

THE SYNTAX OF COMPARATIVE CORRELATIVES
IN MANDARIN CHINESE

by

Chen-chun E

A Dissertation Submitted to the Faculty of the

DEPARTMENT OF LINGUISTICS AND SCHOOL OF ANTHROPOLOGY

In Partial Fulfillment of the Requirements

For the Degree of

DOCTOR OF PHILOSOPHY

In the Graduate College

THE UNIVERSITY OF ARIZONA

2014

THE UNIVERSITY OF ARIZONA

GRADUATE COLLEGE

As members of the Dissertation Committee, we certify that we have read the dissertation prepared by Chen-chun E, titled The Syntax of Comparative Correlatives in Mandarin Chinese, and recommend that it be accepted as fulfilling the dissertation requirement for the Degree of Doctor of Philosophy.

Heidi Harley _____ Date: 05/03/2014

Andrew Carnie _____ Date: 05/03/2014

Simin Karimi _____ Date: 05/03/2014

Qing Zhang _____ Date: 05/03/2014

Final approval and acceptance of this dissertation is contingent upon the candidate's submission of the final copies of the dissertation to the Graduate College.

I hereby certify that I have read this dissertation prepared under my direction and recommend that it be accepted as fulfilling the dissertation requirement.

Dissertation Director: Heidi Harley _____ Date: 05/03/2014

STATEMENT BY AUTHOR

This dissertation has been submitted in partial fulfilment of requirements for an advanced degree at the University of Arizona and is deposited in the University Library to be made available to borrowers under rules of the Library.

Brief quotations from this dissertation are allowable without special permission, provided that an accurate acknowledgement of the source is made. Requests for permission for extended quotation from or reproduction of this manuscript in whole or in part may be granted by the head of the major department or the Dean of the Graduate College when in his or her judgment the proposed use of the material is in the interests of scholarship. In all other instances, however, permission must be obtained from the author.

SIGNED: Chen-chun E

ACKNOWLEDGEMENTS

If I have seen further it is by standing on the shoulders of Giants.
- Isaac Newton

Those days when I received academic training in the Joint Ph. D program in Anthropology and Linguistics (ANLI) constitute a significant chapter and a turning point in my life. Throughout these years, I have been blessed with admirable mentors, faculty members, colleagues, scholars, and friends. Their presence in my life at different times has all significantly led to my development in both personal and professional ways.

In undertaking the dissertation project, I have many people to express my appreciation for supporting me in various ways. First, my deepest gratitude goes to my dissertation committee: Heidi Harley, Andrew Carnie, Simin Karimi, and Qing Zhang. If my research work can be considered a small contribution to the field, I attribute it to my brilliant and supportive committee.

My academic adviser, Heidi, has been a role model as a researcher, scholar, and educator. Her presence and guidance has had the most profound impact on my career development as a scholar. Ever since the first time I met her on a summer day right after I arrived in Tucson in 2007, her cordial manner, sincerity, and constant support have been the main reason for me to persevere and to advance throughout these years. I deeply admire her expertise and great passion for research. I especially admire her passion for exploring unfamiliar syntactic constructions of various languages and her devotion to advising graduates and collaborating with colleagues. In our discussion meetings, I learned a lot from her knowledge and from the way she examined the data and generated possible hypotheses. She always felt excited when we discovered interesting data or figured out plausible solutions. That kind of energy and excitement about linguistic phenomena was so contagious and encouraging that I was able to maintain interest and confidence in my research. Whenever I felt discouraged and stuck in doing research, Heidi's insights and encouragement could always boost my confidence and passion. Her praise and approval has been the main motivation for me to make efforts to advance. The most admirable quality of Heidi is her modest manner. Knowledgeable and outstanding as she is, she still maintains humility and caring attitudes. I am blessed to have her as my adviser and mentor, walking with me through various stages of my academic life. She makes me aspire to become a better scholar and educator.

I am deeply grateful to Andrew Carnie for his professionalism, especially for his guidance in my academic writing. If my ability to do linguistic argumentation is satisfactory, I attribute it to Andrew's advice and instruction. His seminars and classes on syntax and particularly his Analysis-and-Argumentation class benefited me profoundly with methods of presenting and analyzing data as well as conducting effective

argumentation. When I read his praise and positive comments on my analysis chapters of the dissertation, I felt an extreme sense of achievement, which greatly motivated me and boosted my confidence in the rest of the writing. In addition to his expertise and professionalism, I deeply appreciate his timely encouragements. Before I reached the status of ABD, there were a couple of times when I was suffering from a crisis of confidence. His encouragements sustained me and greatly motivated me to keep making progress.

Simin Karimi is one of the giants, whose scholarship has aided my academic career development and helped me see further. I was lucky to take classes of syntax with Simin. I appreciate her professionalism and her well-organized lecture preparation and delivery. I have been greatly indebted to her advice and comments on my research since I worked on my prelim paper back in 2009. Our discussions were always productive and beneficial. I especially would like to thank her for supporting me by writing numerous recommendation letters, one of which helped me get a dissertation fellowship. I was blessed to have her in my dissertation committee. She is an elegant and dedicated scholar as I wish to become.

I would like to express my deepest gratitude to Qing Zhang, who is not only a supportive academic mentor but also a trustworthy friend. I greatly benefited from her classes and seminars on sociolinguistics and linguistic anthropology. It is largely because of her influence and encouragement that I managed to strike a balance in the interdisciplinary doctoral program and learned to embrace the science of language as well as the humanism of linguistics anthropology. Her devotion to advising graduates and to her research projects is worth respect. I was extremely fortunate to have the opportunity to work with her on a book chapter, which was a precious experience for me as a novice scholar. Her mentorship has had a profound and meaningful impact on my pursuit of academic achievements.

My appreciation to the above committee members is beyond description. They are all outstanding role models as scholars, researchers and mentors. I am taking the dissertation study not as my personal achievement, but as a way for me to honor my committee members and the both departments.

The Dissertation Workshops held in the fall of 2011 and in the spring of 2012 were very helpful for me to keep making progress. I thank Heidi and my dear fellows for their comments on my dissertaion in the weekly workshops. Sincere gratitude goes to Greg Key, Jaehoon Choi, Hyun Kyoung Jung, Sylvia Reed Schreiner, Tatyana Slobodchikoff, Megan Stone, Deniz Tat, and Alex Trueman.

I am greatly indebted to many scholars with whom I discussed my research topics on different occasions, and their comments and suggestions greatly enhanced this dissertation study. My special appreciation goes to Dr. Sung-Ho Gyemyong Ahn, who I met at the 2010 Seoul International Conference on Linguistics (SICOL-2010). He recommended Dr. Eiichi Iwasaki's research work on English comparative correlatives to me. It was because of this important scholarly exchange with Dr. Ahn and Dr. Iwasaki that I was able to find and establish the main line of argumentation and reasoning for my dissertation research. I also thank Yosuke Sato, Hsu-Te Cheng, and Jiun-shiung Wu for

their comments and suggestions in personal discussion or via email correspondence. Comments from anonymous conference reviewers were also very helpful for me to address theoretical issues in my dissertation. I would like to thank the reviewers of the following conferences: LSA 2013, Glow in Asia X, Chicago Linguistics Society (CLS) 50, and WCCFL 32. In addition, different parts of the dissertation were presented at the 2010 Seoul Intl Conference on Linguistics (Seoul, June 2010), North American Conference on Chinese Linguistics (NACCL 23, at the University of Oregon, June 2011), Arizona Linguistics Circle 7 (at the University of Arizona, Oct. 2013), and the Joint Meeting of the 22nd IACL and the 26th NACCL (at the University of Maryland, May 2014), and I am grateful to the attendees for their questions and comments. All errors remain my own.

I am grateful that my dissertation study was funded in part with the Dissertation Fellowship granted by Chiang Ching-Kuo Foundation International Scholarly Exchange (Project No. DF012-A-1, 蔣經國國際學術交流基金會). I also sincerely appreciate financial support and funding from Fulbright Program of the Institute of International Education, the Department of Linguistics, the School of Anthropology, and from the College of Social Behavioral Sciences at the University of Arizona.

Throughout the years, I have benefited by taking classes with faculty members in the department of linguistics. I thank Adam Ussishkin for his phonology class, graduate TA training workshops, and a prelim-paper-writing class, Natasha Warner for the great professionalism class, and Tyler Peterson for letting me sit in his well-organized and informative lectures on formal semantics. My special appreciation goes to Amy Fountain for being such a great devoted professor and understanding colleague. Her dedication to teaching and teaching philosophy are valuable qualities I wish to develop. I also like to thank Andy Wedel and Mike Hammond. It was my pleasure to work on the same floor in Douglass Building with them. Once in a while, when I felt gloomy while working on the dissertation in the study room, their cordial manner and presence always brought lively energy, and that made my research and writing time less bleak. I would like to extend my gratitude to the following faculty members in other departments, whom I had great fortune to take classes with, work with, or participate with in scholarly exchanges: Jane Hill, Rudy Troike, Ken Foster, Hai Ren, Feng-hsi Liu, Diana Archangeli, Diane Ohala, Norma Mendoza-Denton, and Jennifer Roth-Gordon among others.

My special thanks goes to dear Marian Wiseley for arranging a study room for me, which made my days of writing dissertation much more productive and efficient. She always kindly helped out and made my life easier whenever I needed an urgent help with processing certain documents. Another cordial lady, who made my days of writing dissertation less stressful and more enjoyable, is Luise Betterton, the program coordinator in the Division for Late Medieval and Reformation Studies. I appreciate those wonderful tea times and lighthearted conversations with her during which I got a break from my research work.

I am blessed to have a group of lovely graduate friends and fellows in different departments and programs at the University of Arizona. Their friendship is valuable and I am thankful to them for sharing life with me. My special thanks go to Keri Miller, Jessica

Nelson, Soo-Min Jwa, Jin Zhang, Yu-Ying Hu, Yan Chen, Kara Johnson, Jaehoon Choi, Kyusang Park, Sunjin Ji, Hui-Yu Huang, Rolando Coto Solano, Hyun Kyoung Jung, Colin Gorrie, Yijun Ding, Baijie Gu, Steven Feng, Teh Lai, Wei-chun Kuan, and Ryeojin Park. All of them played an important part in my life in Tucson. I always remember those wonderful times spent with them, and I especially appreciate their companionship when I was in sorrow or felt discouraged. I also would like to thank the following colleagues and fellows for their positive presence in my doctoral studies at different times: Peter Norquest, Jeff Berry, David Medeiros, Mercedes Tubino-Blanco, Jeff Punske, Kara Hawthorne, Jaime Parchment, Jae-Hyun Sung, Priscilla Liu, Bryan James Gordon, Jorge Muriel, Alan Hogue, M'Balía Thomas, Heidi Ann Orcutt-Gachiri, Ashley Stinnett, Maisa Taha, Dana Osborne, Joon-Beom Chu, Maureen Hoffmann, and many others (too numerous to list).

Outside the busy academic life, I feel blessed and lucky to have a group of warmhearted friends and caring fellows who have meaningful impacts on my spiritual growth. They are Mei-kuang Chen, Philip Alderink, Hilda Grob, Yu-Ying Hu, Mike and Valerie Begley, Lou and Jennie Kisch, Joe and Emalie LaRose, Jim and Linday Floyd, Cheena Ugwu, Hsin-Hui Chang, and Yu-Rong Liu, from whom I have learned how to love, how to pray with thanksgiving, how to live with a peaceful and grateful heart, and how to deal with life issues with perspectives. Among these friends, I am especially grateful to Mei-kuang Chen, Philip Alderink, and Hilda Grob. If I have grown as a more loving and more caring person, I attribute my better being to them. They are like family, cheering for my achievements and especially accompanying me in sorrow and in bad times throughout these years.

A special thanks goes to Y. H. Hu, who is a former colleague, friend, and brother, whose friendship and encouraging words in numerous emails have sustained me throughout these years. I thank him for being watching over me since my mid-twenties, for encouraging me to reach my full potential, for sustaining me in distress, and for motivating me to refine myself.

Last but not least, I would like to thank my family back in Taiwan, especially my devoted and affectionate mother. Her unconditional love gives me a sense of security. I appreciate her dedication and making efforts to foster an environment that values education and character. She is also a role model, who teaches me to be loving, caring and be able to persevere. I am also thankful to my brother and my sister-in-law for their being supportive and trustworthy, particularly in a last-minute rush. My family's unconditional love makes me feel where my heart is. No matter how far I am away from them, affection and love tightly connects me with them. It is my great wish that my academic achievements bring honor to my family.

DEDICATION

To my mother, from whom I've learned how to love,
how to persevere, and how to be devoted to life,
and
to Heidi Harley, who is the kind of scholar I wish to become.

TABLE OF CONTENTS

ABSTRACT.....	12
CHAPTER ONE.....	14
1.1 Observations of comparative correlatives.....	14
1.1.1 Basics of English comparative correlatives.....	14
1.1.2 Basics of Chinese comparative correlatives.....	15
1.1.3 The interpretation and the syntactic interdependency of CCs.....	18
1.2 Goals of the dissertation and research questions.....	19
1.3 The theoretical framework and hypotheses.....	20
1.4 Organization of the chapters.....	22
1.5 Orthography and glosses.....	24
CHAPTER TWO.....	26
2.0 An overview.....	26
2.1 Typology of Comparative Correlatives.....	26
2.1.1 Languages that use paired words followed by a comparative.....	27
2.1.2 Languages that use a morpheme denoting degree or quantity.....	29
2.1.3. Languages that use a measure phrase.....	30
2.2 Previous studies in the literature.....	32
2.2.1 Culicover and Jackendoff (1999).....	32
2.2.2 Dikken's (2005) correlative approach.....	37
2.2.3 Taylor (2006, 2009); Kapetangianni and Taylor (2009a, 2009b).....	40
2.2.4 Iwasaki & Radford (2009).....	43
2.2.5 Leung's (2004, 2005) typological study on CCs.....	47
2.3 A summary of this chapter.....	49
CHAPTER THREE.....	51
3.0 An overview.....	51
3.1 General distribution of <i>yue</i>	51
3.2 The scope of <i>yue</i>	56
3.3 Types of predicates modified by <i>yue</i>	59
3.4 Island effects in Chinese CCs.....	63
3.5 The structural relationship between the two clauses.....	74
3.6 A variant structure with <i>yue</i> ₁ in a NP.....	78
3.7 A summary of this chapter.....	80
CHAPTER FOUR.....	81
4.0 An overview.....	81

4.1 Correlatives	82
4.2 Comparative Correlatives.....	84
4.3 Correlatives in Chinese	87
4.3.1 Left-peripheral clauses.....	87
4.3.2 Two strategies to realize Chinese CCs.....	91
4.4 Wh-in-situ and DegP-in-situ	94
4.4.1 A-bar movement or not?	98
4.4.2 In-situ indefinites	100
4.5 Unselective binding.....	104
4.5.1 Unselective binders in Lewis (1975)	104
4.5.2 Unselective binding in Heim (1982).....	105
4.5.3 Unselective binding in Chinese bare conditionals	107
4.5 A summary of this chapter.....	110
 CHAPTER FIVE	 111
5.0 An overview	111
5.1 The role of <i>yue</i>	112
5.1.1 YUE is an indefinite degree quantifier in the DegP	112
5.1.2 A correlativity operator binding <i>yue</i> -variables	118
5.1.3 Obligatory paired occurrence of <i>yue</i> ₁ and <i>yue</i> ₂	121
5.2 An adjunct approach.....	122
5.3 A Topic-comment approach to Chinese CCs	124
5.4 An alternative proposal	128
5.4.1 Information focus and the [+focus] feature	129
5.4.2 Derivation	131
5.4.3 The split CP.....	133
5.4.4 When a Topic is involved in the left periphery.....	140
5.5 A summary of this chapter.....	144
 CHAPTER SIX.....	 146
6.0 An overview	146
6.1 A variant of Chinese <i>yue</i> -constructions.....	147
6.2 Arguments against the movement approach	151
6.2.1 Extraction from <i>wh</i> -islands	152
6.2.2 No reconstruction effect.....	155
6.2.3 No weak crossover effect.....	156
6.2.4 Lack of an anaphoric relation	160
6.2.5 Resumptive pronouns are possible.....	162
6.3 The <i>yue</i> ₁ -NP in the left periphery.....	163
6.3.1 The <i>yue</i> ₁ -NP functions as a focus	164
6.3.2 When a topic is involved.....	165
6.4 The proposed analysis	166
6.5 Summary	171

CHAPTER SEVEN	172
7.1 A summary of the proposal.....	172
7.2 Contributions of this study.....	176
7.3 Issues for future research	178
REFERENCES	180

ABSTRACT

This dissertation is an analysis, assuming the framework of Government and Binding Theory, of the syntactic derivation of comparative correlative constructions (hereafter CCs for short) in Mandarin Chinese. It attempts to evaluate the theoretical adequacy of extant treatments of CCs and propose an alternative analysis to the prevailing adjunct approach.

