fall nicely into either the category of the Raising or Matching analyses of modifying clauses because the predicate inversion analysis does not assume any raising of the NP (or DP) or WH-/empty operator. D&S consider the Mandarin relative marker *de* to be a linker, a meaningless element that appears as a reflex of predicate moving around its subject – a process called Predicate Inversion. Predicate inversion is found in languages like English⁸⁶, French, and Thai. Linkers in East Asian Languages generally mark possession or modification. The main proposal of the predicate-inversion analysis is that modifying clauses are predicates of DP-internal small clauses which raise over their subjects (subjects of the small clauses) to the projection headed by the linker. (70) is the derivation of *hao de shu* ‘good book’ in Chinese.

(72) [DP D (...) [FP [AP hao]_i [F (= *de*) [SC[NP shu] t_i]]]]
 (=43 in den Dikken & Singhapreecha 2004)

The small clause SC[[NP shu] [AP hao]] is generated first. The subject (the element that will be crossed over by the predicate) is the NP *shu* and the predicate is the AP *hao*. Inversion occurs in the predicate-inversion domain FP. As the inversion occurs, the linker will concomitantly appear as a reflex of the operation. The inverted predicate will land in [spec, FP] and the feature bundle in F will spell out as the linker *de*. This analysis is powerful on several grounds. First, it accounts for the distribution of *de*. Second, once predicate inversion has taken place and FP (site of predicate inversion) is created, the newly formed FP can be the subject of another predicate through external merge and a new small clause will be formed, so that predicate-inversion can happen again, as in *wo de hao de shu* ‘my good book’ in (73):

⁸⁶ The italicized element in (i) is a DP linker in English:
 (i) That idiot *of* a doctor

(73)



Third, since anything can be the subject of a small clause as long as there is a predicate to be merged with, this analysis gives an account of how prenominal phrasal constituents and higher phrasal constituents can be generated. Prenominal phrasal constituents can be generated by having a classifier head select an FP, whereas phrasal constituents in the higher domain can be generated by having a D select an FP like (74). In the case of (74), the subject of the small clause will be a demonstrative-numeral-classifier-noun sequence *na yi ben shu* ‘That one book’.

(74) $FP[[hao]_i [F (= de)[SC [na yi ben shu] t_i]]]$

D&S's proposal involves a predicative analysis of phrasal constituents. D&S, however, are well-aware of a criticism made by Sio (2006) and Paul (2012, 2015), namely the fact that cross-linguistically non-intersective adjectives do not function as predicates. D&S claimed that "the speculation that the ban on predicative use of certain adjectives is not a deep but a surface one (p.13)."

5.5 *Why Predicate Inversion?*

I reviewed the previous accounts of relative clauses in this section. In the subsequent sections, I will base my analysis on a modified version of D&S's Predicate Inversion Analysis. I adopt D&S's work mainly on two grounds: ordering restrictions and the status of DE.

The ordering restrictions of different types of relative clauses will be important for this work. I will therefore not adopt any proposals that argue that modifying phrasal constituents involve an adjunction structure, as these analyses fail to account for the ordering of modifying constituents. Authors (Li and Aoun 2003, Tang 2006, Cheung 2012, among others) who claim that there is no ordering restriction between RCs only look at ordering between AdjPs and non-grounding, individual-level RCs, where there is no ordering restriction. However, our discussion above clearly shows that there is a restriction on different types of phrasal constituents, as stated in (31). If phrasal constituents are adjoined to the different positions, we need to ask how the ordering restrictions in (31) can be maintained since adjuncts are known for being able to freely reorder among themselves. Adjuncts also do not enter into checking or Agree relations. In that case, how do possessor DPs get case? In fact, one major flaw of the adjunction analysis is that it predicts that each adjunction site (phrasal constituent position) in the DP can host all four phrasal constituent types listed in (31). If phrasal constituents are adjoined, there is nothing in the grammar

that will stop a noun complement clause from being adjoined to the high position, while a relative clause (or even another noun complement clause) is adjoined above NP, as in (75). That is simply not borne out. Noun complements and possessor DPs only occur once in the entire DP. As we have repeatedly shown, if a phrasal constituent appears before NP, only phrasal constituents of the same type or types that are to the left of it in (31) can appear in the pre-demonstrative position.

- (75) *[Zhangsan da Lisi de] nei tiao [wo tingdao DE] xiaoxi
 Zhangsan hit Lisi DE DEM CL I heard DE news
 ‘The news that Zhangsan hit Lisi which I heard’

Adjunction also does not explain why only one noun complement may be present -- either before the demonstrative or before the numeral. Furthermore, since noun complements are selected by head Ns and must be closest to the N, it is puzzling why they can appear before projections much higher than the NP.

- (76) a. [guanyu⁸⁷ Zhangsan de] nei ge xiaoxi xia si ren
 about Zhangsan DE dem CL news scare die person
 le
 ASP
 ‘The news about Zhangsan scares one to death.’
 b. wo zai zhao [guanyu Zhangsan de] san fen baogao
 I LOC find about Zhangsan DE three CL reports
 ‘I am looking for three specific reports about Zhangsan.’

As previewed in the previous sections, I am going to answer this question by arguing that modifying phrasal constituents in the high position are base-generated low and moved to a position in the DP left-periphery.

Another reason for not adopting the adjunction proposals is because they do not offer any

⁸⁷ Despite the gloss, I assume that *guanyu* is a verb here. Larson (2009), citing Li (1985) and Tsai (1995), argues that many Chinese prepositions clearly function as verbs. This is not surprising given that most prepositions in Chinese have a verbal source historically. In other words, the bracketed string of words in (70) is a CP.

explanation for *de*. This is a major shortcoming because there is clear evidence showing that *de* is a head based on ellipsis phenomena. Saito, Lin, and Murasugi (2006) argue that although there are some similarities in the distributions of the modifying marker *de* in Chinese and *no* in Japanese, there is evidence that they are structurally very different. *No* appears with complements and adjuncts in Japanese. In the examples in (77), *no* appears with an adjunct. However, in (78) we see that Chinese *de* does not appear with adjuncts. To make (78a) grammatical, we need to turn it into the compound in (78b). (78c) is only grammatical if *xuesheng* is turned into a predicate by adding the copula *shi*, as shown in (78d). In other words, this suggests that Chinese *de* only appears with complements but not adjuncts. The authors take the Japanese fact as evidence that *no* in Japanese is not a head but a contextual case marker which can be affixed to arguments within the DP.

(77) Japanese

- a. ame no hi
rain no day
'rainy day'
- b. gakusei no hito
student no person
'a person who is a student.'
- (=13 in Saito, Lin, and Murasugi 2006)

(78) Chinese

- a. *yu de tian
rain de day
'rainy day'
- (=14a in Saito, Lin, and Murasugi 2006)
- b. yu tian
'rainy day'
- (=15a in Saito, Lin, and Murasugi 2006)
- c. *xuesheng de ren
student de person
'a person who is a student'
- (=14b in Saito, Lin, and Murasugi 2006)
- d. shi xuesheng de ren
be student DE person
'a person who is a student.'
- (=15b in Saito, Lin, and Murasugi 2006)

Furthermore, in Japanese, ellipsis cannot apply to elements appearing after *no* if the *no*-marked phrasal constituent is a nominal adjunct. It only applies if the *no*-marked phrasal constituent is a nominal argument. In the examples in (79), *taido* 'attitude' and *hakai* 'destruction'

are nominal subject and nominal object respectively. In (80), the *no*-marked phrases are nominal adjuncts.

(79) Japanese

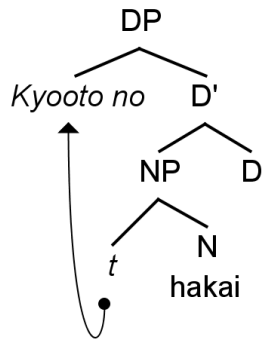
- a. [Taroo no taido] -wa yoi ga, [Hanako no ~~taido~~]
 Taroo *no* attitude TOP good though Hanako *no* attitude
 -wa yokunai
 TOP good-not
 ‘Though Taroo’s attitude is good, Hanako’s isn’t.’
- b. [Rooma no hakai] -wa [Kyoto no ~~hakai~~] -yorimo
 Rome *no* destruction TOP Kyoto *no* destruction than
 hisan datta
 miserable was
 ‘Rome’s destruction was more miserable than Kyoto’s.’
 (=21 in Saito, Lin, and Murasugi 2006)

(80) Japanese

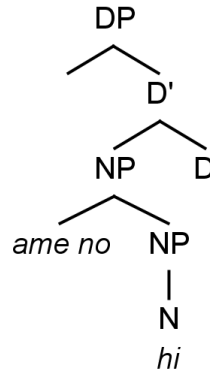
- a. *[Hare no hi] -wa yoi ga, [ame no ~~hi~~] -wa
 Clear *no* day TOP good though rain *no* day TOP
 otikomu
 feel-depressed
 ‘Clear days are OK, but I feel depressed on rainy days.’
- b. *Taroo-wa iti -niti -ni [san -satu no hon]-o yomou
 Taroo -TOP one -day -in three CL *no* book-ACC read
 -ga, Hanako-wa [go -satu no ~~hon~~]-o yomou.
 though Hanako-wa five CL *no* book-ACC read
 ‘Taroo reads three books in a day, but Hanako reads five.’
 (=22 in Saito, Lin, and Murasugi 2006)

(81) shows the differences schematically. The nominal adjunct in (76b) cannot move to a specifier position, and therefore only arguments marked by *-no* can undergo ellipsis.

(81) a.



b.



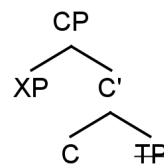
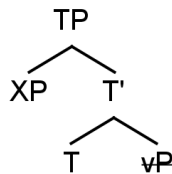
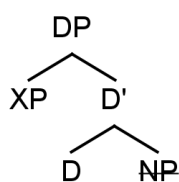
As for Chinese, it is always possible to elide elements after *de*.