CC constructions exist crosslinguistically. An English example is *The more chocolate I eat, the happier I feel*. In Chinese, a simplex CC sentence consists of two non-coordinated clauses; the lexical word *yue*, which indicates degree, is obligatory in both clauses, as illustrated in (1):

(1) *tianqi yue₁ re, dian-fei yue₂ gao.*

weather [YUE₁ hot], electricity-fee [YUE₂ high]

‘The hotter the weather is, the higher the electricity fee is.’

Unlike the English comparative phrase, which has been shown to undergo A-bar movement in earlier studies, the *yue*-constituent remains in situ. I argue that *yue* is generated in [Spec, DegP] and behaves as an indefinite in-situ degree element on a par with an in-situ wh-element (Li 1992; Tsai 1994; Cheng and Rooryck 2000; Cheng 2003a, 2003b). The *yue*-variable in each clause is unselectively bound (Lewis 1975, Heim 1982, Cheng and Huang 1996) by an implicit CORRELATIVITY OPERATOR and does not undergo A-bar movement.

In addition to the idiosyncratic in-situ *yue*-phrase, another property of CCs is the syntactic interdependency between the constitutive clauses. Earlier studies (Dikken 2005, Taylor 2006, 2009, Tsao and Hsiao 2002) treat the preceding clause as an adjunct. However, an adjunct approach cannot account for the property of syntactic interdependency. As an alternative, I assume Rizzi's (1997) work on the Split CP Hypothesis, arguing that Chinese CCs implicate the information structure in the left periphery and that they are a type of Focus construction. A Chinese CC sentence like (1) is projected by a null functional head Foc^0 . The first clause is focused and base-generated in [Spec, FocP] and the second clause is the complement of the null Foc^0 . The [+focus] feature in Foc^0 licenses the co-occurrence of *yue*₁ and *yue*₂. This alternative analysis can capture not only crosslinguistic commonalities but also the language-internal property of topic-prominence in Chinese.

CHAPTER ONE

INTRODUCTION

1.1 Observations of comparative correlatives

1.1.1 Basics of English comparative correlatives

The comparative correlative construction exists in various languages.

Crosslinguistic commonalities and language-specific properties of this construction have received attention and been brought into discussion in the literature of generative syntax since the late 1990s (Beck 1997; McCawley 1998; Culicover and Jackendoff 1999; Hsiao 2003; Dikken 2005; Taylor 2006, 2009; Iwasaki and Radford 2009)¹. The English sentences in (1) exemplify the simplest form of this construction, which is typically composed of two clauses. Each clause contains a comparative constituent following the article *the*:

- (1) a. **The more** you exercise, **the more** energy you need.
b. **The hungrier** I am, **the faster** I eat.
c. **The more** desserts he eats, **the better** he feels.

¹ This construction was noted first in the generative literature by Ross (1967:sec. 6.1.2.6; cited in C & J 1999: 545).

As we see in (1a) and (1b), the comparative phrases are dislocated to the clause-initial position following the article *the*. When a nominal is involved, it is pied-piped, as illustrated in (1c).

The semantic interpretation of this construction involves proportional and conditional readings, and therefore it is also referred to as the *comparative conditional construction* (McCawley 1988, Beck 1997, Michaelis 1994) or the *proportional comparative construction* (Hsiao 2003) in the literature. Following Culicover and Jackendoff (1999), I will use the term *comparative correlative construction* or *comparative correlatives* (hereafter CCs for short) throughout this study.

1.1.2 Basics of Chinese comparative correlatives

Similar to English, a typical simplest form of Chinese CCs also contains two clauses. The degree morpheme *yue* is obligatory in each clause, as shown in (2), in which the square bracket indicates the *yue*-constituent, i.e. *yue* and the phrase it c-commands:

(2) a. 天氣越熱,電費越高

 tienqi **yue** re, dian-fei **yue** gao
 weather [YUE[_{AdjP} hot]], electricity-fee [YUE [_{AdjP} high]]
 ‘The hotter the weather is, the higher the electricity fee is.’

b. 天氣越熱,他越想吃冰

 tienqi **yue** re, ta **yue** **xiang** chi bing
 weather [YUE [_{AdjP} hot]], he [YUE [_{VP} feel.like eat ice cream]]
 ‘The hotter the weather is, the more he feels like eating ice cream.’

In examples (1) and (2), we observe that syntactically the construction consists of two non-coordinated clauses, each containing a comparative or degree-denoting constituent. English and Chinese contrast in the position of the comparative constituent. In English, it is fronted to the clause initial position along with the definite article *the*. In Chinese, the constituent modified by the degree morpheme *yue* remains in situ. In earlier studies on CCs of different languages, the comparative constituent is analyzed as part of the DegP (Beck 1997; Dikken 2005; Taylor 2006, 2009; Kapetangianni and Taylor 2009a, 2009b) or the QP (Culicover and Jackendoff 1999, Iwasaki and Radford 2009). I will present typological differences in the syntactic position of DegP at PF in Chapter Two. In languages such as English, Greek, Spanish, Polish, and Italian among others, the DegP in CCs is dislocated (Borsley, 2004; Dikken 2005; Abeille et al 2006; Taylor 2006, 2009; Kapetangianni and Taylor 2009a, 2009b). By contrast, in languages such as Chinese, Thai, and Indonesian, the DegP stays in situ. In Chapter Four, I will propose an analysis to account for the nature of the in-situ DegP of Chinese CCs.

In addition to the canonical two-clause structure, Chinese has a variant CC construction, which does not exist in English. This variant structure features a left-dislocated NP containing *yue*₁ while *yue*₂ occurs in the main clause. Two examples are given in (3):

(3) a. 越簡單的設計，我越喜歡。

Yue₁ jiandan-de sheji, wo yue₂ xihuan *ec*.
 [YUE₁ simple-DE² design NP]_i, [IP I YUE₂ like *ec*_i]
 ‘The simpler a design_i is, the more I like it_i.’
 Lit. ‘A design_i which is simpler, I like *t*₁ better.’

b. 越多名人推薦的書，越多人買。

yue₁ duo mingren tueijia de shu yue₂ duo ren mai *ec*.
 [[YUE₁ many celebrity recommend *t*_j DE_{Rel}] book_j NP]_i, [IP YUE₂ many people buy *ec*]_i
 ‘The more celebrities recommend a book, the more people buy it.’
 or ‘For those books_i which more celebrities recommend, more people buy them_i.’
 Lit. ‘Books_i which more celebrities recommend, more people buy *t*₁.’

In (3a) and (3b), *yue*₁ is contained in a left-dislocated NP headed by *shiji* ‘design’ and *shu* ‘book’ respectively. The left-dislocated NP is co-indexed with the empty category in the object position of the main verb. The question immediately raised here is whether the sentence-initial NP undergoes movement from the main clause. In Chapter Six, I will argue that the position of the left-dislocated NP, which contains *yue*₁, is not derived via

² The bound morpheme *de* can mark adjectives, a genitive case, and it can also mark a relative clause by attaching to the end of it. Examples are given below:

- (i) *tian-de pingguo*
 Sweet-DE apple
 ‘sweet apples’
- (ii) *wo-de diannao*
 1st.sg.-Gen. computer
 ‘my computer’
- (iii) *wo zuotian yudao de na-ge ren*
 [1st.sg. yesterday met DE] that-CL person
 ‘the person who I met yesterday’

movement, but via the strategy of base-generation.

1.1.3 The interpretation and the syntactic interdependency of CCs

As mentioned above, CC constructions involve conditional semantics (Fillmore 1987, McCawley 1988, Beck 1997, Oda 2008, Lin 2007, Liu 2008 among others).

However, the English CC sentence “The more money you earn, the more money you spend” is not a simple conditional such as “If you earn more money, then you spend more.” Instead, it is a conditional that involves a correlational relationship (Leung 2004, Liu 2008) between two degrees: If you earn more money *to a degree*, then you spend more *to the corresponding degree*. Leung (2004, 2005) suggests that it is the co-occurrence of the CORRELATIVE MARKERS in his term (e.g. the paired *the...the...* in English) that generates the denotation of proportionality and clausal correspondence. In this sense, Leung (2004, 2005) argues that the correlative marker in the preceding clause designates an *indefinite* degree whereas the one in the consequent clause designates an *anaphoric expression* of degree (originally emphasized in Leung 2005). In Chapter Four, the anaphoric relationship between the two clauses will become clear by examining the clausal connection in the configuration of standard correlatives and comparative correlatives. I will show that even though the *yue*-constituents in CCs are morphologically and orthographically identical, the degree/ amount denoted by the second *yue*-variable hinges on that of the first *yue*-variable in the same way that the interpretation of a donkey-pronoun hinges on the values assigned to its antecedent.

1.2 Goals of the dissertation and research questions

The CC constructions of a variety of languages have been examined brought into discussion in the literature. However, there is only a paucity of syntactic research on this construction in Mandarin Chinese (hereafter Chinese for short). Earlier contributions to our understanding of this idiosyncratic construction include Tsao and Hsiao's (2002) analysis using a topic-comment approach and Hsiao's (2003) description data of the CC-construction in Chinese and Mongolian. Lin's (2007) and Liu's (2008) study examine this construction from the perspective of formal semantics.

To contribute to the understanding of Chinese CC constructions, I tackle this construction from a syntactic perspective. This dissertation study aims to analyze the syntactic derivation of the constitutive clauses and the nature of the in-situ *yue*-constituent. It attempts to evaluate the theoretical adequacy of extant treatments of CCs, identify the problems to be addressed, and propose an alternative analysis. Specifically, the dissertation study deals with the following research questions:

- 1) How is the structural relationship between the preceding and the consequent clause in Chinese CCs established? Is an adjunct approach valid to account for it? Is it a coordinate structure?
- 2) Do Chinese CCs conform to the macrostructure proposed by Dikken (2005)?
- 3) Since Chinese is well-known for its property of topic-prominence, how is this property compatible with the CC construction?
- 4) What is the role of the morpheme *yue* in Chinese CCs? Does it project into a DegP or a QP?

- 5) What is the nature of the in-situ *yue*-constituent in Chinese CCs? In Chinese grammar, are there parallels between the in-situ DegP in CCs and in-situ *wh*-elements?
- 6) In derivation, what licenses the obligatory co-occurrence of the *yue*₁-constituent and the *yue*₂-constituent?
- 7) In the variant type of Chinese CCs, is the left-dislocated NP derived via movement or base-generation?

Following Dikken (2005), Taylor (2006, 2009), Iwasaki and Radford (2009), and Tsao and Hsiao (2002), I endeavor to address the above research questions and propose an analysis. I will argue that despite the idiosyncrasy of the morpheme *yue*, Chinese CCs also demonstrate crosslinguistically common properties, which can be accounted for in the framework of Government and Binding Theory.

1.3 The theoretical framework and hypotheses

This dissertation adopts the theoretical framework of GOVERNMENT AND BINDING (Chomsky 1981, 1982, 1986 and others) in generative syntax. Assuming Rizzi's (1997, 2004) work on THE SPLIT CP HYPOTHESIS, I will argue that Chinese CC constructions are a type of focus construction, projected by a null functional head Foc⁰. For the overall configuration, the first clause in Chinese CC constructions is proposed to be base-generated in the left periphery and the consequent clause is analyzed as the complement of the null Foc⁰.

The property of the in-situ DegP in Chinese CCs implicates QUANTIFICATIONAL VARIABILITY EFFECTS (QVE, Huang et al (2009, Chapter 7), Cheng 2003a and 2003b, Li 1992, Cheng 1992 among others), which will be discussed in Chapter Four. It will help us better understand the parallel semantic meaning of in-situ *wh*-elements and the in-situ DegP in Chinese. I will argue that the in-situ DegP functions as an indefinite degree element on a par with indefinite in-situ *wh*-elements. In addition, the mechanism of UNSELECTIVE BINDING (Heim 1982, Pesetsky 1987, Cheng and Huang 1996) will be adopted to account for relationship between an implicit operator and the in-situ DegP. Via unselective binding, it will be explained why the DegP does not undergo A-bar movement at PF in Chinese CCs and the correlative interpretation of the two degrees will be derived.

For the variant type of of Chinese CCs, as exemplified in (3), I will argue that the left-dislocated NP containing *yue*₁ is not derived via movement. Arguments against the movement approach are based on results of diagnoses of WH-ISLAND CONSTRAINTS (Chomsky 1981; Huang 1982a, 1982b), RECONSTRUCTION EFFECTS (Fox 1999), WEAK CROSSOVER EFFECTS (WCO, Chomsky 1976; Higginbotham 1980; Reinhart 1983; Lasnik and Stowell 1991; Postal 1993; Shyu 1995; Badan and Gobbo (2010), and the lack of mandatory anaphoric relation between the left-dislocated NP and the gap. As an alternative, I propose that the left-dislocated NP is derived via base-generation and is a focused NP in the left periphery.

1.4 Organization of the chapters

In Chapter Two, I first present crosslinguistic data and typological differences in the morphology and surface structures of CCs. Languages such as Chinese, Thai, Vietnamese, and Indonesian have the DegP stay in situ whereas languages such as English, Greek, Polish, Hindi, and Hungarian among others have the DegP moved to the left periphery. In the second section, earlier studies on comparative correlatives of will be discussed.

Chapter Three starts with the basic properties and distribution of the morpheme *yue*. Then locality constraints on English CCs and Chinese CCs are examined. It is shown that the Complex NP Constraint (CNPC), the Wh-island Constraint, and the Condition on Extraction Domains (CED)³ are observed in English CCs, but are not relevant in Chinese CCs. With respect to the structural relationship between the two constitutive clauses, I will argue that the preceding clause is not an adjunct, nor is it valid to analyze the CC construction as a coordinate structure. In addition, the variant type of Chinese CCs (as presented in (3) above) is introduced at the end of the chapter.

In Chapter Four, I first review the claim made by Dikken (2005) and Lipták (2009) that CCs are a subset of standard correlatives. Following their contention, I propose that there are two types of Chinese CCs: The *wh*-type CC and the *yue*-type CC. The *wh*-type uses a pair of indefinite *wh*-phrases to realize the correlative interpretation

³ For detailed discussion of the mentioned locality constraints of CNPC, wh-islands, and CED, readers are referred to Chomsky (1973, 1981) and Huang (1982b).

while the *yue*-type uses a pair of *yue*-constituents. For the internal structure of the DegP, I will argue that the position [Spec, DegP] is realized by the *wh*-phrase in the *wh*-type CC, but by the morpheme *yue* in the *yue*-type CC. Neither the *wh*-phrase nor the *yue*-phrase undergoes A-bar movement in each type of CCs, and I argue that this has to do with the *wh*-in-situ property of Chinese syntax. Assuming quantificational variability effects in Chinese *wh*-indefinites, the interpretation of which hinges on an implicit binding operator, I propose that the *wh*-phrase and the *yue*-phrase in each type of Chinese CCs are in-situ indefinites and unselectively bound by a null CORRELATIVITY OPERATOR. In interpretation, this null operator accounts for the correlational relationship between the paired degree variables.

In Chapter Five, I first propose that the paired *yue* morphemes and the non-coordinated syntactic clauses constitute a degree description. On a par with the dependent *that*-clause in the English *so...that...* construction (e.g. *The mount is so tall that you cannot see the top*), which functions as a complement of the adjective head *tall*, the consequent clause in Chinese CCs is argued to be treated as a complement of a certain type of head in derivation. The correlational relationship of the two *yue*-variables and the syntactic interdependency of the two clauses cannot be accounted for by the adjunct approach proposed in earlier studies on English CCs by Dikken (2005, 2006) and Taylor (2006) and Tsao and Hsiao's (2002) study on Chinese CCs. The problems of the adjunct approach will be examined. To address the problems, I propose an alternative analysis, which assumes Rizzi's (1997, 2004) work on a split CP and argue that Chinese CCs are a functional projection of a Foc(us)P, with its head Foc⁰ being null. The proposed structure

can also accommodate a topic in the specifier of the TopP, if there is any, and the TopP is in a higher position above the FocP.

Chapter Six deals with the variant type of Chinese CC, in which *yue_i* is contained in a left-dislocated nominal phrase. I argue that the left-dislocated NP is not derived via movement. Arguments against the movement approach are based on the results obtained from applying diagnostics for wh-island constraints, reconstruction effects, weak crossover effects, and the lack of an anaphoric relation between the left-dislocated NP and the gap. Instead, I propose that it is a base-generated focused NP in the left periphery, licensed by the [+Focus] feature in the head Foc⁰. It will become clear that the analysis of this variant is unitary with the analysis proposed for the canonical two-clause CCs in Chapter Five.

1.5 Orthography and glosses

In this dissertation, sentence examples are given with traditional Chinese characters in the first line, the romanization in the second line (with tone markers omitted), the word-for-word English gloss in the third line, and the English translation in the fourth line. The following is a list of abbreviations used in English glosses:

ASP: aspect

AUX: auxiliary

CL: classifier

COM: comparative marker

CPR: comparative word

DAT: dative

DE: genitive marker, nominal marker, relative-clause marker

DEM: demonstrative

ERG: ergative case

GEN: genitive case

MOD: modal

NEG: negative

PART: particle

PAST: past tense

REL: relative clause

Q: question particle

CHAPTER TWO

PREVIOUS STUDIES ABOUT COMPARATIVE CORRELATIVES

2.0 An overview

This chapter attempts to present the commonalities and typological differences observed in the CCs of various languages. In Section 2.1, I classify the CCs of various languages into three categories based on the morpho-syntactic properties of the degree/ amount/ measure phrases. Among the crosslinguistic data, there is a group of languages which exhibit in-situ comparative phrases or degree phrases. In Chapter Three and Chapter Four, we will see this in-situ property is also characteristic of Chinese CCs. Another purpose of this chapter is to review previous studies on CCs. In Section 2.2, I review how CCs of English, Greek, and Thai have been analyzed, particularly the syntactic derivations that have been proposed. Insights from these studies lay an essential foundation for in my analysis of the DegP and the syntax of Chinese CCs in the subsequent chapters. Throughout the chapter, readers will note that even though language-specific idiosyncrasy exists, it is still possible to analyze CCs in the framework of Principles-and-Parameters framework.

2.1 Typology of Comparative Correlatives

Both common and idiosyncratic properties of the CC construction in different languages have been observed. Crosslinguistic data show that it generally consists of two

clauses. Whether the two clauses' linear order can be varied is language specific and often has to do with the language's morphology. Each of the two constituent clauses contains language-specific morphemes indicating the comparative relation, degree, or quantification. Three typological categories of CCs are presented in the following subsections.

2.1.1 Languages that use paired words followed by a comparative

The first category involves CCs that are expressed with a pair of unique words which are followed by a comparative. I will refer to the paired words as *comparative correlative markers*. English, which uses *the more/-er... the more/ -er...* in its CCs, is a representative. German, Polish and Basque demonstrate a similar pattern, as shown in the following examples, in which the paired comparative correlative markers are boldfaced:

(1) German (from Beck 1997: 229)

Je müd-**er** Otto ist, **desto** aggressive-**er** ist er.
 JE tired-COM Otto is, DESTO aggressive-COM he is.
 'The more tired Otto is, the more aggressive he is.'

(2) Polish (from Borsley: 2004: 64)

Im więcej książek czytam, **tym** więcej rozumiem
 IM more books I-read, TYM more I-understand
 'The more books I read, the more I understand.'

(3) Basque⁴ (from Taylor 2006: 596)

Gero eta Jonek sagar gehiago buldu, **gero eta** pastel gehiago egiten
 CC John-ERG apples more pick, CC pies more did
 zituen bere amak
 Aux.-Trans.-Past his mom-ERG
 ‘The more apples John picked, the more pies his mother baked.’

French CCs, Italian CCs, and Spanish CCs begin with a fronted comparative but do not have a unique lexical word preceding it. In these three languages, a conjunction is optional, as shown in the following⁵:

(4) French (from Abeille et al 2006)

Plus je lis (et) **plus** je comprends.
 more I read (and) more I understand
 ‘The more I read (and) the more I understand.’

(5) Italian (from Abeille et al 2006)

Più leggo (e) **più** capisco.
 more I-read (and) more I-understand
 ‘The more I read, the more I understand.’

(6) Spanish (from Abeille et al 2006)

Más leo (y) más entiendo.
 more I.read (and) more I.understand
 ‘The more I read, the more I understand.’

⁴ According to Taylor’s (2006: 596) documentation, *gero eta* in Basque is glossed here as CC in the same way McCawley glossed *yue* in Mandarin. Elsewhere in Basque, *gero* and *eta* are used independently: *gero* is an adverb meaning ‘after’ and *eta* is a conjunction, meaning ‘and’. When used in CC constructions, the two words need to co-occur and be adjacent.

⁵ The presence of an optional conjunction in French, Italian, and Spanish may support Culicover and Jackendoff’s (1999) paratactic approach for these languages (cf. discussion in Section 2.2.1).

2.1.2 Languages that use a morpheme denoting degree or quantity

The second category of CCs use a pair of morphemes denoting ‘increasing degree’. Chinese is a representative of this category. Chinese CCs features the morpheme *yue*, literally meaning ‘transcending’ or ‘crossing’. Similarly, Cantonese uses *yuht*, literally meaning ‘surpassing’, Thai uses *ying* ‘exceeding’, Vietnamese uses *càng* ‘increasing’, and Indonesian uses *makin* ‘increasing’. The salient feature that contrasts this category with the other two categories is that the degree/quantity-denoting element remains in situ in each clause. The following examples throughout (7) and (10) are documented by Leung (2005):

(7) Cantonese

ni **yuht** gong, keoi **yuht** ganzoeng
 You YUHT talk he YUHT nervous
 ‘The more you talk, the more nervous he is.’

(8) Thai

khun **ying** phuut, khaw **ying** dandeng
 You YING talk, he YING nervous
 ‘The more you talk, the more nervous he is.’

(9) Indonesian

Ali **makin** besar **makin** sombong
 Ali MAKIN old MAKIN arrogant
 ‘The older Ali gets the more arrogant he becomes.’

(10) Vietnamese

Càng nhiều-người **càng** vui
 CANG many CANG happy
 ‘The more, the merrier.’

2.1.3. Languages that use a measure phrase

The third category of CCs features a pair of measure phrases. The measure phrase in the first clause contains a non-interrogative *wh*-element, and the one in the second clause contains a demonstrative element. Like the first category, this category of languages involve displacement of the comparative element. Examples are given in (11)-(17):

(11) Latin (from Hsiao 2003: 266)

quanto in pectore hanc rem meo magis volute,
How.much in heart this matter my more (I)ponder
tantoo mi aegritudo auctior est in animo
that.much me grief greater is in spirit

‘The more I turn this matter over in my mind, the greater the grief is in my soul.’

(12) Spanish (from Abeille et al 2006)⁶

(cuanto) más libros leo, **(tanto)** más cosas entiendo
(how-much) more books I.read, **(that-much)** more things I.understand
 ‘The more books I read, the more things I understand.’

(13) Italian (from Abeille et al 2006)

Quanto più leggo, **(tanto)** più capisco
 how-much more I.read, (that-much) more I.understand
 ‘The more I read, the more I understand

⁶ Abeille et al (2006) point out that the fronted comparative in Spanish CCs and in Italian CCs can be premodified by an element meaning ‘how much’ in the preceding clause and by a demonstrative element meaning ‘that much’ in the consequent clause. Readers may note the alternation by comparing the example in (12) and (13) with the example in (5) and (6) in Section 2.2.1.

(14) Khalkha Mongolian (from Hsiao 2003)

Xedii targan max **todii** amttai.

how-much fat meat **that-much** delicious

'The fatter a piece of meat is, the more delicious it is.'

(15) Hindi (from Taylor 2006: 596)

a. **jitne** zyaada sawaal Joanna sujhaae, use **utne** acche

How-much more problem Joan-ERG solve, to-her **that-much** good

ank aaye

score came

'The more problems Joan solved, the better score she received.'

b. **Jitnii** jaldi Bill kaam karega, use **utnaa** zyaadaa mithaai milegii

How fast Bill work do-FUT he-DAT **that** more sweets get-FUT

'The more quickly Bill finishes his work, the more desserts he will get.'

(16) Greek (from Kapetangianni and Taylor 2009)

Oso (pio poli) zahari tros **toso** (pio poles) thermides

as.much.as (more) sugar eat.2sg.pres **that.much** (more) calories

pernis

get.2sg.pres

'The more sugar you eat, the more calories you get.'

(17) Russian (from Dikken 2005)

Naskol'ko luchshe mashina, **nastol'ko** ona dorozhe.

by-how-much better car-NOM **by-that-much** it-F.NOM more.expensive

'The better the car, the more expensive it is.'

In this category, the occurrence of the demonstrative form indicates an anaphoric relationship between the clauses. This observation corresponds to Leung's (2005) contention that the degree denoted in the preceding clause designates an 'indefinite' degree whereas the one in the second clause designates an 'anaphoric' expression of degree.

In Chapter Four, I will argue that there are in fact two types of CCs in Chinese. One is realized with a pair of non-interrogative *wh*-words on a par with the third category of CCs, as illustrated in examples from (11) to (17). The other type is realized with a pair of *yue* morphemes and belongs to the second category of CCs presented in Section 2.1.2; this is the type that is focused on in this dissertation. In Chapter Four and Five, I will argue that the lexical word *yue* functions as an indefinite degree element like a *wh*-in-situ.

2.2 Previous studies in the literature

2.2.1 Culicover and Jackendoff (1999)

In their study of English comparative correlatives, Culicover and Jackendoff (1999: 543) claim that there is a mismatch between syntax and semantics: The two constitutive clauses are "connected paratactically in syntax, but the first clause is subordinate in semantics." An argument for taking the preceding clause as a subordinate clause is based on the results of testing the CC construction in subjunctives, tag questions, direct questions, and imperatives.

First, when CC is the complement of a verb or adjective that governs the subjunctive, subjunctive morphology may appear on the second clause but not on the first

clause, as shown in the following examples (extracted from Culicover and Jackendoff (1999: 548-9):

(18) Subjunctives

- a. It demands/ is imperative that [the more John eats, the more he pay(s)].
- * b. It demands/ is imperative that [the more John eat, the more he pay(s)]

Second, a tag question's form is based on the second clause, not on the first clause. The contrast is illustrated in (19):

(19) Tag questions

- a. The more we eat, the angrier you get, don't you.
- *b. The more we eat, the angrier you get, don't we.
- *c. The more we eat, don't we, the angrier you get.

Third, when a direct question is constructed, the article *the* is replaced with *how much*.

Inversion takes places in the second clause, and the complementizer *that* cannot appear in the second clause, as shown in (20):

(20) Direct questions

- a. The harder (that) it has rained, how much faster a flow (*that) appears in the river?
- b. The harder (that) it rains, how much faster (*that) do you run?

Fourth, in combining the CC with the imperative construction by using a generic subject in the second clause, a moderately acceptable imperative can be formed, like the example

of (21a), which is intended to have the semantic meaning in (21c). By contrast, the first clause cannot have the imperative form, as shown in (21b):

(21) Imperatives

- a. ?The more John eats, the tighter everyone keep your mouth shut about it, OK?
- b. *The more everyone eat, the more John keeps his big mouth shut about it, OK?
- d. If/When/As John eats more, (everyone) keep your mouth shut tighter, OK?

The above results of test of the construction demonstrates that the first clause is subordinate while the second clause has main-clause force. However, Culicover and Jackendoff (1999) argue that the subordinate interpretation of the first clause is only a semantic fact, which is not reflected in syntax. If the first clause is subordinate and the second clause is a main clause in syntax, we would expect that extraction from C2 would be unproblematic whereas extraction from Clause 1 would result in a violation of the Condition on Extraction Domains (CED, Huang 1982a, 1982b).

This prediction turns out to be incorrect. Extraction is possible not only from the second clause but also from the first clause. Consider the following examples, with the one in (22) being the ‘base’ sentence (Culicover and Jackendoff 1999: 569):

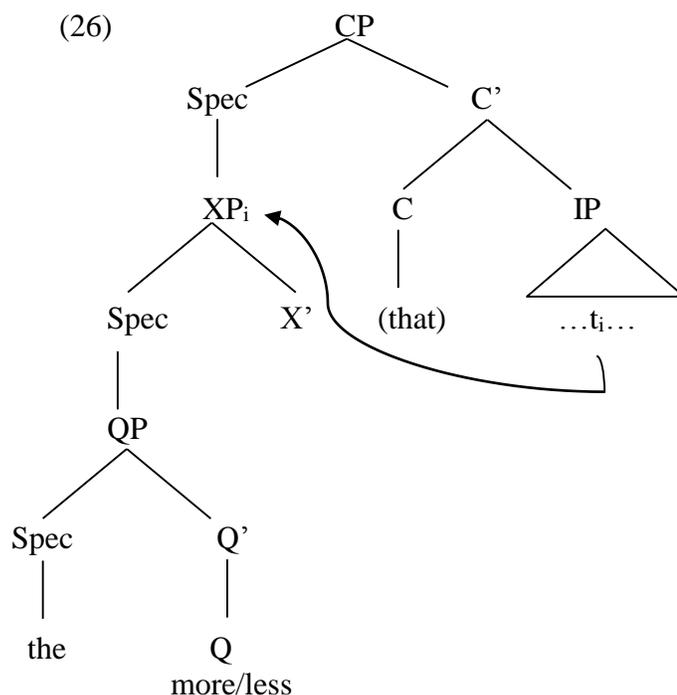
(22) The sooner you solve this problem, the more easily you’ll satisfy the folks up at corporate headquarters.