(82) Chinese

- a. [Luoma de huimie] bi [Bali de huimie]
 Rome de destruction compare Paris de destruction
 geng canlie
 compare disastrous
 'Rome's destruction was more disastrous than Paris's.' (=33b in SLM 2006)
- b. Zhangsan xuan-le [san -bang de rou], Lisi xuan -le
 Zhangsan pick-PERF three CL candy Lisi pick -PERF
 [wu -bang de rou]
 'Zhangsan picked three pounds of meat, while Lisi picked five pounds.'

Saito et al. follow Saito and Murasugi's (1990) and Lobeck's (1990) assumption that most cases of ellipsis require a filled specifier of a functional head (D, T, C), followed by deletion of the complement. Therefore, the modifying marker *de* in Chinese must be a head, with a phrasal constituent filling its specifier. Although Saito et al. follows Simpson's (2003) proposal that *de* is D, in subsequent sections I will argue that this head does not have to be D, it can also be *n*.

(83) a. N'-ellipsis b. VP-ellipsis c. Sluicing



Therefore, there are sufficient arguments against adopting the adjunction approach to phrasal constituents in Chinese, as it creates more problems than solutions. This leaves us with proposals that derive modifying constituents by movement. The status of DE, which I will discuss in the next section, is a major reason why I choose D&S's Predicate Inversion approach over Simpson's raising approach for the remainder of this work⁸⁸. Simpson's approach claims that DE is a D head, whereas D&S's proposal simply argues that DE is a functional head. Simpson's proposal does not fit well into recent proposals (Aldridge 2009, 2017, Yip 2009) that suggest DE could be reflexes of multiple functional heads. For example, Aldridge (2017) argues that in Archaic Chinese ZHI 之 occupies D and express definiteness or genericity, and ZHE 者 occupies *n* and carries out the role of individuation. In subsequent sections, I will also argue that the linker (or relative marker) in Mandarin and Cantonese can be reflexes of D and *n*.

6. On the status of DE

After reviewing both the adjunction and promotion analyses, it is clear that we need to pay attention to the status of the modifying marker DE. As mentioned in the last section, most adjunction analyses ignore the status of DE. Since the promotion analyses assume a complementation structure, DE is taken to be the head of some functional projection. For Simpson, it is D and the support mainly comes from diachronic data. For den Dikken, DE is treated as a linker resulting from predicate inversion. In this section, I review several other alternative proposals about DE.

6.1 DE as C (Cheng 1986)

It's been reported in the literature (Zhu 1961, Li and Thompson 1981, Yue-Hashimoto 1994) that

⁸⁸ I must also add that even though I do not lay the raising/matching controversy to rest, my arguments and ideas are also compatible with a raising analysis of modifying constituents in Chinese. I leave this for further research.

there are several DE's in Mandarin Chinese. Zhu (1961), for example, argues that there is an adverbial DE, an adjectival DE, and a nominalizing DE.

- (84) a. Adverbial DE:
 wo [manman de] zou
 I slowly DE1 walk
 'I walk slowly.'
- b. Adjectival DE:
 [hen congming de] xiaohai
 very smart DE2 child
 'a very smart child'
- c. Nominalizing DE:
 tamen shi [xin lai de]
 They COP new come DE
 'They are newcomers.' (=28c in Huang 2006)

Li and Thompson (1981) point out that DE can appear with different phrasal categories (VPs, IPs, PPs, etc.), which leads Cheng (1986) to argue that DE in modifying constructions is a head-final complementizer⁸⁹ head taking a predicate XP as its complement. This explains the functional similarities between the different phrasal constituents with DE's despite clear structural differences. Cheng claims that the CP is adjoined to the N that it modifies. However, Cheng does not offer empirical arguments to substantiate her claim. While it is plausible that the clause-final DE may be the same as (or related to) the phrasal constituent marker DE, the proposal needs to be fleshed out in detail. From a historical standpoint, this argument is slightly problematic because equivalent markers ZHI/ZHE (see Aldridge 2011) already exist in Archaic Chinese and they are unrelated to C.

6.2 DE as a semantic-type lowerer (Huang 2006)

Huang (2006) proposes a type-matching constraint on modification and argues that bare nouns and

⁸⁹ Cheng (1986) also argues for a head-initial DE that only appears in resultative constructions.

their modifiers must be of the same type (type <e>). In other words, simple adjectives are of type <e> too⁹⁰. Simple adjectives are adjectives like *congming* ‘smart’ and *hong* ‘red’ that cannot serve as predicates, as shown in (85c). One way of turning simple adjectives into complex adjectives is by adding the degree modifier *hen* ‘very’ to a simple adjective, and complex adjectives can appear as predicates.

- (85) a. Simple adjective
 [hong] (de) shu
 red DE book
 ‘a red book’
- b. Complex adjective
 [hen hong de] shu
 very red de book
 ‘a very red book’
- c. *zhe ben shu [hong]
 DEM CL book red
 ‘Intended meaning: The book is red.’
- d. zhe ben shu [hen hong]
 DEM CL book very red
 ‘This book is very red.’

As (83b) shows, the predicative complex adjective is accompanied by DE in nominal structures. Predicative complex adjectives are of type <e,t>. Huang claims that in order to avoid a type clash that would happen if a complex adjective is directly attached to a bare noun (which is of type <e>), *de* needs to be inserted to lower the complex adjective into type <e>. Her analysis is inspired by Li and Thompson’s (1981) and Zhu’s (1961) claim that *de* has a nominalizing function. While adjectival DE and nominalizing DE are different lexical items in many varieties of Chinese, in Mandarin the DE that appears in modifying clauses carries both the predicative (adjectival DE) and nominalizing (nominalizing DE) functions. In Huang’s proposal, the nominalizing *de* is a

⁹⁰ Huang claims that simple adjectives have nominalized properties, like *pinqiong* in (i).

(i) women yao zhansheng pinqiong
 We need defeat poverty
 ‘We need to defeat poverty.’

function of type <<e,t>, e> and it lowers modifiers that are of type <e,t> into type <e>. However, as Cheng and Sybesma (2008) aptly point out, this proposal implies that simple adjectives (which are of type <e>) like (85a) should not be accompanied by DE as there should be no type clash when they modify type <e> bare nouns⁹¹. It also reveals nothing about the categorial status of DE.

6.3 DE as an underspecified classifier (Cheng and Sybesma 2008)

Cheng and Sybesma (2008), following Arsenijevic and Sio's (2008)⁹² work on Cantonese, argue that DE is an underspecified classifier because both DE and classifiers license ellipsis.

- (86) a. ta bu xihuan nei-ben shu, ta xihuan zhei-ben ~~shu~~
 3s NEG like that-CL book 3s like this-CL
 'He doesn't like that book. He likes this one.'
 (=8b in Cheng and Sybesma 2008)
- b. ta zuotian mai-le yi-jian xin de maoyi,
 3s yesterday buy-PERF one-CL new DE sweater
 wo mai-le yi-jian jiu de ~~maoyi~~
 1s buy-PERF one-CL old DE
 'he bought a new sweater yesterday. I bought an old one.'
 (=9b in Cheng and Sybesma 2008)

Cheng and Sybesma argue that DE is a special type of classifier that marks unit ('u-marking' in C&S 2008). They propose the following to characterize the u-marking classifier.

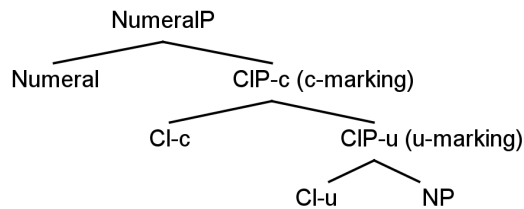
“[The u-marking classifier] does not produce count nouns; it does not turn a mass noun into a count noun. U-marking is a morpho-syntactic process, not of adding meaning, but of bringing out overtly an aspect of meaning that is already present in the semantic denotation of the noun (or which is given contextually). In some ways it can be seen as a doubling or, maybe, even an agreement operation. (p.7)”

⁹¹ Huang argues that types must match in modification structures.

⁹² Arsenijevic and Sio (2008) proposes that the Cantonese modification marker *ge3* is an underspecified classifier. Some of their arguments have been adopted by Cheng and Sybesma (2008).

It is different from c(ount)-marking classifiers that facilitate counting and serve as the go-between between numerals and nouns. They propose the following structure in which CIP-c(ount) is higher than CIP-u.

(87)



C&S claim that we never have the same classifier filling both positions. A c-marking classifier only shows up in the context of counting and will not appear if there is no numeral. A u-marking classifier is at work when there is reference to an individual, as in the Cantonese data in (88) where the classifier is carrying a definite, deictic function. It is also claimed that Mandarin differs from Cantonese in that u-marking is done in the lexicon and not in the syntax.

- (88) a. bun syu
 CL book
 ‘the book’ (=14a in C&S 2008)
- b. *ben shu
 CL book

C&S’s final argument comes from languages like Thai where the modification marker *thîi* can be replaced by classifiers. Based on the parallel between (89a) and (89b), it is claimed that both *thîi* and the classifier marking modification are u-marking classifiers.

- (89) a. rôm thîi jàj sǎam khan nán
 umbrella THÎI big three CL that
 ‘those three big umbrellas’
- b. rôm khan jàj sǎam khan nán
 umbrella CL big three CL that

‘those three big umbrellas’

(=13 in Cheng and Sybesma 2008)

This is an original proposal that merits consideration, as it has been suggested that the Cantonese modification marker GE is a reduced form of the generic classifier [go] ‘個’ (Anne Yue, personal communication). C&S’s (and also Arsenijevic and Sio 2008) first argument about ellipsis agrees with earlier proposals that claim that heads can license ellipsis when their specifiers are filled (Lobeck 1995, Zhang 2012). It proves that classifiers and DE are both functional heads. Their second argument claims that classifiers like the Cantonese examples in (88) and DE get their definite, deictic function by virtue of being u-marking classifiers. However, it is unclear how C&S will account for a modification marker that appears before a demonstrative⁹³. The structure in (87) does not touch on that issue.

Furthermore, data from Cantonese also supports the analysis in Aldridge (2017) that more than one functional head can host modification markers. In Cantonese, there is a clear difference in grammaticality when the modification marker GE appears before a demonstrative – it is considered unnatural sounding or ungrammatical⁹⁴. This is similar to Aldridge’s (2017) claim that ZHI is D and ZHE is *n*.