(23) a. This is the sort of problem which_i the sooner you solve t_i , the more easily you’ll satisfy the folks up at corporate headquarters. [extraction from Clause 1]

- b. The folks up at corporate headquarters are the sort of people who_i the sooner you solve this problem, the more easily you'll satisfy t_i . [extraction from Clause 2]
- (24) a. This problem_i, the sooner you solve t_i , the more easily you'll satisfy the folks up at corporate headquarters. [extraction from Clause 1]
- b. ? The folks up at corporate headquarters_i, the sooner you solve this problem, the more easily you'll satisfy t_i . [extraction from Clause 2]
- (25) a. It is this problem_i that the sooner you solve t_i , the more easily you'll satisfy the folks up at corporate headquarters. [extraction from Clause 1]
- b. ?*It is the folks up at corporate headquarters_i (not the ones here at the regional office) who_i the sooner you solve this problem, the more easily you'll satisfy t_i . [extraction from Clause 2]

The above examples throughout (23) and (25) show that extraction is possible from both clauses in English CCs. If the movement constraint of CED holds true, we can conclude that the first clause in these examples is not an adjunct. In other words, the CC construction shows no subordination in syntax despite its subordinate semantics. Culicover and Jackendoff (1999: 566) conclude that the two clauses are “coordinate in syntax but subordinating in semantics”.

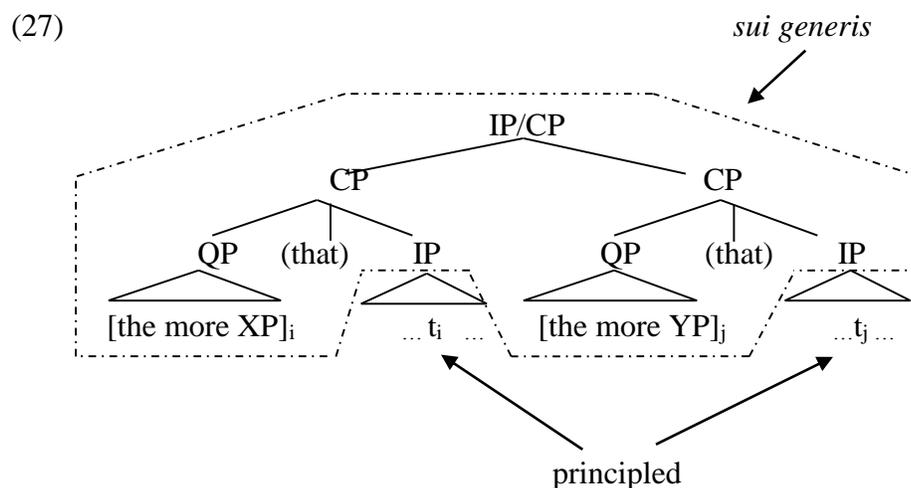
For the position of the comparative phrase within the CC, they propose that the following plausible structure for each constitutive clause, as schematized in (26) (Culicover and Jackendoff 1999: 558):



In the above structure, the C^0 is null or realized by *that* since the complementizer *that* may optionally occur in either constitutive clause of a CC⁷. In addition Culicover and Jackendoff propose that the comparative morpheme *more/ -er* projects into a QP, with the article *the* in the specifier. On a par with a fronted *wh*-phrases, the fronted comparative phrase carries along the elements of which *the more* is a left branch and moves out of the IP to [Spec, CP]. However, the motivation for the article *the* to sit in [Spec, QP] still remains mysterious, which is another idiosyncratic property of English CCs.

⁷ Two examples of CCs with an optional *that* are given in (i) (Culicover and Jackendoff 1999: 546):
 (i) a. The more (that) you eat, the less (that) you want.
 b. The angrier (that) Sue gets, the more (that) Fred admires her.

Culicover and Jackendoff use the following schema in (27) to distinguish the *sui generis* parts of the CC construction (enclosed with dotting lines) from the parts that conform to more general principles (Culicover and Jackendoff 1999: 567):



They conclude that the peculiar configuration in the specifier of the comparative phrase and the mismatch between semantics and syntax make the dotted part *sui generis* while the IP domain follows more general principles of X-bar theory.

2.2.2 Dikken's (2005) correlative approach

In his study on CCs, Dikken (2005) argues against Culicover and Jackendoff's paratactic approach, which is mainly based on the possibilities of extraction from either clause (as discussed in Section 2.2.1). Dikken (2005) points out that extraction in English CCs is not entirely free, which is evidenced by the following examples in (28) (Dikken 2005: 509, footnote 13):

- (28) a. *the kind of doctor that [the more he wants to be **ec**], [the less able he will be to actually become **one**]

- b. ?/* the kind of doctor that [the more he wants to be **one**], [the less able he will be to actually become *ec*]

In addition, extraction from either clause is prohibited in the CC construction of Dutch and German. In other words, the extraction possibilities of comparative correlatives are not universally robust.

Alternatively, Dikken (2005, 2009) proposes a correlative approach. He investigates data from CC constructions of various languages and contends that the CC construction exhibits a high degree of crosslinguistic consistency and is “well-behaved... analyzable in keeping with the principles and parameters of UG” (Dikken 2005: 498). Adopting Srivastav’s (1991) correlative structure, Dikken (2005 and 2009: 264) proposes a general structure (i.e. a ‘macrostructure’ in his term) for crosslinguistic CCs, as schematized in (29), in which the relative clause functions as the sub-clause (SUBCL) and adjoins to the head clause (HEADCL):

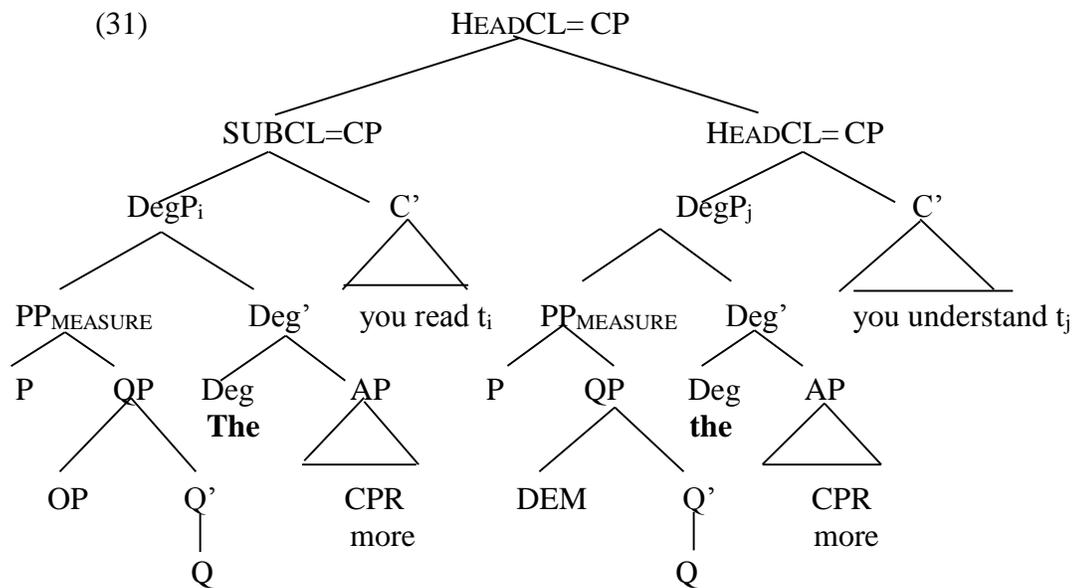
(29) [HEADCL [SUBCL REL/WH-operator+CPR...]] [HEADCL CORREL-PART+CPR ...]]

Consider the Dutch sentence in (30):

- (30) {hoe/ des-te} meer je leest, {hoe/ des-te} minder je begrijpt [Dutch]
 how/the-Gen. more you read, how/the-Gen. less you understand
 ‘The more you read, the less you understand.’

According to the macrostructure in (29), Dikken treats the initial clause in (30) as an adjoined relative clause, with *hoe* or *des* serving as a relative pronoun, and the second clause as the head clause with *hoe* or *des* being the correlative particle.

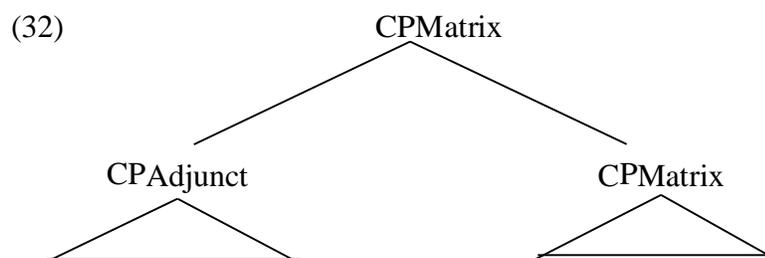
Dikken (2005) also examines the internal structure of the constituent clauses and the internal configuration of the comparative phrase at the left edge of each clause. The detailed microstructure of the English sentence *The more you read, the more you understand* is demonstrated in (31) (Dikken (2005: 510):



In the above structure, the fronted comparative phrase is a DegP. Its specifier position is occupied by a (prepositional)⁸ measure phrase, and the head of DegP is spelled out as the definite article *the*, taking a comparative AdjP or AdvP as its complement.

2.2.3 Taylor (2006, 2009) and Kapetangianni and Taylor (2009a, 2009b)

Examining the CC construction in English and in other languages, Taylor (2006) proposes an analysis assuming the Minimalist Program. In Taylor's proposal, the subordinate clause is taken as an adjunct, base-generated and left-adjoined to the main clause, as shown in the structure of (32) (Taylor 2006):



For the English sentence *The more sugar you eat, the more calories you get*, a structure is schematized in (33) (Taylor 2006):

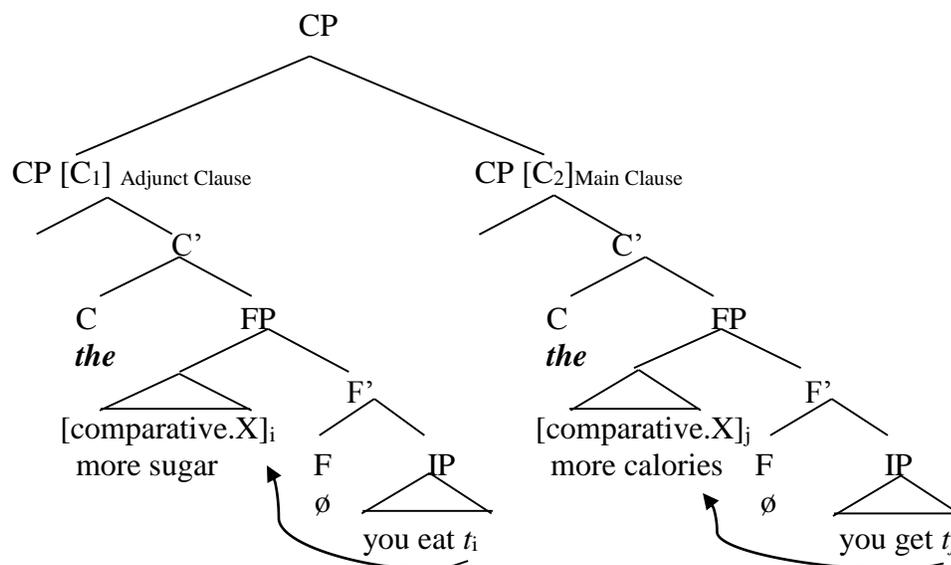
⁸ In his discussion, Dikken (2005: 502) points out that in Early Modern English, a measure phrase headed by a preposition is overtly present in the CC construction:

(i) *By how much the lesse he looked for this discourse, by so much the more he liked it.*

(Lyly, *Euphues*, 16th century)

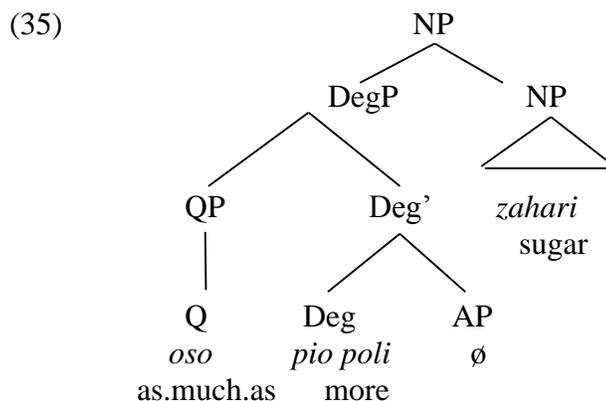
Russian also has a prepositional measure phrase in the clause-initial position in its CCs, as shown in the example of (17) in Section 2.1.3.

(33) The internal structure of comparative correlatives (Taylor 2006)



In the structure of (33), Taylor treats the obligatory *the* in the English CC construction as a complementizer C^0 , which selects a functional phrase (FP)⁹. The head of FP triggers A-bar movement of the comparative constituent out of IP to [Spec, FP]. This A-bar movement of the comparative constituent to [Spec, FP] is like the A-bar movement of a null wh-operator to [Spec, CP]. However, taking *the* as a C^0 is controversial. An argument against the contention that *the* is a complementizer is based on the observation (cf. Iwasaki and Radford’s discussion in 2009) that the CC construction can contain an overt complementizer *that* (also noted in Footnote 7 above), for example, “the more chocolate *that* you eat, the quicker you put on weight.”

⁹ In a later paper, Kapetangianni and Taylor (2009a) propose that the functional projection is FocusP. The evidence is based on ungrammaticality caused by focus movement in Greek CC constructions. In Chapter Five, I will propose that Chinese CCs are a functional projection of FocP, and each *yue* carries with it a focus feature. For Taylor, the [focus] feature is checked in each clause independently, but in my proposal for Chinese CCs, they are both checked in the matrix clause.

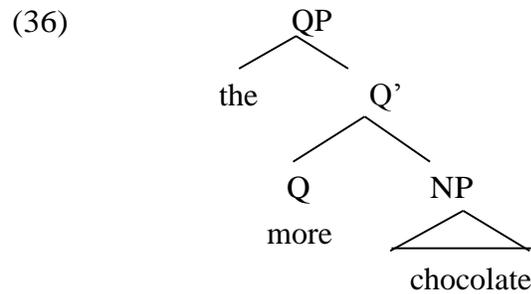


Likewise, the demonstrative item *toso* that appears in the matrix clause also functions as a measure phrase. According to Taylor (2006) and Kapetangianni and Taylor (2009a), even though the English *the* and the Greek *oso* appear in front of a comparative, they are not counterparts of each other: In their proposals, the English article *the* is C^0 , introducing either clause of the CC, whereas *oso / toso* in Greek CCs are quantifiers and project into a QP. In Chapter Four, it will be argued that the lexical word *yue* in Chinese CCs has a similar status as the Greek *oso / toso* and is not an equivalent of English *the*.