(90) mo maai-gwo syu (?ge) go-go jan
 NEG buy-EXP book GE that-CL person
 ‘that person who never bought a book’

In other words, the Cantonese data shows that there are two function projections for modifying constituents. The functional head that hosts high modifying constituents may not have the same

⁹³ In Cheng and Sybesma (1999), C&S puts the demonstrative in [spec, NumP] or [spec, CIP], depending on the presence of a numeral. If DE is an unspecified classifier, it is unclear how the surface order will be derived.

⁹⁴ Anne Yue (personal communication) suggests that some young people use GE before a demonstrative due to Mandarin influence.

phonetic spell-out as the functional head that hosts low modifying constituents. If C&S is on the right track about DE (or its variants) being an underspecified classifier in Mandarin, then they will need to take into account that what they claim is an underspecified u-classifier may very likely just be the DE that appears lower in the structure (=what I will argue to be *n*). In other words, this proposal deserves consideration but requires further work.

6.4 DE as an Ezafe marker (Larson 2009)

Larson (2009) argues that DE in Chinese is a Reverse Ezafe particle. Ezafe and Reverse Ezafe particles are common in Iranian languages. Ezafe particles are case-related and usually appear on items with noun-like properties. The basic pattern of an Ezafe Language is that [+N] heads are followed by their complements and modifiers. When the complements or modifiers are also nominal in nature, the Ezafe (EZ) particle will occur in between and cliticized to the [+N] head.

(91) N **-EZ** NP/AP/PP/nonfinite CP

(92) Farsi

- | | | | |
|----|--------------------------|----------|-------------|
| a. | del-é | sang | |
| | Heart-EZ | stone | |
| | 'stone heart' | | |
| b. | manzel-é | John | |
| | house-EZ | John | |
| | 'John's house' | | |
| c. | ketâb-é | sabz-é | jâleb |
| | book-EZ | green-EZ | interesting |
| | 'interesting green book' | | |
- (Larson 2009)

There also exist Reverse Ezafe Languages (REZ) like Gilaki, which inverts the Farsi pattern.

(93) NP/AP/PP **-REZ** N

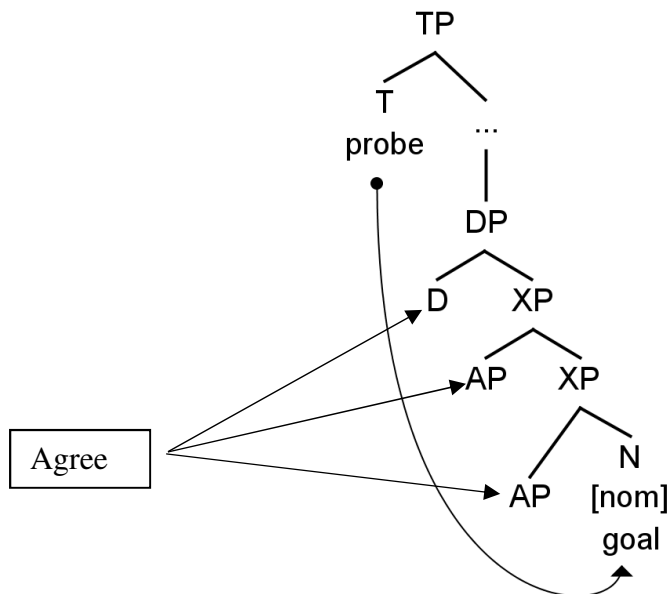
(94) Gilaki

- | | | |
|----|-----------------|-----------|
| a. | bay-ə | gul-an |
| | garden-REZ | flower-PL |
| | 'garden flower' | |
| b. | John-é | xowne |
| | John-REZ | house |

- c. ‘John’s house’
 surx-ə gul
 red-REZ flower
 ‘red flower’

The pattern in (94) is strikingly similar to the occurrence of DE in Chinese. Larson therefore argues that Chinese is a Reverse Ezafe Language. Ezafe particles are case-related elements according to Larson. Larson claims that Mandarin DE is a kind of case particle that is both concordializing⁹⁵ and adjectivalizing, which allows the phrasal constituent before it to obtain case through agreement. This idea is not entirely new. Li (1985) argues that DE occurs between case-bearing categories. Larson argues that DE, being a Reverse Ezafe particle, appears due to Case Concord. Ns are inflected for case and phi-features, and attributive elements exhibit concord by agreeing with these elements. Larson claims that when case licensing heads like T and v enter into Agree with a DP, concord happens and T/v agrees with all the specifiers within the DP that are [+N].

(95)



⁹⁵ This means that DP-modifiers bearing case features must move to a site where they can check case.

As a result, the case element DE (i.e. it is not a head) will be cliticized to all the phrasal elements appearing before the noun. While I will not adopt Larson's case-based approach, I find his idea that DE is attached to [+N] modifiers and have an adjectivalizing effect very interesting. In my analysis in Section 7, I will claim that DE in the lower domain attract movement of phrasal constituent to carry about the nominalizing function. Presumably, this function is similar to the idea that DE is concordializing and adjectivalizing.

6.5 *DE as n*

As far as I know, Zhang (1999) is the first proposal that suggests that *de* is a light noun and it licenses nominal ellipsis, but Zhang does not discuss DE's in different domains within the DP. In Zhang (2012), it is suggested in the discussion that DE may be a realization of *n* and it provides nominal categorical features to the whole phrase.

Yip (2009) incorporates den Dikken and Singhapreecha's Predicate Inversion analysis and argues that the site of predicate inversion is [spec, *nP*]. Inspired by Aboh's (2004) works on DP-internal topic and focus, Yip argues that prenominal phrasal constituents are derived by predicate inversion in the *nP* domain, but pre-demonstrative phrasal constituents first undergo predicate inversion within *nP* and move to the DP left periphery due to focus movement, hence the contrastive interpretation. Under Yip's analysis, *de* is cliticized to the phrasal constituent to the left of it (see also Simpson 2001, 2003, Larson 2009 for similar arguments). This analysis is able to explain the ordering restrictions among different phrasal constituent types in (31), repeated below as (96), across the entire DP.

(96) Grounding RC > Non-Grounding AP/RC > Noun complement CI/PP

Cinque (2010) makes a passing mention that if phrasal constituents can appear in a high

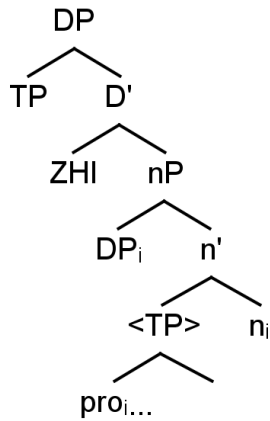
position (DP) and a low position, then the low position may be *nP*.

Aldridge (2017) discusses the age-old dichotomy of the attributive ZHI and nominalizing ZHE and argues that ZHI is D and ZHE is *n*. In Archaic Chinese, the marker ZHI appears in headed relative clauses and ZHE appears in headless relative clauses. ZHI is used to mark possessors, modifiers, and relative clauses, whereas ZHE cannot mark possessors. This difference leads Aldridge to the conclusion that ZHI and ZHE do not have overlapping functions and are not different phonetic realizations of the same head. Example (98) shows that ZHI and ZHE can co-occur within a DP, further proving that they are not realizations of different feature bundles of the same head.

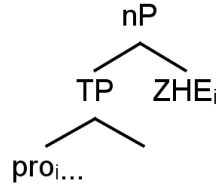
- (97) a. 父母 之 邦
 fumu zhi bang
 parents ZHI land
 ‘the land of my parents’
- b. *文 王 者
 Wen wang zhe
 Wen king ZHE
 ‘King Wen’s’ (Mencius, Liang Hui Wang 2, in Aldridge 2017)
- (98) 晉 之 從 政 者 新
 [DP Jin zhi [_{NP} [_{TP} cong zheng] zhe]] xin
 Jin ZHI exercise power ZHE new
 ‘The commander of the Jin (forces) is new.’
 (Zuozhuan, Xuan 12, in Aldridge 2017)

Aldridge proposes the following structures for ZHI and ZHE.

(99) a.



b.



Aldridge argues that ZHI is associated with definite or generic interpretations, and ZHE expresses specificity. This can be shown in (100) and (101). In (100), ZHI is associated with the discourse topic *ma* ‘horses’. In (93), ZHE is associated with individuation or specificity, and appears in an existential construction.

- (100) 我 善 治 馬... 飢 之, 渴 之, 馳 之...
 Wo shan zhi ma ji zhi ke zhi chi zhi
 I well train horse starve 3.OBJ thirst 3.OBJ run 3.OBJ
 馬 之 死 者 已 過 半 矣.
 Ma zhi si zhe yi guo ban yi
 Horse ZHI die ZHE ASP surpass half ASP
 ‘I am good at training horses... I starve them, deprive them of water, run them... the horses which have died are more than half.’ (Zhuangzi, Mati, in Aldridge 2017)

- (101) 有 一 史 後 至 者.
 You [nP [yi shi] [n' [TP hou zhi] zhe]]
 Exist one scribe later arrive ZHE
 ‘There was one scribe who arrived late.’ (Zhuangzi, Quqie, in Aldridge 2017)

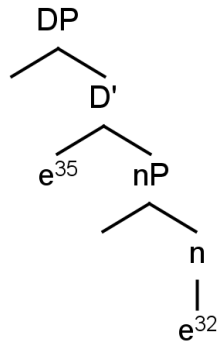
It is shown that this distinction between ZHI and ZHE is lost over time and ZHE starts to take over functions previously performed by ZHI in Middle Chinese. ZHE was subsequently replaced by *di* 底 which is the precursor of the Modern Mandarin DE. Further support for the ZHI/ZHE analysis

can be found in diachronic data. Yue-Hashimoto (1993) shows that in the Hakka dialect, Liancheng, there are two markers in this dialect that have parallel the functions of ZHI and ZHE: e^{35} (mid falling tone) and e^{32} (mid rising tone).