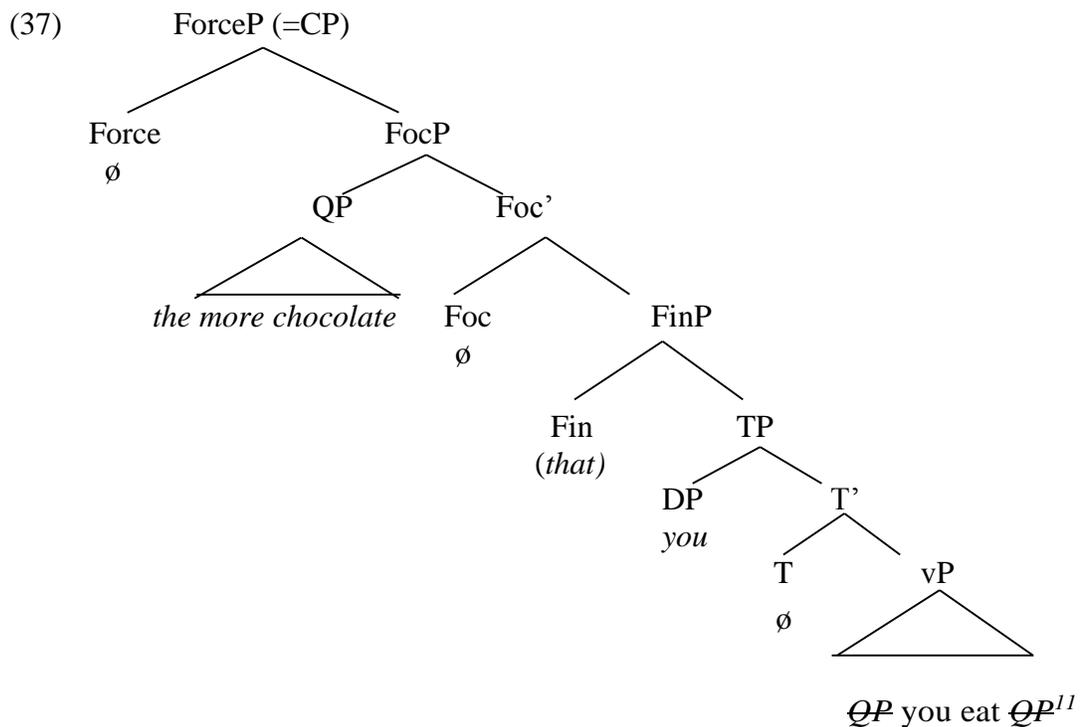
2.2.4 Iwasaki & Radford (2009)

Iwasaki and Radford (2009) are in line with Taylor's (2006) and Dikken's (2005) claim that it is possible to arrive at a principled description of CC constructions within the principles-and-parameters approach and Minimalist framework. However, they argue against the idea of taking the article *the* as C^0 in Taylor's (2006) analysis of the English CC construction. Instead, they propose that *the* originates within TP and functions as a **degree operator**, linked to its correlative counterpart in the paired clause. For the sentence *The more chocolate (that) you eat, the more weight you put on*, Iwasaki and

Radford (2009) treat *the more chocolate* as a QP, headed by the comparative morpheme *more/er*, and the degree operator *the* is generated in the specifier. The structure of the QP is shown in (36):



The QP originates as the direct object of *eat* and undergoes A-bar movement. For the derivation of each clause, Iwasaki & Radford (2009) assume Rizzi's (1997, 2004) work on the split CP and propose the following clause internal structure in (37), which applies to both clauses:



In the above derivation, the QP first moves to the edge of vP according to the Phase Impenetrability Condition (Chomsky 2000) and thereafter to the edge of FocP. The overt *that* is treated as the head of a FinP.

To capture the structural dependency between the two clauses, Iwasaki & Radford (2009) propose the projection of a TopP¹², with the first clause being a ForceP (i.e. the conventional CP) in [Spec, TopP]. The derivation is schematized in (38):

¹¹ The two italicized QPs denote copies of the moved QP *the more chocolate*.

¹² Their argument in favor of the notion that the functional projection is TopP is based on two assumptions: 1) 'satellite' constituents are typically topics, and 2) clauses can be topics (Alrenga 2005).

2.2.5 Leung's (2004, 2005) typological study on CCs

Leung (2004, 2005) presents a typological study of the CC construction in various languages. He uses the term ‘correlative marker’ to refer to lexical items occurring in pairs in CCs, such as *the...the...* in English, *yue...yue...* in Chinese, or *ying...ying...* in Thai. Leung (2004) attempts to decompose the semantics of the CC construction into combinations of the semantics of compositional lexical items. He claims that languages differ in two aspects. First, they differ in whether the realization of the correlative marker is overt (e.g. English, German, Dutch, Chinese) or not (e.g. French, Italian). Second, they differ in whether the semantics of comparatives in CCs is expressed by comparatives (e.g. English) or is incorporated into the lexical meaning of the correlative markers such as the morpheme *ying*, which means ‘exceeding(ly)’, in Thai CCs (Leung 2004). Similar to *ying* in Thai, the Chinese lexical word *yue* has the verbal meaning of ‘transcending’ or ‘crossing’ when used in other contexts. An example of the CC construction in Thai and its Mandarin equivalent are given in (39):

(39) a. khun **ying** phuut, khaw **ying** dandeng. [Thai]

You **YING** talk, he **YING** nervous

‘The more you talk, the more nervous he is.’

b. ni **yue** shou, ta **yue** jinzhang [Chinese]

You **YUE** talk, he **YUE** nervous

‘The more you talk, the more nervous he is.’

Because *ying* in (39) denotes an increasing degree and incorporates the meaning of comparatives, Leung (2004) claims this accounts for why a comparative morpheme is

not needed¹³. It is noted that the CC construction denotes a ‘proportional’ relation between the two clauses. This denotation is missing in regular conditionals, nor can it be expressed by comparatives alone. Leung (2004) thus proposes that the proportional interpretation is attributed to the paired correlative markers (e.g. *the...the...* in English). On the other hand, *the* in the English CC construction does not explicitly express the directionality of comparison, and therefore the comparative morpheme *more/-er* is required.

A central point in Leung’s (2004) analysis is that *ying* is a wh-operator and functions as an operator which scopes over the constituent it c-commands. The notion that *ying* is a scopal operator is evidenced by the following two examples in (40), where the difference in their meaning is accounted for by the scope of *ying*¹⁴.

(40) a. khaw khit waa khun **ying** khayǎn, khaw **ying** diicai
 he think that you **YING** hardworking, he **YING** happy
 ‘The more hardworking he thinks you are, the happier he is.’

b. khaw **ying** khit waa khun khayǎn, khaw **ying** diicai
 he **YING** think that you hardworking, he **YING** happy
 ‘The more he thinks that you are hardworking, the happier he is.’

¹³ The Thai morpheme *ying* differs from the ordinary comparatives suffix morpheme *kwa*. An example of a regular Thai comparative is given in (i):

(i) khun mai suung, khaw suung-kwa
 you not tall 3sg. Tall-Comp.
 ‘You are not tall; he is taller’

¹⁴ In Chinese, the scope of *yue* works in the same way.

In (40a) *ying* has a narrow scope over the adjective ‘hardworking’ in the first clause, but a larger scope over the matrix VP ‘think that you are hardworking’ in (40b). The difference in scope contributes to different interpretations. The degree of his happiness co-varies with the degree of your hardworkingness in (40a). On the other hand, in (40b), the degree of his happiness depends on the degree of his thinking of you as hardworking.

Both Chinese CCs and Thai CCs feature an in-situ element that expresses the covariance of two degree variables. The CC data in these two languages contrast with English and other languages in which a certain type of movement or fronting is implicated in CCs.

2.3 A summary of this chapter

In this chapter, I have presented crosslinguistic data exemplifying CCs and grouped them into three categories based on their morpho-syntactic properties. The three groups are 1) languages that use paired words followed by a comparative, 2) languages that use a morpheme denoting degree or quantity, and 3) languages that use a measure phrase.

Then I reviewed previous studies on CCs in the literature. Culicover and Jackendoff (1999) point out an apparent mismatch between syntax and semantics in English CCs and also distinguish a *sui generis* part in the structure from the part that conforms to the general principles of X-bar Theory. Dikken (2005) argues against Culicover and Jackendoff’s (1999) paratactic coordination approach and instead proposes a correlative approach, taking the preceding clause as a type of relative clause adjoined to

the head clause (i.e. the consequent clause). He also emphasizes that despite language-specific idiosyncrasies, the syntax of the CC construction exhibits a high degree of crosslinguistic consistency and is well-behaved and analyzable in the Principles-and-Parameters framework. In the same line of reasoning, Taylor (2006, 2009), Kapetangianni and Taylor (2009a, 2009b), and Iwasaki and Radford (2009) also analyze the construction in the principles-and-parameters framework, and their analyses commonly involve information structure. The analysis of English CCs proposed by Taylor (2006, 2009) and Greek CCs by Kapetangianni and Taylor (2009a, 2009b) both feature a functional projection of FocP while the analysis of English CCs proposed by Iwasaki and Radford (2009) involves a functional projection of TopP. Like Dikken's proposal, Taylor (2006) also treats the first clause of CCs as an adjunct. However, in terms of the internal structure of the DegP in English CCs, the Deg⁰ is realized by the article *the* for Dikken, whereas it is realized by the comparative morpheme *more/ -er* for Taylor. On the other hand, in Iwasaki and Radford's (2009) study on English CCs, the article *the* is in the specifier of the QP and the comparative morpheme *more/ -er* is realized as the head Q⁰. Chinese CCs and Thai CCs feature an in-situ element that expresses the covariance of two degree variables. The CC data in these two languages contrast with English and other languages in which a certain type of movement or fronting is implicated in CCs. Leung's (2004, 2005) typological study shows that both Chinese CCs and Thai CCs feature an in-situ element that expresses the covariance of two degree variables. The CC data in these two languages contrast with English and other languages in which a certain type of movement or fronting is implicated in CCs.

CHAPTER THREE

YUE IN CHINESE COMPARATIVE CORRELATIVES

3.0 An overview

This chapter aims to describe the basic properties and the configuration of Chinese *yue*-constructions. The general distribution of the lexical word *yue* is presented in Section 3.1. The scope of *yue* is dealt with in Section 3.2 by showing its interaction with negation, modal verbs, and predicates. Section 3.3 addresses the compatibility of *yue* with aspect-marked predicates, predicates of different situation types, and finiteness. In Section 3.4, I discuss locality constraints with respect to ‘topic’ in non-CC sentences and CC-sentences. The empirical data show that while arguments are relatively free to be topicalized via base-generation, the *yue*-constituent itself is restricted to the local domain. In Section 3.5, the structural relationship between the two constitutive clauses is examined. By testing with the coordinate structure constraint I show that the two clauses in Chinese CCs are not coordinate clauses. In Section 3.6, a variant structure of CCs will be presented, which does not have an equivalent in English CCs. Section 3.7 concludes.

3.1 General distribution of *yue*

When standing alone, the lexical word *yue* is oftentimes taken as a verb, meaning ‘to cross; to exceed; to transgress’. Examples of compound words are given in (1):

(1) a. 越界

yue-jie

cross-border

‘cross the border’

‘overstep the boundary’

‘beyond the mark’

b. 越獄

yue-yu

cross-jail

‘jailbreak’

c. 越級

yue-ji

cross-rank

‘bypass the immediate leadership’

d. 越冬作物

yue-dong zuowu

cross-winter crop

‘overwintering crops’

In CCs, *yue* must occur in pairs. Dropping either *yue* in either clause would cause absolute ungrammaticality, as shown in (2):

(2) a. 天氣越熱,電費越高。

tianqi **yue** re, dian-fei **yue** gao.

weather YUE hot, electricity-fee YUE high

‘The hotter the weather is, the higher the electricity is.’

b. 天氣*(越)熱,電費越高。

tianqi *(yue) re, dian-fei yue gao.
 weather *(YUE) hot, electricity-fee YUE high
 ‘The hotter the weather is, the higher the electricity is.’

c. 天氣越熱,電費*(越)高。

tianqi yue re, dian-fei *(yue) gao.
 weather YUE hot, electricity-fee *(YUE) high
 ‘The hotter the weather is, the higher the electricity fee is.’

Given the English translation in (2), readers may conjecture that *yue* is the counterpart of the English comparative morpheme *er/more*. However, this is not the case. The lexical word *yue* does not indicate comparison, which is evidenced by that fact that it cannot be attached to adjectives or adverbs to form regular comparatives. Comparatives in Chinese are constituted by attaching a comparative morpheme, *gen* (更), *bijiao* (比較), or *jiao* (較) to a bare adjective or adverb. Examples are given in (3):

(3) a. (和大衛比), 約翰跑得更/比較快/ *越。

(han Dawe bi), Yuehan pao-de gen- / bijiao- / *yue- kuai.
 (with David compare), John run-DE GEN/ BIJAO- / *YUE- fast
 ‘(Compared with David), John runs faster.’

b. (和那支手錶比), 這支更/ 比較/ *越 便宜。

(han na-zhi shoubiau bi), zhe-zhi gen / bijiao / jiao/ *yue pianyi.
 With that-CL watch compare, this-CL GEN/BIJAO/ JIAO/ *YUE cheap
 ‘(Compared with that watch), this one is cheaper.’

The asterisk in front of *yue* indicates that *yue* does not form a regular comparative phrase. Therefore, *gen* or *(bi)jiao* are more likely candidates for the direct equivalent of English *er* or *more*. To avoid confusion and stress the unique role of *yue* in Chinese CCs, I will use YUE instead of ‘the more/ er’ in the word-to-word gloss throughout the dissertation.

The lexical word *yue* in CCs denotes a proportional increase in the degree of a property or the amount of an entity. In general, *yue* precedes the adjective, adverb, or verb phrase which it modifies, as shown respectively in the following examples through (4) to (6), where the brackets indicate the *yue*-constituent:

(4) *yue* modifies an AdjP:

a. 天氣越熱, 電費越高。

tianqi **yue** re, dian-fei **yue** gao.

weather [YUE_{[AdjP hot]]], electricity-fee [YUE_[AdjP high]]]}

‘The hotter the weather is, the higher the electricity fee is.’

b. 瑪麗賺越多錢, 就買越多書。

Mali zhuan **yue** dou qian, *pro* jiou mai **yue** duo shu.

Mary_i earn [YUE much] money, *pro*_i then buy [YUE many] book

‘The more money Mary earns, the more books she buys.’

(5) *yue* modifies an AdvP:

你越早寫完作業, 就可以越早睡覺。

ni **yue** zao xie-wan zuoyie, *pro* jiu keyi.

you_i [YUE early] [_{VP} write-finish homework], *pro*_i then can

yue zao shuijiao

[YUE early] [_{VP} go.to.bed]

‘The earlier you finish writing your homework, the earlier you can go to bed.’

(6) *yue* modifies a VP:

天氣越熱，他越想吃冰。

tienqi **yue** re, ta **yue** xiang chi bing.

weather YUE hot, he [YUE [_{VP} feel.like]] eat ice.cream

‘The hotter the weather is, the more he feels like eating ice cream.’

As the English translation shows in the examples through (4)-(6), fronting of the comparative constituents and pied-piping of the associated phrase is obligatory in English. The fronting results in a filler-gap structure in English CCs. By contrast, dislocation of the *yue*-constituent would cause ungrammaticality in Chinese CCs¹⁵, as shown in (7b):

(7) a. 天氣越熱，電費越高。

tienqi **yue** re, dian-fei **yue** gao.

weather [YUE hot], electricity-fee [YUE high]

‘The hotter the weather is, the higher the electricity fee is.’

b. *[越熱]天氣, [越高]電費。

***yue** re tienqi , **yue** gao dian-fei.

[YUE hot]_i weather *t_i*, [YUE high]_j electricity-fee *t_j*

‘The hotter the weather is, the higher the electricity fee of my house is.’

¹⁵ As seen in Chapter Two, crosslinguistic data show typological differences in whether the comparative constituent is dislocated. Abeillé and Borsley (2008, p.1154) point out that in English and French, fronting is obligatory in both clauses. They propose that the C⁰ which heads the clauses has a certain feature which requires its specifier position to be filled by a correlative phrase. In Chapter Four, I will argue that the *yue*-constituent remains in situ and is bound by an implicit operator on a par with Chinese indefinite wh-in-situ.

Another difference noticed between Chinese CCs and English CCs pertains to whether a prepositional *than*-phrase is allowed. Consider the following example in (8) (originally from Liu 2008), which shows that an overt *than*-phrase is allowed in Chinese, but not in English:

- (8) 你越比漢斯傑出，他越嫉妒你。
 ni yue (**bi hansi**) jiechu, ta yue jidu ni.
 you YUE (**than Hans**) outstanding, he [YUE [_{VP} envy you]]
 ‘The more you are outstanding (*than Hans), the more he envies you.’

3.2 The scope of *yue*

When interacting with negation, *yue* precedes and modifies a negated predicate. For instance, in (9a) and (9b), *bu*, as a negation adverb¹⁶, negates the predicate following it, and *yue* needs to c-command the negated predicate so as to have scope over it:

- (9) a. 蘋果越不甜越不好吃
 pingguo yue bu tian, pro yue bu hauchi.
 Apple_i [YUE [_{AdjP} Neg. sweet]], pro_i [YUE [_{AdjP} Neg. tasty]]
 ‘The less sweet an apple is, the less tasty it is.’
- b. 你越不喜歡我去跳舞，我就越要去
 ni yue bu xihuan wo qu tiaowu, wo jiou yue iao qu
 you [YUE [Neg. [_{VP} like I go dance]]], I then [YUE [_{VP} want go]]
 ‘The more you dislike that I go dancing, the more I would like to go (dancing).’