- (102) a. 燒 (lau33lau33) e^{35} 粥
 Steaming.hot DE1 rice.gruel
 ‘steaming hot rice gruel’
 b. 燒 (lau33lau33) e^{32}
 Steaming.hot DE2
 ‘steaming hot one’ (Yue-Hashimoto 1993:229, in Aldridge 2017)

Aldridge argues that e^{35} corresponds to ZHI and e^{32} corresponds to ZHE. [e^{35}] appears as D and e^{32} appears as *n*.

(103)



To summarize the present discussion, there is overwhelming evidence that DE is a head within the DP spine. Furthermore, there is also evidence that suggests that Archaic Chinese ZHI and ZHE can appear as different functional heads, namely D or *n*. This is what I will propose for Modern Mandarin and Cantonese in the next section.

7. The current proposal

I have been mentioning throughout the chapter that there are two positions for phrasal constituents. The low position is immediately preceding N, and the high position is the position

before the demonstrative. I am going to argue that three questions need to be addressed, however. First of all, where is this base (low) position? Second, what would the high position be? Third, what are the roles of the different DEs (the one in the low position and the one in the high position)?

There are good reasons to believe that the low position for Chinese phrasal constituents is [spec, *n*P]. In *Distributed Morphology* (Halle & Marantz 1993, 1994), the syntactic category of an *l*-morpheme (or Root -- roughly equivalent to lexical morphemes) is determined by a *c*-commanding *f*-morpheme (functional category). Nominalization and the ‘nouniness’ of a noun can therefore be attributed to light *n*. This is exactly the insight that Zhang (2012) shared. In her analysis of Archaic Chinese ZHE as *n*, Aldridge (2009, 2017) also proposed that *n* is some type of low determiner element.

As for the second question, I argue that the high position is an information structure related category. Revisiting the claim I made in the last chapter that the left periphery of DP also hosts information structure, I would like to argue that high phrasal constituents either appear in [spec, DTopP] or [spec, DFocP]. When the DTopic head carries a [uTopic] feature or when the DFoc head carries a [uFocus] feature, it forces phrasal constituents to move away from their underlying positions to the high position.

Finally, I would like to claim that DE in the low position and DE in the high position perform different functions in Modern Mandarin. The low position is where Predicate Inversion takes place. Following Larson (2009), I will also assume the role of *n* to be nominalization, meaning that *n* heads will also come with a [Nom] feature that needs to be checked by the moving phrasal constituents. It must be noted that D&S (2004) also claim that Predicate Inversion has interpretive effects. When a predicate is inverted around the subject of its small clause, the predicate becomes

old information ('topic')⁹⁶. However, D&S do not argue for a pragmatically driven movement or separate topic and focus layers. D&S assume that formal features of the head trigger Predicate Inversion and the interpretive effect is simply a byproduct of the movement. I argue that the formal feature is [Nom], but I am going to depart from D&S and claim that Predicate Inversion does not determine the interpretive effect. This means that the moving element undergoing Predicate Inversion could be interpreted as old information or new information. Whether it is old information (grounding modifying constituent) or new information (non-grounding modifying constituent) is encoded in the numeration⁹⁷.

Aldridge (2017) claims that the Archaic Chinese ZHI in D is associated with a definite or generic expression. Data from Mandarin and Cantonese supports this claim. Phrasal constituents driven to the high position ([spec, TopicP] or [spec, FocusP]) by [uTopic] or [uFocus] necessarily receive a definite reading. However, on the way to the high position, phrasal constituents must stop at [spec, nP] to check [nom]. DE is spelled out when [Topic], [Focus], or [Nom] are checked at their respective functional heads.

7.1 *Pre-nominal phrasal constituents*

We now look into how the proposal works. As mentioned above, Den Dikken & Singhapreecha's (2004) Predicate Inversion Analysis makes no assumption about the locus of Predicate Inversion⁹⁸, it allows us to postulate DE as *n*, making *nP* the locus of Predicate Inversion. Den Dikken (2004) notes that any subconstituent smaller than NumP can serve as the subject of a DP-internal small clause. This is in line with our proposal. If *nP* is the site for Predicate-Inversion, then the natural

⁹⁶ D&S also claim that when the predicate is contrastively focused, the topic interpretation can be undone.

⁹⁷ See Aboh (2010), who argues for a strong Minimalist view that discourse-related features are added when lexical items enter the numeration.

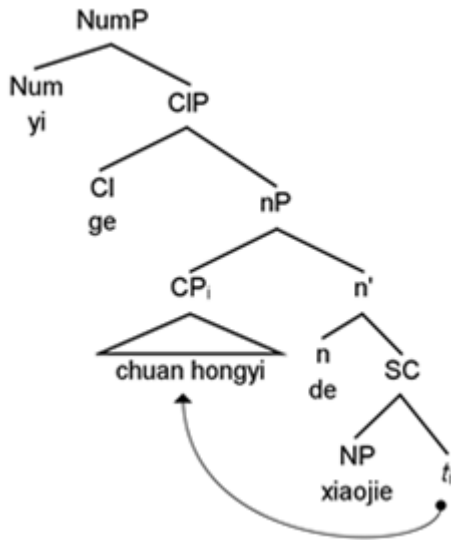
⁹⁸ For D&S (2004), the locus of Predicate Inversion is just an abstract FP.

outcome is that only NP (or *nP* itself if in the case of multiple phrasal constituents – to be discussed below) is allowed to serve as the subject of a small clause and merge with predicates. Consider (105), represented as (106):

For adjectives and relative clauses, *n* takes a small clause⁹⁹ as its complement. The subject of the small clause is NP and the predicate is a modifier AP or a relative clause CP. In this case, *n* comes with a [uNom] feature which drives the movement of the phrasal constituent. Predicate inversion then takes place with *de* appearing as *n* concomitantly.

(105) yi ge [chuan hongyi de] xiaojie
 yi CL wear red dress DE lady
 ‘a lady who wears a red dress’

(106)



Noun complements always follow adjective phrases and relative clauses when they co-occur.

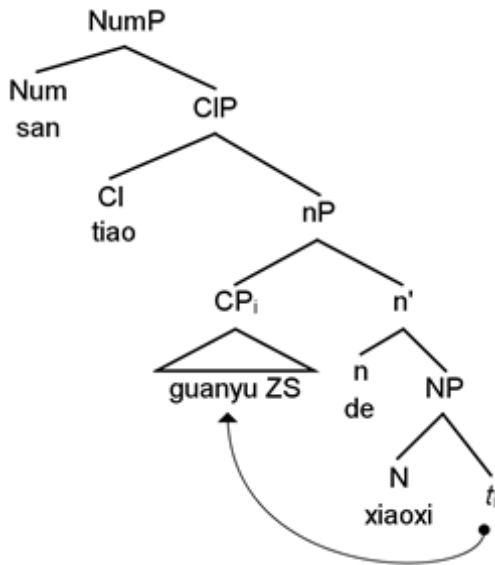
⁹⁹ Throughout the dissertation, I have been following D&S’s (2004) notation. In den Dikken (2006), the internal structure of the small clause is spelled out a little more clearly. The small clause is treated as a Relator Phrase. For example, (i) is the derivation of *hao de shu* ‘good book’.

(i) [DP D... [FP [AP *hao*]_i [*de* [RP [*shu*] Relator *t*_i]]]]]

Contrary to den Dikken, I assume that noun-complements are complements of Ns. I do not assume that this is a case of Predicate Inversion in the sense of D&S because the noun complement is not acting as a predicate. However, the noun-complement clause still moves to [spec, nP] due to the uninterpretable [nom] feature on *n*.

- (107) san tiao [guanyu¹⁰⁰ Zhangsan de] xiaoxi
 Two CL about Zhangsan de news
 ‘three pieces of news about Zhangsan’

(108)



We discussed earlier that even in the low position, when multiple phrasal constituents appear, ordering restrictions apply. I already discussed above why a noun-complement clause is always closest to the noun. What about the ordering between different type of modifiers (RCs, APs)? There is a clear indication that Larson and Takahashi’s (2007) proposal is incorrect. They claim that stage-level RCs are D-modifiers. However, as we have shown, there is evidence that stage-level modifiers can appear in the low position. Example (109) shows that they can appear

¹⁰⁰ I am treating *guanyu* ‘about’ as a verb here, hence the bracketed phrase is a CP. It makes no difference if one wants to treat it as a PP.

after classifiers.

- (109) wo yishi le san fen [RC ni zuotian song lai
I lose PERF three CL you yesterday deliver come
de] [RC hen hou de] wenjian
DE very thick DE document
'I lost three thick documents that you delivered here.'

We have shown that Larson and Takahashi's generalization also does not capture the full range of facts. It is not true that individual-level RCs necessarily follow stage-level RCs. It is possible to have a stage-level RC follow an individual-level RC when the individual-level RC is a grounding RC.