¹⁶ The interaction between a NegP projected by *bu* and a predicate is beyond the scope of this dissertation, and I do not deal with it here. Readers are referred to discussion about Chinese NegP in Ernst (1995), Hsiao (2002), and Huang (2003).

That *yue* functions as a scopal element is also demonstrated in (10). Note the relative position of the *yue*-constituent with respect to the modal verb:

(10) a. 你越早準備，表現才會/能越好

ni yue zao zhunbei, biao xian cai **hui/ neng** yue hao
 you YUE early prepare, performance then [**Mod.** [YUE good]]
 ‘The earlier you start preparing, the better_i your performance will be _{t_i}.’
 ‘If you prepare earlier, your performance will then be better.’

b. 給他越多時間，他越能表現得好

pro ta yue dou shijian, ta yue **neng** biao xian-de hao
 pro he YUE much time, he [YUE [**Mod.** [_{VP} perform-DE well]]]
 ‘The more time we give to him, the better he will perform.’
 ‘If we give more time to him, he is more likely to perform well.’

The modal verb *hui/neng* ‘will/can’ composes with the *yue*-constituent *yue hao* ‘better’ in (10a). By contrast, in (10b), the lexical word *yue* composes with the constituent headed by the modal verb *neng* ‘can’. This is more transparent in the second English translation. A similar contrast in scope is shown in (11) and (12):

(11) a. 他越認為你有實力，你要越積極

ta **yue renwei** ni you-shili, ni yao yue jiji
 he [**YUE think** [_{CP} you have-competence]], you need YUE active
 ‘**The more he thinks** that you are competent, the more active you need to be.’

b. 他認為你越有實力, 你要越積極

ta **renwei** ni **yue** you-shili, ni yao yue **jiji**

he [_{VP} **think** you [_{YUE} have-competence]], you need YUE active

‘**The more competent** he thinks that you are, the more active you need to be.’

(12) a. 你越認為你懂行銷, 你會越容易忽略細節

ni **yue renwei** ni dong xingxio, ni hui yue rungyi hulyue xijie

you [_{YUE think} [_{CP} you know marketing]], you will YUE likely neglect detail

‘The more you think you know about marketing, the more likely you will be to neglect details.’

b. 你認為你懂得越多, 你會越容易忽略細節

ni **renwei** ni dong-de **yue** duo, ni hui yue rungyi hulyue xijie

you **think** [_{CP} you know-DE **YUE** much], you will YUE likely neglect detail

‘The more_i you think you know *t_i*, the more likely you will be to neglect details.’

The example (11a) shows that *yue* precedes and takes scope over the matrix verb *renwei* ‘think’ and its complement CP. This results in the interpretation that the degree of your needing to be active correlates with the degree of his thinking of you as competent. On the other hand, in (11b) *yue* occurs in the embedded clause selected by the matrix verb *renwei* ‘think’ and thus has a narrower scope. The degree of your needing to be active

correlates with the degree of your being competent¹⁷. The same account applies to the contrast between (12a) and (12b).

The above data showing scope of *yue* indicate that it is interpreted in situ and thus does not need to be raised at LF. If the *yue*-constituent could move at LF, one might expect to find that sentences like the ones above would exhibit scopal variability, rather than fixed scope. In Chapter Four, I will argue that the *yue*-constituent remains in situ as an indefinite degree expression on a par with other Chinese *wh*-in-situ expressions are bound by an abstract operator.

3.3 Types of predicates modified by *yue*

From the above description, we have seen that *yue* can modify both asserted and negated predicates. Nevertheless, there is restriction on the type of predicates that it can modify in terms of *aspectual marking*. Bounded aspectual particles *le/guo/wan* are not compatible with the morpheme *yue*¹⁸. Consider the example in (13a) and (13b), where all the verbs can be interpreted as either present tense or past tense, depending on the context and immediate discourse. However, when aspectual particles such as *le* (了), which

¹⁷ As noted in Chapter Two, an identical observation regarding scope also exists in Thai CCs, where the lexical word *ying* is the equivalent of *yue* in Chinese CCs (Leung 2004, 2005).

¹⁸ Unlike its Mandarin equivalent sentence in (13a), the English sentence in (i) below, is grammatical. The past tense doesn't prevent an atelic reading with predicates like *think* or *worry*, which are regarded as atelic verbs:

(i) The more I thought about it, the more I worried about it.

indicates ‘perfectiveness’ and *guo* (過), which indicates ‘experience’ and *wan* (完), which indicates ‘completion’, are attached after the verbs, ungrammaticality occurs, as shown in (13a) and (13b):

(13) a. 我越想 (*了/*過/*完) 越擔心(*了/*過/*完) 。

wo yue xiang (***le/*guo/*wan**), *pro* yue danxin (***le/*guo/*wan**).

I_i YUE worried (*Asp.) , *pro*_i YUE worry (*Asp.)

‘The more I think (about it), the more I get worried.’

b. 你越罵 (*了/*過/*完)他, 他越不說實話 (*了/*過/*完) 。

ni yue ma ta (***le/*guo/*wan**), ta yue bu shou-shihua (***le/*guo/*wan**).

You [YUE [scold him (*Asp.)]] , he [YUE [Neg. tell-truth (*Asp.)]]

‘The more you scold him, the more he rejects telling the truth.’

As shown in (13), when *yue* composes with an unbounded VP, it must be an imperfective VP. In addition to being sensitive to aspectual marking, Liu (2008: 1036-7) points out that predicates in Chinese CCs must be ‘unbounded’ such as a state (e.g. 14a), an activity (e.g. 14b.), or a derived multiple-event consisting of repeated achievement (e.g. 14c) or semelfactive events (e.g. 14d)¹⁹. In the examples in (14), the relevant predicates are in boldface and the type of the predicate is indicated in square brackets:

¹⁹ Readers are referred to Smith (1997, Chapter Two) for detailed explication about features of [stative], [durative], and [telic] in verbs of different situation types. According to Smith (1997), predicates of state are [+stative, +durative, -telic], predicates of activity are [-stative, +durative, -telic], predicates of achievement are [-stative, -durative, +telic], predicates of accomplishment are [-stative, +durative, +telic], and semelfactive predicates are [-stative, -durative, -telic].

(14) a. 女孩子越大(就)越漂亮。

nuhaizi yue **da**, (jiu) yue **piaoliang**. [state]

girl YUE **grown.up**, then YUE **beautiful**

‘The older a girl is growing, the more beautiful she will be.’

b. 你越追, 她越跑。

ni yue **zui** *ec*_i, ta_i yue **pao**. [activity]

you YUE **chase** *ec*_i, he_i YUE **run**

‘The more you chase after him, the more he runs / evades.’

c. 士兵越死越多。

shibing yue **si** *pro* yue duo. [achievement]

soldier YUE **die** *pro* YUE many

‘(As the war continues), there are more and more deaths of soldiers.’

d. 門越敲越響。

men yue **qiao**, *pro* yue xiang. [semelfactive]

door YUE **knock**, *pro* YUE loud

‘As the act of knocking-at-the-door continues, the louder the knocking is.’

e. #你越打破碗, 瑪麗越生氣。

#Ni yue **dapuo** wan , Mali yue shengqi [accomplishment]

You YUE **break** bowl, Mary YUE angry

#‘The more (times) you break bowls, the angrier Mary gets.’

The examples through (14a)- (14e) indicate that *yue* occurs with atelic predicates or predicates denoting repeated or cumulative events. For the sentence in (14e), both

English and Mandarin get a similar effect with the telic predicate *break*. The symbol # does not mean that they are ungrammatical, but we need to understand it as a repeated incident.

We have seen, through the above examples, that the occurrence of *yue* is compatible with imperfective and unbounded VP. The following examples in (15) and (16) show that there is also a restriction on the finiteness of the clause that contains *yue*:

(15) a. 你越逼大衛學鋼琴，他越逃避。

ni **yue** **bi** Dawei xue gangqin, ta yue taobi.
 [CP you **YUE force** [IP David to.learn play.the.piano]], he YUE evade
 ‘The more you force David to learn playing the piano, the more he evades.’

b. *你逼大衛越學鋼琴，他越逃避。

* ni **bi** Dawei **yue** xue gangqin, ta yue taobi.
 [CP you **force** [IP David **YUE** to.learn play.the.piano], he YUE evade
 ‘The more learning to play the piano you force David to do, the more he evades.’

(16) a. 你越求大衛幫忙，他越高傲。

ni **yue** **qiou** Dawei bangmang, ta yue gaoao.
 [CP you **YUE beg** [IP David to.help]], he YUE insolent
 ‘The more you beg David to do you a favor, the more insolent he gets.’

b. *你求大衛越幫忙，他越高傲。

* ni **qiou** Dawei **yue** bangmang, ta yue gaoao.
 [CP you **beg** [IP David **YUE** to.help]], he YUE insolent
 ‘The more helping you beg David to do, the more insolent he gets.’

In (15a), *yue*₁ occurs in the matrix clause and modifies the verb *bi* ‘force’, which selects a non-finite clause as its complement. By contrast, ungrammaticality in (15b) is caused when *yue* occurs with the infinitive verb *xue* ‘to learn’ in the embedded clause. The same account also applies to (16b).

3.4 Island effects in Chinese CCs

In English CCs, the comparative form of the adjective or adverb is extracted to the clause-initial position following the article *the*. If there is a noun modified by the comparative adjective is required to be pied-piped. Examples are shown in (17):

- (17) a. The hungrier I am t_i , the faster I eat t_j .
 b. The more desserts he eats t_i , the better he feels t_j .
 c. The more money he earns t_i , the more book he buys t_j .

The extraction creates a dependency between the moved comparative phrase and the gap within the clause, as pointed out by Culicover and Jackendoff (1999: 555-557). Typical locality constraints are observed in such extractions. The following English examples in (18) show effects of the Complex NP Constraint (CNPC), the *Wh*-island Constraint, and Condition on Extraction Domain (CED)²⁰ (examples originally from Culicover and Jackendoff 1999:555):

²⁰ In Chomsky (1973, 1981) and subsequent works, the constraints that prohibit extraction out of complex NPs and *wh*-islands are subsumed under the Subjacency Condition. In Huang (1982b), prohibitions of extraction out of subject and adjunct phrases are explained by the Condition on Extraction Domain (CED). For detailed discussion about effects of the Subjacency Condition and the CED in Mandarin Chinese, readers are referred to Huang (1982b) and Huang et al (2009).

- (18) a. *[The more food]_i Mary knows a man that eats *t_i*, the poorer she gets. (CNPC)
 b. *[The more people]_i I ask what_j he will give *t_j* to *t_i*, the more he reads. (*wh*-island)
 c. *[The fatter]_i he goes to a doctor when he gets *t_i*, the more he eats. (CED)

The same island effects are not observed in the Chinese counterpart of the above examples since no extraction occurs in Chinese CCs, as shown in (19), where the in-situ *yue*-constituents are bracketed:

- (19) a. 瑪莉認識一個吃越多食物的人,她就越窮。

Mali renshi yige chi yue duo shiwu de ren, ta jiou yue qiong
 Mary know one [eat [YUE much food] DE²¹_{CP}] person, she then [YUE poor]
 *'The more food_i Mary knows a man that eats *t_i*, the poorer she gets.'

- b. 我問他送什麼給越多人, 他就會看越多書。

wo wen ta song shime gei yue duo ren, ta jiou hui kan yue duo shu
 I ask he give what to [YUE many people], he then will read [YUE many book]
 *'The more people_i I ask what_j he will give *t_j* to *t_i*, the more he reads.'

- c. 當他變得越胖去看醫生, 他吃越多。

dang ta bian-de yue pang ec qu kan yisheng, ta chi-de yue duo
 [when he get-Adv. [YUE fat]] *pro* go see doctor, he eat-Adv. [YUE much]
 *'The fatter_i he goes to a doctor when he gets *t_i*, the more he eats.'

²¹ In Chinese syntax, the bound morpheme *de* (的) is a general modification marker, which occurs with prenominal modifiers, such as adjectival modifiers, possessors and relative clauses (Cheng 2005 among others).

The above Chinese examples show that since the comparative phrase in either clause is not extracted or moved, conditions on movement are therefore not relevant in Chinese CCs.

However, observations related to topicalized arguments from either clause reveal some properties of Chinese CCs that are worth investigation. In Chinese, the topic in topic-comment structures is analyzed in different manners according to its nature²². Both movement and base-generation approaches are employed to analyze derivation of topics in Chinese syntax (Li and Thompson 1976, 1981, Tsao 1977, Tang 1979, Her 1991; Shi 1989, 1992, 2000, Huang et al 2009, among many others). As our discussion proceeds, readers will see that the base-generation approach is adopted in this study to account for the relevant data concerning Chinese CCs. In the following examples, (20a) and (21a) are

²² The role of topics in Chinese syntax has been much explicated. A topic is generally, but not always, related to a constituent inside the comment (Shi 2000; Huang et al 2009:197-211). On the other hand, there exists another type of topics, which are referred to as ‘base-generated topics’, ‘aboutness topics’ or ‘nongap topics’, i.e. topics “that bear no anaphoric relationship to a constituent in the comment sentence (Gasde and Paul, 1996: 267).” The existence of this type of topics calls the movement analysis of gapped topics into question. An example is presented by Li and Thompson (1976: 462):

- (i) na-chang huo, xinkui xiaofangdui lai-de kuai
 That-CL fire fortunately fire-brigade come-Adv.particle quickly
 ‘That fire (topic), fortunately the fire-brigade came quickly.’

In addition, as a discourse-oriented language, Mandarin has ‘zero topics’, that is, a discourse topic which is not overtly indicated. The example in (ii) shows that in object-drop constructions, an empty category can be licensed by a zero topic (or discourse topic), which refers to an element in previous discourse (Huang 1984, 1989).

- (ii) [_{Top} *ec*], [Zhangsan_j shuo [Lisi_k bu renshi *ec*]]
*ec*_i Zhangsan say Lisi NEG know *ec* _{i/*j} / *_k ‘
 *(Him_i), Zhangsan say Lisi didn’t know *ec*_i.

In their review of relevant studies, Huang et al (2009, Chapter Six) conclude that topics are not all derived in the same manner. Some topics are derived by movement and related to gaps in the associated clause; on the other hand, some topics are not related to any gaps and are derived by base-generation.

regular non-CC sentences. The object of the first clause can be topicalized and co-indexed with the empty category within the clause, as shown in (20b) and (21b):

(20) a. 瑪莉去年買了那棟房子，她的父母很高興。

Mali qunian mai-le na-dong fangzi, tade fumu hen gaoping.
 Mary last.year buy-Perf. **that-CL. house**, her parents very be.pleased
 ‘Mary bought that house last year; her parents are pleased.’

b. 那棟房子，瑪莉去年買了，她的父母很高興。

na-dong fangzi, Mali qunian mai-le *ec*, tade fumu hen gaoping.
that-CL. house_i, Mary last.year buy-Perf *ec_i*, her parents very be.pleased
 ‘That house_i, Mary bought *t_i* last year; her parents are pleased.’

(21) a. 天氣很熱的時候，瑪莉喜歡吃冰淇淋。

tianqi hen re deshiho, Mali xihuan chi bingqilin.
 weather very hot time, Mary like eat **ice.cream_i**
 ‘When the weather is very hot, Mary likes eating ice cream.’

b. 冰淇淋，天氣很熱的時候，瑪莉喜歡吃。

bingqilin, tianqi hen re deshiho, Mali xihuan chi *ec*.
ice.cream_i, weather very hot time in.the.time, Mary like eat *ec_i*
 ‘Ice cream_i, when the weather is very hot, Mary likes eating *t_i*.’

Similarly, in Chinese simplex CCs, an argument is also allowed to be topicalized. The sentences in (22a) and (23a) are regular simplex CC sentences while in (22b) and (23b), an argument is topicalized, highlighted in boldface:

(22) a. 瑪莉買越大的房子, 她的父母越高興。

Mali mai yue dade **fangzi**, tade fumu yue gaoxing.

Mary buy YUE big **house**, her parents YUE be.pleased

‘The bigger a house Mary will buy, the more pleased her parents will be.’

b. 房子, 瑪莉買越大的, 她的父母越高興。

fangzi, Mali mai yue dade *ec*, tade fumu hen gaoxing.

house_i, Mary buy YUE big *ec_i*, her parents very be.pleased

‘For a house_i, the bigger one_i Mary will buy *t_i*, the more pleased her parents will be.’

(23) a. 天氣越熱, 瑪莉越喜歡吃冰淇淋。

tianqi yue re, Mali yue xihuan chi **bingqilin**.

weather YUE hot, Mary YUE like eat **ice.cream**

‘The hotter the weather is, the more Mary likes eating ice cream.’

b. 冰淇淋, 天氣越熱, 瑪莉越喜歡吃。

bingqilin, tianqi yue re, Mali yue xihuan chi *ec*

ice.cream_i, weather YUE hot, Mary YUE like eat *ec_i*

‘For ice cream, the hotter the weather is, the more Mary likes eating it.’

If topicalization in the b-sentence from (20) through (23) above is derived by movement, island effects would be predicted to occur when these sentences are embedded in islands.

However, consider the examples in (24), where a *wh*-island is embedded, as well as the

examples in (25), where a complex NP is embedded. The fact that topicalization does not cause violation of subjacency in (24b), (24d), (25b), and (25d) evidences that no movement takes place:

(24) a. 我想知道是否瑪莉決定買那棟房子,她的父母就會高興。

wo xiangzhidao shifo Mali jiueding mai **na-dong fangzi**,
I wonder [CP whether Mary decide buy **that-CL. house**,

tade fumu jiou hui gaoxing.
her parents then will be.pleased].

‘I wonder whether Mary decides to buy that house and her parents will then be pleased.’

b. 那棟房子,我想知道是否瑪莉決定買,她的父母就會高興。

na-dong fangzi, wo xiangzhidao shifo Mali jiueding mai *ec*
that-CL. House_i, I wonder [CP whether Mary decide buy *ec_i*

tade fumu jiou hui gaoxing.
her parents then will be.pleased].

*‘That house_i, I wonder whether Mary decides to buy *t_i* and her parents will then be pleased.’

- c. 我想知道是否[瑪莉買越大的房子, 她的父母越高興]。

wo xiangzhidao shifo Mali mai yue dade **fangzi**,
I wonder [CP whether Mary buy **YUE** big **house**,

tade fumu jiou yue gaoxing.

her parents then **YUE** be.pleased]

‘I wonder whether the bigger a house_i Mary will buy t_i , the more pleased her parents will be.’

- d. 房子, 我想知道是否[瑪莉買越大的, 她的父母越高興]。

fangzi, wo xiangzhidao shifo Mali mai yue dade *ec*,
house_i, I wonder [CP whether Mary buy **YUE** big *ec_i*,

tade fumu jiou yue gaoxing.

her parents then YUE be.pleased]

‘For a house_i, I wonder whether the bigger one_i Mary will buy t_i , the more pleased her parents will be.’

*‘A house, I wonder whether Mary buys a bigger t_i , the more pleased her parents will be.’

- (25) a. 我很懷疑[天氣熱,瑪莉很喜歡吃冰淇淋的說法。]

wo hen huaiyi tianqi re, Mali hen xihuan chi **bingqilin** de shuofa.

I very doubtful [[CP weather hot, Mary very like eat **ice.cream** DE] NP] claim

‘I am doubtful about the claim that when the weather is hot, Mary likes eating ice cream very much.’

b. 冰淇淋, 我很懷疑[天氣熱, 瑪莉很喜歡吃]的說法。

bingqilin, wo hen huaiyi tianqi re, Mali hen xihuan chi *ec* de shuofa.
ice.cream_{*i*}, I very doubtful [[_{CP} weather hot, Mary very like eat *ec*_{*i*} DE]_{NP}] claim
 ‘For ice cream_{*i*}, I am doubtful about the claim that when the weather is hot, Mary
 likes eating it_{*i*} very much.’

* ‘Ice cream_{*i*}, I am doubtful about the claim that when the weather is hot, Mary likes
 eating *t*_{*i*}.’

c. 我很懷疑[天氣越熱, 瑪莉越喜歡吃冰淇淋]的說法。

wo hen huaiyi tianqi yue re, Mali yue xihuan chi **bingqilin** de shuofa
 I very doubtful [_{CP} weather **YUE** hot, Mary **YUE** like eat **ice.cream** DE]_{NP}] claim
 ‘I am doubtful about the claim that the hotter the weather is, the more Mary
 likes eating ice cream.’

d. 冰淇淋, 我很懷疑[天氣越熱, 瑪莉越喜歡吃]的說法。

bingqilin, wo hen huaiyi tianqi yue re, Mali yue xihuan chi *ec* de shuofa
ice.cream_{*i*}, I very doubtful[[_{CP} weather **YUE** hot, Mary **YUE** like eat *ec*_{*i*} DE]_{NP}] claim
 ‘For ice cream_{*i*}, I am doubtful about the claim that the hotter the weather is, the more
 Mary likes eating it_{*i*}.’

* Ice cream_{*i*}, I am doubtful about the claim that the hotter the weather is, the more
 Mary likes eating *t*_{*i*}.’

In the above examples of (24) and (25), the b-sentence (a non-CC sentence) and the d-sentence (a CC-sentence) involve a topicalized argument, which is co-indexed with an empty category in the *wh*-island and the complex NP. For both non-CC sentences and

CC-sentences, topicalization of an argument does not cause violation of subjacency in (24) and (25). The topicalized argument is therefore analyzed to be derived via base-generation, not movement. By contrast, the asterisk mark in the translation indicates that in English, where topics are derived via movement, the extraction out of the *wh*-island and the complex NP violates the condition of subjacency. If the condition of subjacency holds true across languages, topicalization in Chinese must be derived via the strategy of base-generation in both non-CC sentences and CC-sentences²³.

However, while nominal arguments in both ordinary non-CC sentences and CC sentences can be topicalized via base-generation, the *yue*-constituent itself is prohibited from being topicalized along with the nominal argument it modifies. Consider two sets of examples in (26) and (27) below and note particularly the ungrammatical c-sentence and e-sentence, where the *yue*-constituent is dislocated:

(26) a. 瑪莉買越大的房子 她的父母越高興

Mali mai yue dade fangzi, tade fumu jiou yue gaoxing.

Mary buy YUE big **house_i**, her parents then YUE be.pleased

‘The bigger a house Mary buys, the more pleased her parents will be.’

b. 房子, 瑪莉買越大的, 她的父母越高興

fangzi, Mali mai yue dade *ec*, tade fumu jiou yue gaoxing.

house_i, Mary buy YUE big *ec_i*, her parents then YUE be.pleased

‘For a house_i, the bigger one_i Mary buys *t_i*, the more pleased her parents will be.’

²³ For some linguists of Chinese syntax, who apply the movement approach to analyze Chinese, locality constraints on movement are observed in certain constructions (Huang 1984, Shyu 1995, Aoun and Li 2003, and A. Li 2007). Readers are also referred to Huang et al (2009, Chapter Six) for a review of subjacency and island effects observed in those constructions where topics are derived via movement.

c. *越大的房子,瑪莉買, 她的父母越高興

*yue dade fangzi, Mali mai *ec*, tade fumu jiou yue gaoxing

YUE big house_i, Mary buy *ec_i*, her parents then YUE be.pleased

‘The bigger a house_i Mary buys *t_i*, the more pleased her parents will be.’

*’For the bigger a house_i, Mary buys *t_i*, the more pleased her parents will be.’

d. 房子, 我想知道是否[瑪莉買越大的, 她的父母越高興]

fangzi, wo xiangzhidao shifo Mali mai yue dade *ec*,

house_i, I wonder [CP whether Mary buy YUE big *ec_i*,

tade fumu jiou yue gaoxing

her parents then YUE be.pleased]

‘For a house, I wonder whether the bigger *(one_i) Mary buys *t_i*, the more pleased her parents will be.’

e. *越大的房子, 我想知道是否[瑪莉買, 她的父母越高興]

* yue dade fangzi, wo xiangzhidao shifo Mali mai *ec*,

YUE big house_i, I wonder [CP whether Mary buy *ec_i*,

tade fumu jiou yue gaoxing

her parents then YUE be.pleased]

* ‘The bigger a house_i, I wonder whether Mary buys *t_i*, the more pleased her parents will be.’

(27) a. 天氣越熱, 瑪莉吃越多冰淇淋。

tianqi yue re, Mali chi yue duo bingqilin

weather YUE hot, Mary eat YUE much **ice.cream**

‘The hotter the weather is, the more ice cream Mary eats.’

b. 冰淇淋, 天氣越熱, 瑪莉吃越多。

bingqilin, tianqi yue re, Mali chi yue duo *ec*

ice.cream_{*i*} weather YUE hot, Mary eat YUE much *ec*_{*i*}

‘For ice cream_{*i*}, the hotter the weather is, the more_{*i*} Mary eats *t_i*.’

c. *越多冰淇淋, 天氣越熱, 瑪莉吃。

*yue duo bingqilin, tianqi yue re, Mali chi *ec*

YUE much ice.cream_{*i*}, weather YUE hot, Mary eat *ec*_{*i*}

*‘The more ice cream_{*i*}, the hotter the weather is, *t_i* Mary eats *t_i*.’

d. 冰淇淋, 我很懷疑[天氣越熱, 瑪莉吃越多]的說法。

bingqilin, wo hen huaiyi tianqi yue re, Mali chi yue *duo ec* de shuofa.

ice.cream_{*i*}, I very doubtful [[_{CP} weather YUE hot, Mary eat YUE much *ec*_{*i*} DE]_{NP}] claim

‘For ice cream, I am doubtful about the claim that the hotter the weather is, the more Mary eats.’

e. *越多冰淇淋, 我很懷疑[天氣越熱, 瑪莉吃]的說法。

*yue duo bingqilin, wo hen huaiyi tianqi yue re, Mali chi *ec* de shuofa

YUE much ice.cream_{*i*}, I very doubtful [[_{CP} weather YUE hot, Mary eat *ec*_{*i*} DE]_{NP}] claim

*‘The more ice cream_{*i*} I am doubtful about the claim that the hotter the weather is, *t_i* Mary eats *t_i*.’

In (26) and (27), ungrammaticality of the c-sentence and the e-sentence shows that *yue* and the predicate it modifies (*da* ‘big’ and *duo* ‘much’ respectively), is not allowed to be topicalized along with the argument either in the context of a simplex CC sentence ((26c) and (27c)) or when the CC sentence is embedded in an island ((26e) and (27e)). That is,

while nominal arguments are freer to be topicalized, the *yue*-constituent is more restricted.

3.5 The structural relationship between the two clauses

The idiosyncrasy of CCs is demonstrated in the structural relationship between the two constitutive clauses. Tsao and Hsiao's (2002) analysis treats the first clause in Chinese CCs as an adjunct, as do Dikken's (2005) and Taylor's (2006) analysis of English CCs. In Chapter Five, I will argue against treating the first clause as an adjunct. The main reason is that adjuncts are generally optional, but the first clause of CCs is apparently not optional.

An alternative analysis is to treat the *yue*-construction as a coordinate structure that does not allow an overt conjunction, such as *han/erqei* 'and', as shown in (28):

- (28) 你越緊張, (*和/*而且) 他越不能專心
 ni yue jinzhang, (*han/*erqei) ta yue bu-neng zhuanxin
 you YUE nervous (* and) he YUE Neg.-can concentrate
 'The more nervous you are, the less he can concentrate.'

However, if the two clauses in a *yue*-construction are coordinated, then we would expect the Coordinate Structure Constraint (CSC) (Ross 1967, Postal 1998, Zhang 2006, Haspelmath 2007) to be observed²⁴. According to the CSC, in a coordinate structure, no

²⁴ The coordinate structure constraint is generally obeyed in Chinese (Rodman 1977, Zhang 2006). In the following examples, (a) is the basic sentence, where the coordinate structure is bracketed. Extraction of both conjuncts is permissible while extraction of either conjunct or extraction of an element from either conjunct is barred:

(i) a. 我買了香檳和蛋糕。

-
- wo mai-le xiangbin han dangao.
I buy-Perf. [champagne and cake]
'I bought champagne and cake.'
- b. 香檳和蛋糕, 我買了__。
xiangbin han dangao, wo mai-le *ec*.
[champagne and cake]_{*i*} I buy-Perf. *ec_i*
'Champagne and cake, I bought.'
- c. *香檳, 我買了_和蛋糕。
*xiangbin , wo mai-le *ec* han dangao.
champagne,_{*i*} I buy-Perf. [*ec_i* and cake]
*'Champagne,_{*i*} I bought *t_i* and cake.'
- d. *蛋糕, 我買了香檳和__。
* dangao, wo mai-le xiangbin han *ec*.
cake,_{*i*} I buy-Perf. [champagne and *ec_i*]
*'Cake,_{*i*} I bought champagne and *t_i*.'
- (ii) a. 我早上去了超市和郵局。
wo zaoshang qu-le chaoshi han youju.
I morning go-Perf. [super.market and post.office]
'I went to the supermarket and the post office this morning.'
- b. 超市和郵局, 我早上去了__。
chaoshi han youju, wo zaoshang qu-le *ec*.
[super.market and post.office]_{*i*}, I morning go-Perf. *ec_i*
[The supermarket and the post office]_{*i*}, I went to *t_i* this morning.
- c. *超市, 我早上去了_和郵局。
*chaoshi,_{*i*} wo zaoshang qu-le *ec* han youju.
super.market,_{*i*} I morning go-Perf. [*ec_i* and post.office]
*'The supermarket_{*i*}, I went to *t_i* and the post office this morning.'
- d. *郵局, 我早上去了超市和__。
* youju,_{*i*} wo zaoshang qu-le chaoshi han *ec*.
post.office,_{*i*} I morning go-Perf. [super.market and *ec_i*]
*'The post office_{*i*}, I went to the supermarket and *t_i* this morning.'
- (iii) a. 大衛喜歡看電影和寫小說
Dawei xihuan kan dianying han xie xiaoshuo.
David like [watch movies and write novels]
'David likes watching movies and writing novels.'
- b. *電影, 大衛喜歡看_和寫小說
*dianying, Dawei xihuan kan *ec* han xie xiaoshuo.
movie,_{*i*} David like [watch *ec_i* and write novels]
*'Movies_{*i*}, David likes watching *t_i* and writing novels.'

conjunct can be extracted, not can an element contained in a conjunct be extracted out of that conjunct (Ross 1967). This is not the case for Chinese CCs; extraction from either clause is in fact permissible, as seen in (22), (23) and shown again in (29):

(29) a. 這些書, 越多名人推薦, 作者越高興。

zhe-ben shu, yue duo mingren tueijian *ec*, zuozhe YUE gaoxing.

This-Cl. book_i, YUE many celebrity recommend *ec_i*, author YUE happy

‘This book, the more celebrities recommend *t*, the happier the author is.’

b. 這個問題, 你請教越多人, 越能有效解決。

zhe-ge-wenti, ni qingjiao yue duo ren, *pro* yue neng

this-Cl.-problem_i, you_j consult YUE many people, *pro_j* YUE can

youxiao jiejiue *ec*.

effectively solve *ec_i*

‘This problem, the more people you consult, the more effectively you can solve *t*.’