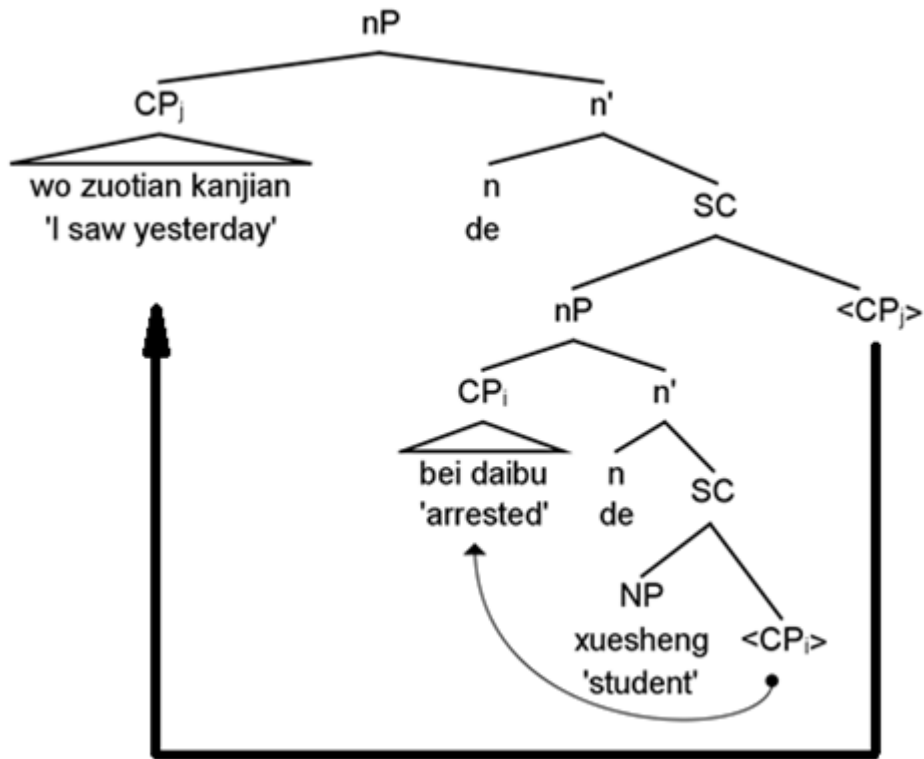
- (110) a. na ge [wo renshi de] [xie le yi ben shu de]
DEM CL I know DE write PERF one CL book DE
xuesheng hen congming
student very smart
'The student whom I know who wrote a book is very smart.'
- b. ??na ge [xie le yi ben shu de] [wo renshi de]
DEM CL write PERF one CL book DE I know DE
xuesheng hen congming
student very smart
'The student whom I know who wrote a book is very smart.'
- (Example adapted from (7) in Ming and Chen (2011))

Moreover, as discussed above, RCs that share the same properties do not always freely reorder. Example (111) shows two stage-level RCs, but only one order is grammatical. Again, this is because the first RC in (111a) is a grounding RC. The referent *wo* 'I' and the temporal expression *zuotian* 'yesterday' can both ground the head NP.

- (111) a. na ge [wo zuotian kanjian de] [bei daibu
 DEM GE I yesterday see DE passive arrest
 de] xuesheng hen piaoliang.
 DE student very pretty
 ‘The student whom I saw yesterday who was arrested is very pretty.’
- b. *na ge [bei daibu de] [wo zuotian kanjian
 DEM CL passive arrest DE I yesterday see
 de] xuesheng hen piaoliang.
 DE student very pretty
 ‘The student whom I saw yesterday who was arrested is very pretty.’
 (Example adapted from (21) in Ming and Chen (2011))

Since Predicate Inversion can happen more than once (so that there can be stacking of phrasal constituents), it is possible to have iterated layers of *nP*. In (112), we see two cases of Predicate Inversion. The lower little *n* drives movement of CP_i to the lower [spec, *nP*]. The resulting lower *nP* becomes the ‘subject’ of the small clause with the CP_j , which will be driven to the higher [spec, *nP*] also because of a need to check [nom]. Here, a stipulation is in order. I claim that grounding modifying constituents must take scope over non-grounding modifying constituents. This explains why grounding phrasal modifying constituents are always higher.

(112)



7.2 High phrasal constituents

I mentioned before that there are two ‘types’ of high phrasal constituents. I use quote marks on the word *types* because their differences are superficial and syntactically they really are the same. The first ‘type’ is the common cases where the phrasal constituent appears before the demonstrative, as in (113).

- (113) [ta mai de] na san ben shu
He bought DE DEM three CL book
‘The three books that he bought (as opposed to some other books).’

The other ‘type’ is the less-studied type discussed by Sio (2006), as in (114). I call them [+specific] phrasal constituents, since Sio (2006) proposed a SpecificityP specifically for them –

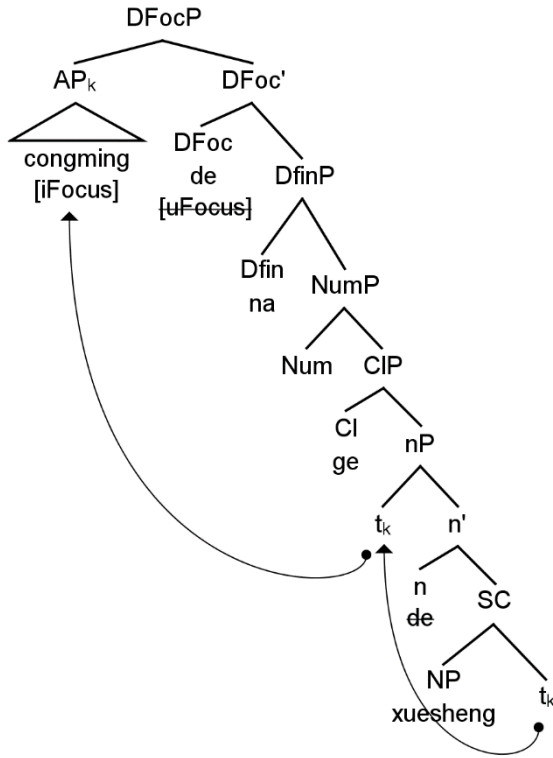
an approach I will not adopt.

- (114) wo yao zhao [chidao de] liang ge xuesheng
I need find late DE two CL student
'I need to find the two students who are late.'

I will first explain the derivation for the pre-demonstrative phrasal constituents. Since I assume that DE in *n* carries a nominalizing function and DE in the high position express a definite meaning, I propose that a phrasal constituent is moved to the high position because of information structure (e.g. either it is in [spec, DTopP] or [spec, DFocP]). In other words, grounding modifying phrasal constituents will move to [spec, DTopP] in order to check the uninterpretable [Topic] feature on the Topic head. Non-grounding phrasal constituents will move to [spec, DFocP] to check the [focus] feature on DFoc. Let us examine a simple case.

- (115) [congming de] na ge xuesheng
Smart DE DEM CL student
'that smart student (as opposed to the not so smart ones)'

(116)

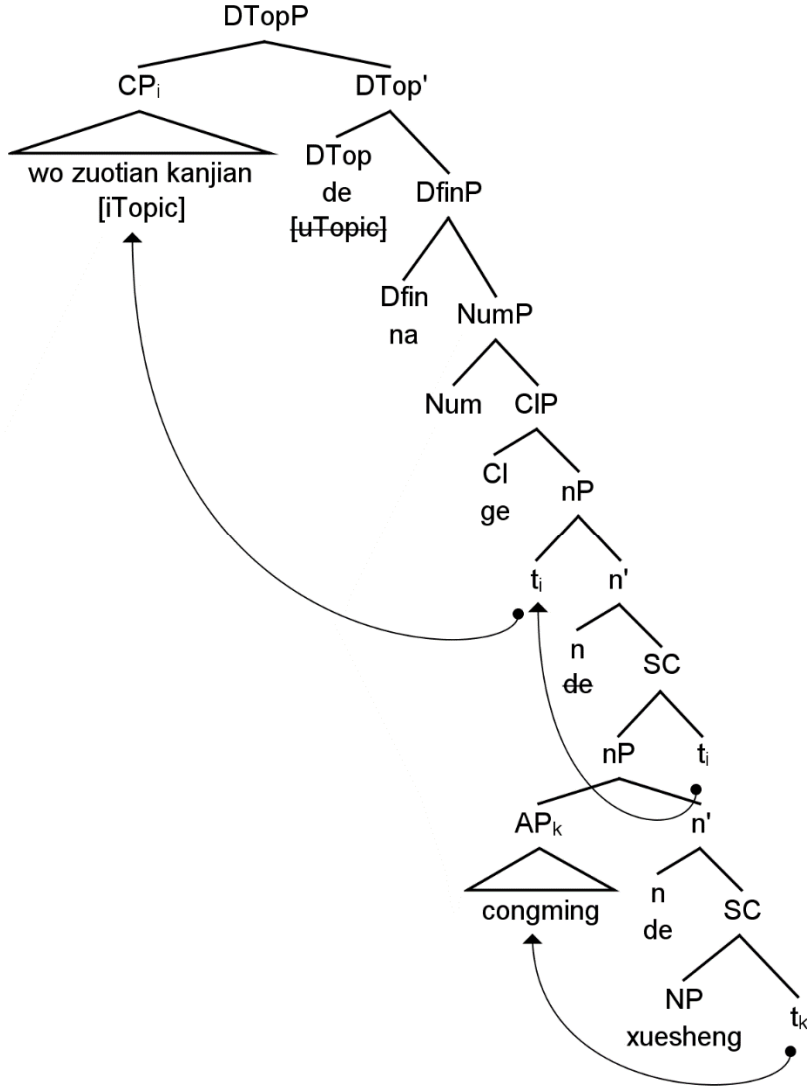


Due to the [uNom] feature on *n*, *n* will trigger Predicate Inversion and drive the AP to [spec, *n*P]. However, because DFoc has an uninterpretable [uFocus] feature that needs to be checked, the non-grounding AP with the matching [iFocus] feature will move further to [spec, DFocP]. This movement causes the AP to leave [spec, *n*P]. As *de* needs a phonological host, once its specifier moves away, the lower *de* in *n* will not be pronounced.

When a grounding RC and a non-grounding phrasal constituent co-occur, it is possible to only move the grounding RC to the DP left periphery as in (118).

- (117) a. [CP wo zuotian kanjian de] na ge [AP congming de]
 I yesterday see DE DEM CL smart DE
 xuesheng
 student
 ‘The smart student I saw yesterday.’

b.



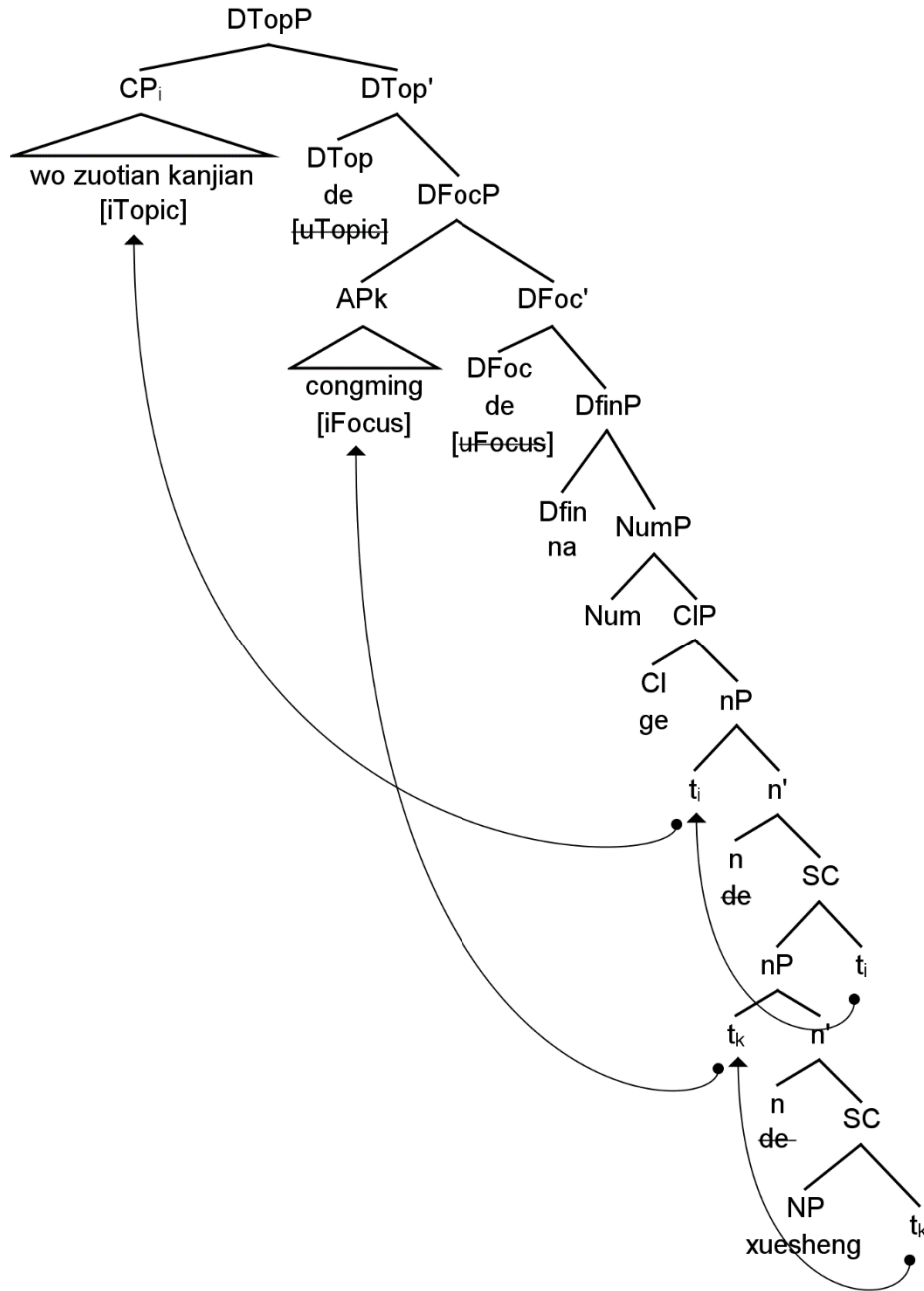
In the lower *nP* of (117b), the AP moves to the lower [spec, *nP*] to check [Nom]. In the higher *nP*, the grounding CP_i also moves to the higher [spec, *nP*] to check [Nom], but subsequently moves to [spec, $DTopP$] to check the [uTopic] feature on $DTop$.

It is also possible to move both the grounding RC and the non-grounding phrasal constituent¹⁰¹.

¹⁰¹ I am aware that the lower movement violates the Subject Island Constraint, since the lower *nP* is the subject of the small clause. However, Bianchi and Chesi (2012) have argued that Subject Island effects are variable and unstable. I refer the reader to their work. There is also another possibility. It must be noted that this notation of small clause is simply a shorthand. As I mentioned in footnote (3), Den Dikken (2006) treats it as a Relator Phrase. I will

(118) a. [CP wo zuotian kanjian de] [AP congming de] na ge
 I yesterday see DE smart DE DEM CL
 xuesheng
 student
 'The smart student I saw yesterday.'

b.



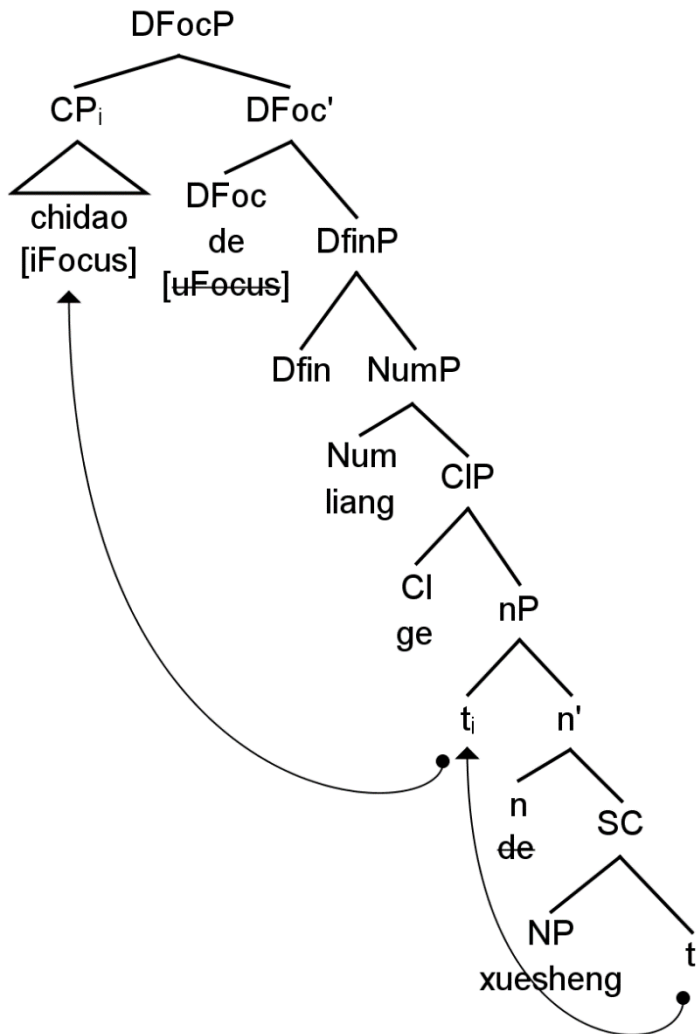
therefore claim that these subjects are different from subjects of clauses. I leave this issue for further research.

Now, let us turn to the [+specific] phrasal constituents, like (119).

- (119) [chidao de] liang ge xuesheng
 late DE two CL student
 'two late students'

The only difference is the absence of the demonstrative, but the non-grounding AP occupy exactly the same final position. It stops by [spec, nP] on the way to check [Nom] and subsequently moves to [spec, DFocP] to check [Focus]. Since there is no demonstrative present, these DPs are indefinite specific, as opposed to definite specific.

- (120)



There is clear evidence in support of my claim that this type of phrasal constituent does not require

a special analysis. Sio (2006) mentions that the demonstrative and this type of phrasal constituent are in complementary distribution. For example,

- (121) (*na) [chidao de] liang ge xuesheng
 DEM late DE two CL student
 ‘the two late students’

However, if we are correct, it is not that the demonstrative and [+specific] phrasal constituents are in complementary distribution. It simply means that these phrasal constituents are in a Topic or Focus projection higher than the demonstrative, i.e. we cannot place them below the demonstrative. This is a clear advantage for my approach as I do not need a separate analysis for this type of phrasal constituent.

Finally, I would like to talk briefly about possessors. Possessors do not occur in the low position (as shown in 122b). I argue that possessors behave like grounding phrasal constituents and that they are base-generated at [spec, DTopP]¹⁰², as shown in (123).

- (122) a. ta de (nei ben) shu
 3SG DE (dem CL) book
 ‘That book of his’
 b. *nei ben ta de shu
 DEM CL 3SG DE book
 ‘That book of his’
- (123) ta de hen hao kan de nei ben shu
 3SG DE very good read DE DEM CL book
 ‘his very interesting book’

In this section, I presented my analysis of modifying constituents in high and low positions. Inspired by Aldridge’s work on Archiac Chinese ZHI and ZHE, I claim that DE in the high position (D region, namely Top) and DE in the low position (*n*) perform different functions. DE in D expresses specific, definite, or generic meanings. DE in *n* carries a nominalizing function (Larson

¹⁰² I will also assume that the possessor will get genitive case through spec head agreement with DTop.

2009). Little *n* always moves a phrasal constituent to [spec, *n*P] to check [Nom]. The specifier of *n*P will also act as the intermediate landing site (since all phrasal constituents have to check [Nom] on *n*) for further movement to the high position (either [spec, DTopP] or [spec, DFocP]). Our analysis supports the idea that there is information structure within the DP layer. Movement to the high position is movement to the left periphery, which links the DP to a previously mentioned idea or entity in the discourse.

8. Dialectal variations between Mandarin and Cantonese

In this section we discuss the dialectal variation between Mandarin and Cantonese, namely the omission of the linker GE in high position.

8.1 The Cantonese linker GE

After looking at the Mandarin data and presenting our analysis, we now look at Cantonese. The basic pattern of Cantonese phrasal constituents is similar to Mandarin. The marker for modification in Cantonese is GE. GE is mandatory when the phrasal constituent immediately precedes the noun. This parallels the Mandarin data, in which the linker is always required in the low position.

(123) Low position: *Ge* obligatory

ko	jat	tiu	[ngo	gindou	*(ge)]	sidaai	hou	gwai
Dem	one	CL	I	see	GE	ribbon	very	expensive

‘The ribbon that I saw was very expensive.’

(124) Mandarin

na	yi	ge	wo	kanjian	*(de)	nanhai	hao	huai.
Dem	one	CL	I	see	DE	boy	very	naughty

‘The boy that I saw was very naughty.’

GE is optional when it precedes the demonstrative. It has been reported by Yue-Hashimoto (1993) that Cantonese speakers typically omit GE¹⁰³ before the demonstrative. It is suggested that the

¹⁰³ Yue-Hashimoto’s actual claim is that there is a zero marker.

optional appearance of the marker before the demonstrative is due to Mandarin influence.

(125) Pre-demonstrative: *Ge* omission preferred

- | | | | | | | | |
|----|---|----------|---------|-----------|----------|--------|--------------------------|
| a. | daai | (?ge) | go-tiu | jyu | | | simple adjective |
| | Big | GE | that-CL | fish | | | |
| | ‘that big fish’ | | | | | | |
| b. | fei-soeng | daai | (?ge) | go-tiu | jyu | | complex adjective |
| | extraordinary | big | GE | that-CL | fish | | |
| | ‘that terribly big fish’ | | | | | | |
| c. | zoengsaam | (?ge) | go-gin | saam | | | possessor |
| | Zhangsan | GE | that-CL | clothes | | | |
| | ‘that piece of clothing of Zhangsan’s’ | | | | | | |
| d. | mo | maai-gwo | syu | (?ge) | go-go | jan | RC |
| | NEG | buy-EXP | book | GE | that-CL | person | |
| | ‘that person who never bought a book’ | | | | | | |
| e. | keoi | coeng | go | (?ge) | go-baa | seng | gapless RC |
| | 3S | sing | song | GE | that-CL | voice | |
| | ‘that voice with which he sings’ | | | | | | |
| f. | deoi | zai | (?ge) | go-zung | taai-do | | PP |
| | regarding | son | GE | that-type | attitude | | |
| | ‘that kind of attitude towards one’s son’ | | | | | | |
| g. | yicin | (?ge) | go-go | zungtung | | | Non-predicative modifier |
| | former | GE | that-CL | president | | | |
| | ‘the former president’ | | | | | | |

The omission of the marker is a Cantonese (or Yue¹⁰⁴) feature according to Yue, as other dialects within the Yue¹⁰⁵ group like Kaiping (Yue 1993, 1994) also have no marker before the demonstrative. Typologically, Yue reports that neighboring Kam-Tai and Miao-Yao languages also exhibit the same characteristic. In her work, she takes it for granted that high phrasal constituents before demonstratives in Mandarin are always accompanied by the marker DE¹⁰⁶.

¹⁰⁴ Yue is the dialect group spoken in Canton and neighboring provinces that Cantonese belongs to.

¹⁰⁵ Yue is one the language groups spoken in South China, to which Cantonese belong.

¹⁰⁶ However, as Cheng and Sybesma (2009) report, even in the case of Mandarin, sometimes speakers can omit DE before a demonstrative. Still, as shown below, the omission of DE in Mandarin can lead to different degrees of grammaticality, depending on the type of phrasal constituent. This contrasts sharply with Cantonese in which omission of GE is not only the norm, but is also possible across all phrasal constituent types. If Yue is correct, then the omission of DE before demonstrative could very well be an influence from the Southern dialects. This is not surprising considering that most Chinese speakers are bilingual in Mandarin and their home dialect. I will assume that the presence of DE before demonstratives is a native Mandarin trait in this work, even though this issue probably warrants future research.

Furthermore, recall that Cantonese allows CL-D movement. In the examples in (126), we know that there is Cl-to-D movement because these are definite expressions even though there is no demonstrative before the classifier. It is therefore expected that high phrasal constituents in Cantonese can directly appear before a moved classifier. This is in fact borne out and is a trait unique to Cantonese and other Yue dialects like Kaiping. Possessors appear to be the most common type of phrasal constituents that appear in this position, though other types of phrasal constituents can also appear, as shown in (126). However, phrasal constituents in this position cannot appear with GE.

(126) Before moved CL: *Ge* cannot appear.

- a. zoengsaam (*ge) gin saam
Zhangsan GE CL clothes
'that piece of clothing of Zhangsan's'
- b. mo maai-gwo syu (*ge) go jan
NEG buy-EXP book GE CL person
'that person who never bought a book'
- c. keoi coeng go (*ge) baa seng

(i)	Mandarin					
a.	da	*(de)	nei-tiao	yu		simple adjective
	Big	DE	that-CL	fish		
	'that big fish'					
b.	feichang da	?(de)	nei-tiao	yu		complex adjective
	extraordinary	big	DE	that-CL	fish	
	'that terribly big fish'					
c.	Zhangsan	(de)	nei-jian	yifu		possessor
	Zhangsan	DE	that-CL	clothes		
	'that piece of clothing of Zhangsan's'					
d.	mei	mai-guo	shu	(de)	nei-ge	ren
	NEG	buy-EXP	book	DE	that-CL	person
	'that person who never bought a book'					RC
e.	ta	chang	ge	(de)	nei-ge	shengyin
	3S	sing	song	DE	that-CL	voice
	'that voice with which he sings'					gapless RC
f.	dui		erzi	?(de)	nei-zhong	taidu
	regarding		son	DE	that-type	attitude
	'that kind of attitude towards one's son'					PP
g.	yiqian	(de)	nei-ge		zongtong	
	former	DE	that-CL	president		Non-predicative modifier
	'the former president'					

(Cheng and Sybesma 2009)

- 3S sing song GE CL voice
‘that voice with which he sings’
- d. deoi zai (*ge) zung taai-do
regarding son GE type attitude
‘that kind of attitude towards one’s son’
- e. yicin (*ge) go zungtung
former GE CL president
‘the former president’

As in Mandarin, phrasal constituents can also appear before numerals to create a specific reading. This is also possible in Cantonese.

(127) Before Numeral:

ngo jiu wan sik jin *(ge) loeng go tonghok
I need find eat cigarette GE two CL student
‘I need to find two students who smoked.’

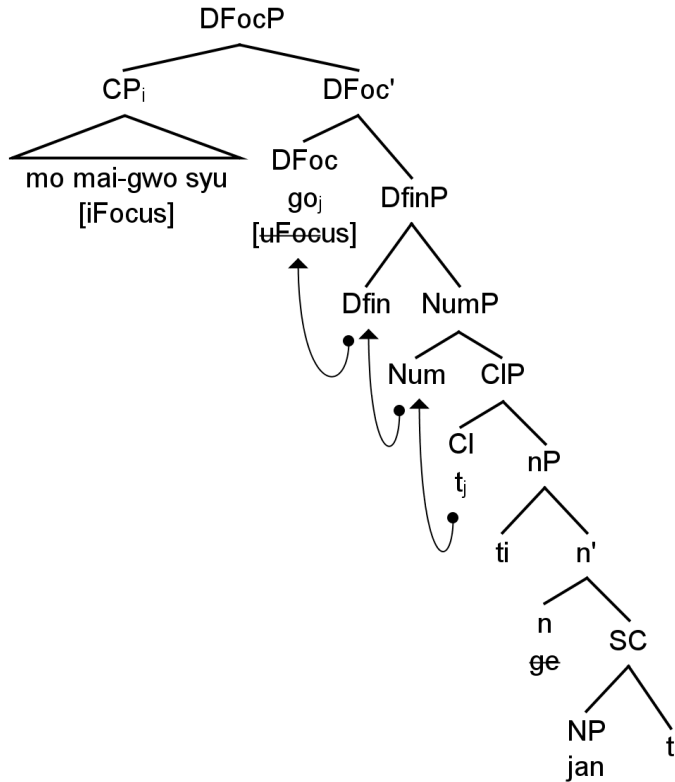
While low phrasal constituents in Cantonese behave like their Mandarin counterparts in that each of them is accompanied by a GE marker, an interesting pattern emerges for high phrasal constituents in Cantonese. Note that in (127) omission of GE renders the sentence ungrammatical. We therefore cannot say that all high phrasal constituents in Cantonese omit the marker GE. Phrasal constituents appearing before a demonstrative or a classifier occupying the D position omit GE, but [+specific] phrasal constituents require GE. How do we account for this? I am going to stipulate that DFoc (or DTop) needs to be phonetically supported when its specifier hosts a modifying constituent, either by moving Cl or Dem to it.

Omission (or an empty marker) occurs in the presence of the demonstrative and a classifier occupying D with a definite interpretation, which is why I said that omission of GE coincides with definiteness. In (128), CL must move to Dfin to attain definiteness. However, since DFoc is not phonetically supported, it must move one more step to DFoc. In this case, we can explain why GE and CL are incompatible in (128).

(128) Cantonese high phrasal constituent before a moved classifier

- a. mo maai-gwo syu (*ge) go jan
 NEG buy-EXP book GE CL person
 ‘that person who never bought a book’

b.

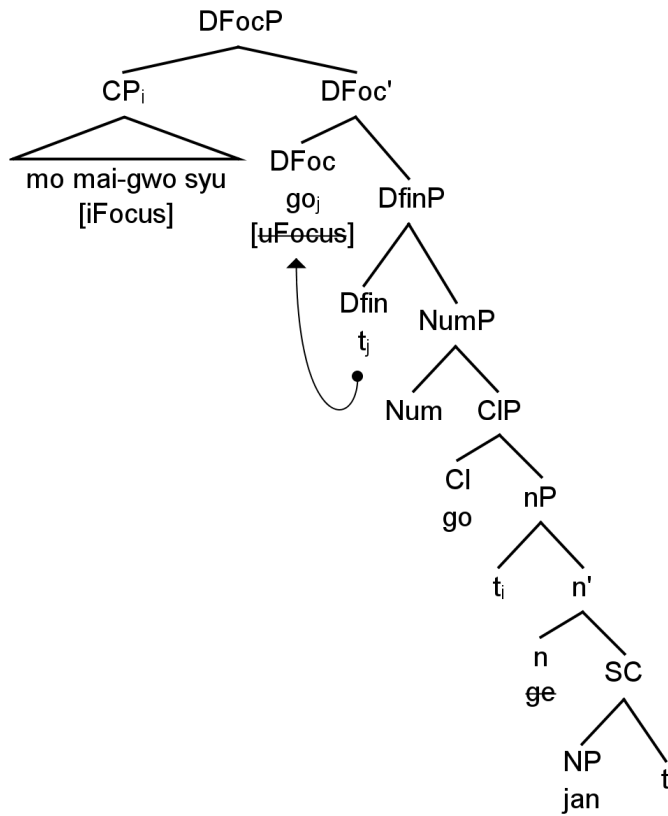


In (129), when a demonstrative is present, GE again does not appear. This can be argued also by claiming that DFoc head needs to be phonetically supported. The demonstrative in Dfin therefore moves to DFoc. Again, this explains why GE and demonstrative do not co-occur.

(129) Cantonese high phrasal constituent before a demonstrative

- a. mo maai-gwo syu (*ge) go go jan
 NEG buy-EXP book GE DEM CL person
 ‘that person who never bought a book’

b.

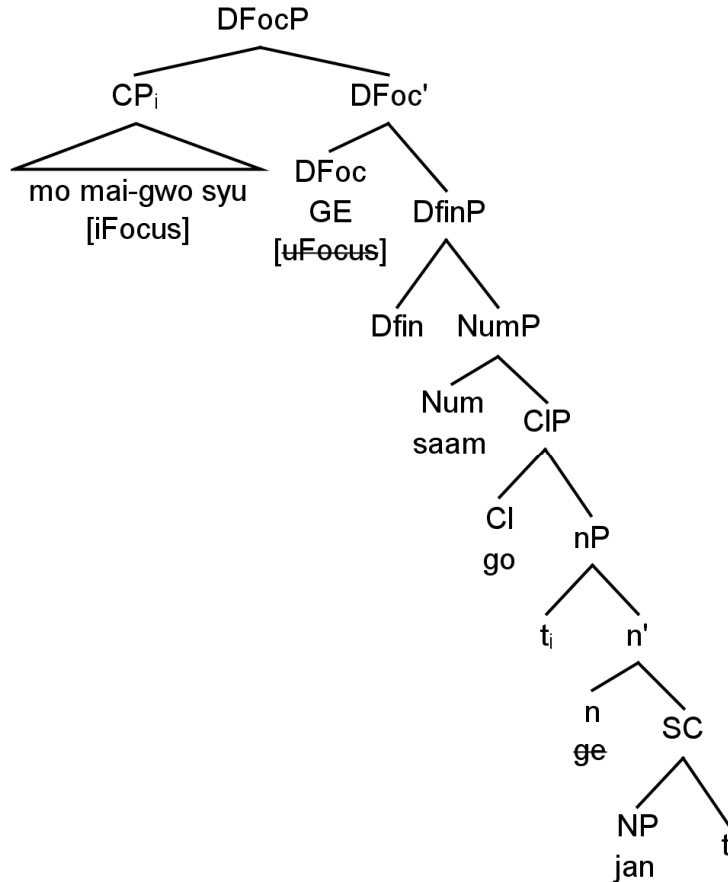


However, when a phrasal constituent appears in the high position but there is no classifier or DEM, GE appears. I argue that this is because a phrasal constituent in [spec, FocP] needs to be phonetically supported by either Dem or a CL. Since there is no demonstrative and head movement of CL is blocked by NUM, GE needs to be inserted.

(129) Cantonese high phrasal constituent before a demonstrative

- a. mo maai-gwo syu ge saam go jan
 NEG buy-EXP book GE three CL person
 ‘the three people who did not buy a book’

b.



The Cantonese data seems to reinforce the idea that linkers in D and *n* carry different functions. In Cantonese, the empty marker is strictly associated with a definite expression. This is in line with the proposal for ZHI made in Aldridge (2017).

9. Conclusion

In this chapter, I have reviewed different previous analyses of phrasal constituents. Under the adjunction approach, phrasal constituents can freely adjoin to any phrasal projections within the DP and the ordering restriction we observed in (130) are not predicted by the adjunction structure. The status of DE is also left in the dark.

(130) Grounding modifier > Non-grounding modifier > Noun complement CI/PP

In this chapter, it is argued that in Mandarin, DE is the spell out of *n*, DFoc, and DTop. The two DEs have different functions. DE in DTop expresses specificity, definiteness, or genericity. DE in *n* carries a nominalizing meaning. Phrasal constituents are base-generated low as small clause predicates contained inside nP. They move to [spec, nP] to check [Nom]. If information structure is involved, they will move further to [spec, DTopP] (for grounding phrasal constituents) or [spec, DFocP] (for non-grounding phrasal constituents).

(137)

	HIGH	LOW
Mandarin	<ul style="list-style-type: none"> • [spec, DTopP] for grounding phrasal constituents • [spec, DFocP] for non-grounding phrasal constituents • DE obligatory 	<ul style="list-style-type: none"> • [spec, nP] • DE obligatory
Cantonese	<ul style="list-style-type: none"> • [spec, DTopP] for grounding phrasal constituents • [spec, DFocP] for non-grounding phrasal constituents • No marker when there is a definite marker like DEM or moved CL following the phrasal constituent • GE present when indefinite specific. 	<ul style="list-style-type: none"> • [spec, nP] • GE obligatory

I argue that pre-demonstrative phrasal constituents and the [+specific] pre-numeral phrasal

constituents actually both occupy the high position, with the only difference being the presence or absence of the demonstrative. Finally, the Cantonese data reinforces the idea that linkers in D and *n* have different functions. In Cantonese, the empty marker is strictly associated with a definite expression, whereas GE only surfaces in indefinite environments and serves as a nominalizing device in *n*. This division of labor is similar to the proposal for ZHI/ZHE made in Aldridge (2017).

Ch. 5 Concluding Remarks

This dissertation argues in favor of the Universal DP Hypothesis, which claims that all languages have DPs which contain extended functional projections above the NP, as opposed to the Parameterized DP Hypothesis, which argues that only languages with overt articles project DPs, and languages without overt articles have NPs as nominal arguments.

In Chapter 1, I presented the previous literature on DP structure.

In Chapter 2, I presented previous literature on noun phrase structure in Chinese and offered new evidence against Cheng and Sybesma's claim that CI assumes the role of D in Chinese. The first set of evidence comes from true measures. True measures must be preceded by numerals and can never be definite, in part because they do not individuate. Cheng and Sybesma (1999) assume that all classifiers occupy the CI head and express definiteness. True measures constitute a set of classifiers that C&S's analysis cannot account for. The second set of evidence comes from reduplicative classifiers. It is shown that classifier reduplication in the nominal domain makes use of different functional layers (namely CI, Num) above NP to create different meanings. First, plural reduplication moves a CI to NUM and creates a copy of it at NUM head. Second, the "Each/Every" type of reduplication in Cantonese can occur without a preceding sentential topic or adverbial because of CL-to-D movement. The moved classifier takes on the function of a determiner and becomes an outer layer of restriction for the quantifier following it. This also corroborates my thesis that the DP layer exists in Chinese. The reduplication facts shown in this chapter also demonstrate that extended functional layers exist above the NP. This suggests that the Universal DP Hypothesis is correct.

In Chapter 3, I argued that there are DP-internal topic and focus movements in Chinese. I focused on three main kinds of evidence: the NP-Num-CL construction, the use of DE in adjectival modification and its discourse effects, and nominal ellipsis.

I followed Simpson (2005), Lin (2010), Hsu (2012) in claiming that the non-canonical NP-Num-CL order is derived through movement of NP to the left periphery of DP. I showed that the competing analysis presented by Tang (1996), which argues that the NP and [Num-CL] are in a predication relation, is problematic. In particular, that analysis predicts that [NP Num-CL] sequences only appear in clause-final position. I showed that this prediction is not borne out.

I also adopted Ntelitheos' (2003) (see also Corver and van Koppen 2006) proposal and treats nominal ellipsis as DP-internal topicalization followed by movement of the focused remnant XP. This proposal resolves the shortcomings of empty category approaches to ellipsis like Lobeck (1995), while making the case that nominal ellipsis involves discourse-related projections just like verbal ellipsis (Johnson 2001). I showed that NP Ellipsis in Chinese is also PF deletion of [spec, DTopP] at the left edge of DP. However, since Lin (2010) has shown that NP can transformationally move to [spec, CP] from inside the DP, it was also important to show that the PF deletion of NP happens at the left edge of DP, and not CP. Consequently, I showed that NP-Ellipsis happens at the left edge of DP by demonstrating that movement of NP to the left periphery is subject to the Complex NP Constraint. The above arguments offer clear evidence that there are information structure related positions in DP.

Most importantly, showing that topic and focus projections exist in the left periphery of DP serves two goals. First, it presents just another similarity shared by the subordinators C and D. Second, it shows that even in a determiner-less language like Chinese, these discourse-related movements generally assumed to be in the left periphery of D still exist. This is indirect evidence

for a full DP structure in Chinese, contra Cheng and Sybesma (1999)'s CIP analysis of the Chinese nominal phrase.

In Chapter 4, I have reviewed different previous analyses of phrasal constituents. Under the adjunction approach, phrasal constituents can freely adjoin to any phrasal projections within the DP and the ordering restriction we observed in (138) are not predicted by the adjunction structure. The status of DE is also left in the dark.

(138) Grounding modifier > Non-grounding modifier > Noun complement CI/PP

In this chapter, it is argued that in Mandarin, DE is the spell out of *n*, DFoc, and DTop. The two DEs have different functions. DE in DTop expresses specificity, definiteness, or genericity. DE in *n* carries a nominalizing meaning. Phrasal constituents are base-generated low as small clause predicates contained inside nP. They move to [spec, nP] to check [Nom]. If information structure is involved, they will move further to [spec, DTopP] (for grounding phrasal constituents) or [spec, DFocP] (for non-grounding phrasal constituents).

(139)

	HIGH	LOW
Mandarin	<ul style="list-style-type: none"> • [spec, DTopP] for grounding phrasal constituents • [spec, DFocP] for non-grounding phrasal constituents • DE obligatory 	<ul style="list-style-type: none"> • [spec, nP] • DE obligatory
Cantonese	<ul style="list-style-type: none"> • [spec, DTopP] for grounding phrasal constituents 	<ul style="list-style-type: none"> • [spec, nP] • GE obligatory

	<ul style="list-style-type: none"> • [spec, DFocP] for non-grounding phrasal constituents • No marker when there is a definite marker like DEM or moved CL following the phrasal constituent • GE present when indefinite specific. 	
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I argue that pre-demonstrative phrasal constituents and the [+specific] pre-numeral phrasal constituents actually both occupy the high position, with the only difference being the presence or absence of the demonstrative. Finally, the Cantonese data reinforces the idea that linkers in *D* and *n* have different functions. In Cantonese, the empty marker is strictly associated with a definite expression, whereas GE only surfaces in indefinite environments and serves as a nominalizing device in *n*. This division of labor is similar to the proposal for ZHI/ZHE made in Aldridge (2017).

Therefore, I argue that my findings support the Universal DP Hypothesis.

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