In (29a), the sentence-initial argument is associated with the gap in the first clause, and in (29b) the gap is in the second clause. Since the CSC does not exert effects here, we can conclude that the two *yue*-clauses are not coordinated.

c. 小說, 大衛喜歡看電影和寫__

*xiaoshuo, Dawei xihuan kan dianying han xie *ec*.

novels_i, David like [watch movie and write *ec_i*]

*‘Novels_i, David likes watching movies and writing *t_i*.’

Another argument against a coordinate structure for Chinese CCs pertains to the linear order of conjuncts. Two coordinate clauses can usually switch in order without severely affecting the intended meaning. This is not true with the two *yue*-clauses²⁵. When the two clauses in (28) above switch in order, the intended meaning is entirely changed or even cannot be interpreted at all, as shown in (30):

(30) # ta yue bu-neng zhuanxin, ni yue jinzhang
 he YUE Neg.-can concentrate, you YUE nervous
 ‘The less he can concentrate, the more nervous you are.’

The symbol # is used for this sentence because it’s not ungrammatical; rather it just does not have the intended meaning.

In addition, the interpretation of Chinese CCs also indicates that the relationship between the two *yue*-clauses is a subordinate-head dependency, instead of a coordination relationship. The above sentence in (28) can have a conditional interpretation, meaning ‘If you are acting more nervous, he is less likely to concentrate’ or a causality interpretation, meaning ‘Because you are being more nervous, he is less likely to concentrate.’ This fact is consistent with Dikken’s (2005, 2006) contention that the second clause in CCs is construed as the head clause as well as Culicover and Jackendoff’s (1999) viewpoint that the first clause in English CCs is interpreted as a subordinate clause while the second clause has the main-clause force (cf. discussion in Chapter Two.)

²⁵ The order of the two clauses in both English and Chinese CCs cannot be inverted. Nevertheless, the order can be switched without affecting the intended meaning in some languages, such as Polish and Russian (Borsley 2004 and Dikken 2005).

3.6 A variant structure with *yue*₁ in a NP

So far, all the examples of Chinese CCs we have seen are typically made up of two clauses as English CCs. In addition to the canonical two-clause structure, Chinese has a variant CC construction, which does not exist in English. This variant structure features a left-dislocated NP containing *yue*₁, and *yue*₂ occurs in the main clause. The dislocated NP is associated with a gap in the main clause. Two sets of examples are given in (31) and (32):

(31) a. 越簡單的設計, 我越喜歡

Yue₁ jiandan-de sheji, wo yue₂ xihuan *ec*
 [YUE₁ simple-DE²⁶ design_{NP}]_i, [IP I YUE₂ like *ec*_i]

‘The simpler a design_i is, the more I like it_i.’

Lit. ‘A design_i which is simpler, I like *t*_i better.’

²⁶ The bound morpheme *de* can mark adjectives, a genitive case, and it can also mark a relative clause by attaching at the end. Examples are given below:

(i) *tian-de pingguo*
 Sweet-DE apple
 ‘Sweet apples’

(ii) *wo-de diannaoh*
 1st.sg.-Gen. computer
 ‘My computer’

(iii) *wo zuotian yudao de] na-ge ren*
 [1st.sg. yesterday met DE_{CP}] that-CL person_{NP}
 ‘The person who I met yesterday’

b. 越甜的蘋果越好吃

yue tian de pingguo **yue** haochi
 [IP [NP **YUE** sweet DE apple] **YUE** tasty]
 ‘The sweeter an apple is, the tastier it is.’
 Lit. ‘An apple_i which is sweeter is tastier.’

(32) a. 越多名人推薦的書，越多人買

yue duo mingren tueijia de shu **yue** duo ren mai **ec**
 [[**YUE** many celebrity recommend t_j DE Rel] book_j NP]_i, [IP **YUE** many people buy *ec*]_i
 ‘The more celebrities recommend a book, the more people buy it.’
 or ‘For those books which more celebrities recommend, more people buy them.’
 Lit. ‘Books which more celebrities recommend, more people buy.’

b. 越多名人推薦的書，賣得越好

yue duo mingren tueijia de shu **ec** mai-de yue hao.
 [[**YUE** many celebrity recommend t_j DE Rel] book_j NP]_i, [IP *pro*_i sell-DE **YUE** well]_i
 ‘The more celebrities recommend this book, the better it sells.’
 or ‘For those books which more celebrities recommend, they sell better.’
 Lit. ‘Books that more celebrities recommend sell better.’

In (31a) and (31b), *yue*₁ occurs in the sentence-initial NP and modifies the adjective. The initial NP is co-indexed with the empty category in the object position in the main clause in (31a), but in (31b) it is interpreted as the subject of the entire construction. The example of (32a) and (32b) demonstrate a similar structure, but the left-dislocated NP is a complex NP, in which *yue*₁ is contained in the relative clause. In Chapter Six, I will argue that the left-dislocated (complex) NP in this variant construction

is base-generated in the left periphery no matter whether it is construed as the object (i.e. (31a) and (32a)) or as the subject (i.e. (31b) and (32b)) in the entire construction.

3.7 A summary of this chapter

In this chapter, I have presented the general distribution of the lexical word *yue* in Chinese CC and its interaction with negation, modal verbs, predicates, aspect-marking, and finiteness. I also argue that the lexical word *yue* is not the equivalent of the comparative morpheme *er/more* in English. Then in the discussion concerning locality constraints with respect to ‘topics’, the data show that topicalization in both non-CC sentences and CC-sentences does not violate the Subjacency Condition or the Condition on Extraction Domains. The data also show that while arguments are relatively freer to be topicalized via base-generation, the *yue*-constituent itself cannot be topicalized. With respect to the structural relationship between the two constitutive *yue*-clauses, I argue against the coordinate structure but for a subordinate-main clause dependency. In the last section of this chapter, a variant structure of Chinese CCs is presented, which does not have an equivalent in English CCs. My analysis of the variant structure will be presented in Chapter Six.

CHAPTER FOUR

CORRELATIVES AND COMPARATIVE CORRELATIVES

4.0 An overview

This chapter shows that Chinese has two types of CCs, the *wh*-type CC and the *yue*-type CC. I treat both as a subset of ordinary correlatives, which is a construction characteristic of Hindi among other languages. Unlike the DegP in English CCs, which is argued to undergo A-bar movement, I propose that the DegP in Chinese CCs does not undergo A-bar movement. The argument implicates the nature of *wh*-in-situ characteristic of Chinese syntax. Assuming quantificational variability effects in Chinese (*wh*)-indefinites as well as the mechanism of unselective binding, I propose that the *wh*-word and the *yue*-constituent in the two types of Chinese CCs are in-situ indefinites, unselectively bound by a base-generated abstract correlativity operator, and therefore are free from movement.

Section 4.1 introduces ordinary correlatives much cited from Hindi. In Section 4.2, the macrostructure of comparative correlatives is presented and its resemblance to the structure of ordinary correlatives shows it to be a subset of ordinary correlatives. In Section 4.3, I show that Chinese has two types of CCs. One is formed in the same way as Hindi and uses *wh*-phrases, which I refer to as the *wh*-type CC. The other is formed with a unique morpheme *yue*, which I refer to as the *yue*-type CC. In Section 4.4, I first address the typological difference in the syntactic position of the DegP at PF. In

languages such as English, Greek and others, the DegP in CCs has been shown to undergo A-bar movement. By contrast, in Chinese CCs, the DegP stays in situ. To account for this, I briefly review the quantificational variability effects in Chinese *wh*-in-situ, and accordingly I claim that the in-situ DegP functions as an indefinite element on a par with an indefinite *wh*-in-situ expression. Section 4.5 reviews the notion of unselective binding and I propose that the indefinite DegP in each clause of CCs is unselectively bound by an abstract correlativity operator.

4.1 Correlatives

Correlativization is a relativization strategy that has been studied in typological linguistics²⁷ (Downing 1973; Keenan 1985) and in generative linguistics (Srivastav 1991; Izvorski 1996; Bhatt 2003; Dikken 2005; Lipták 2009, 2012, Mitrenina 2010 among others). Hindi is particularly most referred to and well-known for this characteristic construction. Correlatives feature a non-local strategy of relativization in which a relative clause is not adjacent to the nominal it modifies and rather is found left dislocated and linked to the main clause by a correlate, which is a nominal and usually realized in a demonstrative form (Izvorski 1996; Lipták 2004, 2009, 2012). The structure of correlatives is schematized in (1) (originally in Lipták 2004: 305):

$$(1) [_{\text{matrix CP}} [_{\text{Rel. Cl.}}]_i [_{\text{matrix CP}} \dots \text{DEM}_i \dots]]$$

²⁷ Correlativization is a typologically relevant notion: some languages make extensive use of the correlative strategy for relativization and other subordinated clausal adjuncts (conditionals, temporals, comparatives and degree clauses). (Lipták 2004: 305)

The ungrammaticality of the example in (2) shows that correlatives are not possible in English (quoted from Citko 2009: 49):

(2)* What John is working on right now, that (topic) I like.

Crosslinguistic examples of correlatives are given in (3), in which the relative words and demonstratives are boldfaced:

(3) a. Hindi (in Dikken 2005: 498)

[_{IP} [_{CP} **Jo** larRkii khaRii hai] [_{IP} **vo** lambii hai]]

REL girl standing is **DEM** tall is

‘The girl that is standing is tall.’

(lit.) ‘Which girl is standing, that (one) is tall.’

b. Hungarian (in Lipták 2004: 288)

[_{RC} **Amit** Mari tegnap főzött], **azt** nem ette meg János.

what-ACC Mari yesterday cooked, **that-ACC** not ate PV John

‘John did not eat what Mari cooked yesterday.’

c. Russian (in Citko 2009: 50)

kogo ljublju, **togo** poceluju.

Whom love.1sg, **DEM** kiss.1sg

‘I kiss who I love.’

(lit.) ‘Whom I love, I kiss that (one).’

d. Polish (in Citko 2009: 50)

kogo lubisz, **togo** pocałuj.

Whom like.2sg, **DEM** kiss.imp

‘Kiss the one you like.’

(lit.) ‘Whom you like, kiss that (one).’

e. Bulgarian (in Citko 2009: 50)

Kolkoto pari iska **tolkova** misli če šte i dam.
How.much money wants **that.much** thinks that will her give
 ‘She thinks that I’ll give her as much money as she wants.’

All the examples in (3) have a relative clause preceding the matrix clause which contains the pronominal correlate in a demonstrative form. For interpretation, Lipták (2004) points out that the correlate must refer to a unique/maximal individual that has the property denoted by the dislocated relative clause. Therefore, the correlate can only be a definite entity.

4.2 Comparative Correlatives

4.2.1 The macrostructure of CCs

Consider now examples of comparative correlatives (hereafter CCs for short) in (4), which demonstrate a similar structure to ordinary correlatives:

(4) a. Hindi (in Dikken 2005: 499)

Jiitnii der ho-tii gayii,
 [IP[CP **how-much** late be-HAB go-PF]

utnii(-hii) ThanD baRh-tii gayii.
 [IP **that-much(-only)** cold increase-HAB go-PF]]
 ‘The later it got, the colder it became.’

b. Hungarian (in Dikken 2005: 525)

amennyivel magasabb az apa, **annyival** alacsonyabb a gyerek.
 A-how.much-INST taller the father, **that.much**-INST shorter the child
 ‘The taller the father, the shorter the child.’

c. Russian (in Dikken 2005: 522)

Naskol'ko luchshe mashina, **nastol'ko** ona dorozhe.
by-how-much better car-NOM, **by-that-much** it-F.NOM more.expensive
 'The better the car, the more expensive it is.'

d. Polish (in Citko 2009: 51)

Im więcej się usmiechase, tym lepiej się czujesz
REL more REFL smile **DEM.Instr.** better REFL feel.2sg
 'The more you smile, the better you feel.'

On a par with ordinary correlatives in (3), the preceding clause in the examples in (4) is a left peripheral relative clause and is linked to the demonstrative pro-form in the consequent clause.

Observing the syntactic parallelism in structures like those in (3) and (4) in various languages, including Dutch, German, Russian, Hungarian, and pre-modern English, Dikken (2005, 2006, 2009) treats CCs as a subset of correlatives. The occurrence of comparative words/morphemes is characteristic of this construction. As described in Chapter Two, he proposes a macrostructure for comparative correlatives (Dikken 2005, 2006, 2009), which is schematized in (5):

(5) [_{HEAD-CL} [_{SUB-CL} REL/WH-operator+CPR...]] [_{HEAD-CL} CORREL-PRT+CPR...]]

In the structure of (5), the subclause (i.e. the first clause) contains a relative word or a wh-word followed by a comparative, and the headclause (i.e. the second clause) has a corresponding correlate word or a particle followed by a comparative. Following the

same line of reasoning, Lipták (2009: 19) gives a structure, illustrated in (6), for the English sentence *the more I read, the more I understand*:

(6) [_{correlative clause} [the more]_i I read *t_i*] [_{main clause} [the more]_j I understand *t_j*]

In each clause, the *the*-phrase, as a filler, undergoes A-bar movement to [Spec, CP] and binds a trace in the IP. To account for the fronting operation observed in crosslinguistic data, Dikken (2005) argues for an operator which turns the first clause in the CC into a relative clause and establishes a link with the second clause where a correlative particle must appear²⁸.

In interpretation, Citko (2009) points out a difference in interpretation between CCs and ordinary correlatives: The left peripheral clause in CCs is interpreted as a conditional one while it is a restrictive one in ordinary correlatives. In the examples of (4) and (6), the first clause expresses a condition under which the proposition of the second clause holds true. Therefore, the CC construction is also referred to as a ‘comparative conditional’ in the literature (such as McCawley 1988, Beck 1997, Michaelis 1994, Oda 2008).

²⁸ For English CCs, Iwasaki and Radford (2009) treats the determiner *the* as the degree operator triggering the fronting whereas Dikken (2005) considers *the* to be the Deg⁰ and the fronting is triggered by a null operator (cf. discussion in Section 2.1.2 and 2.1.4 in Chapter Two).

4.3 Correlatives in Chinese

4.3.1 Left-peripheral clauses

In Section 4.1 and 4.2, I have discussed two types of correlatives in natural languages. One is ordinary correlatives, and the other is comparative correlatives. The latter is considered a subset of the former based on parallel syntactic features (Dikken 2005 and Lipták 2009). This section shows that Chinese has both types of correlatives. The examples in (7) instantiates a Hindi-type ordinary correlative:

(7) a. 你喜歡哪一本書，我就送那一本給你

ni xihuan **nǎ** yi-ben shu, wo jiou song **nà** yi-ben gei ni
 you like [**which** one-Cl. book]_i, I then give [**that** one-Cl.]_i to you
 ‘I will give to you whichever book you like.’

Lit. ‘Whichever book you like, I will give that one to you.’

b. 你不喜歡哪一個員工，我就開除那一個

ni bu xihuan **nǎ** yi-ge yuangong, wo jiou kaichu **na** yi-ge.
 you Neg. like [**which** one-Cl. employee]_i, I then fire [**that** one-Cl.]_i
 ‘I will fire whichever employer you don’t like.’

Lit. ‘Whichever employee you don’t like, I will fire that one.’

As in ordinary correlatives, the above two examples show that the preceding clause contains a non-interrogative wh-phrase, which is linked to a demonstrative pronominal in the main clause. The wh-phrases in (7) are not interpreted as an interrogative. Instead, they are interpreted as existential quantifiers, which is a demonstration of quantificational variability effects (QVE). The idea is that a Chinese wh-phrase is a lexically indeterminate category and enters syntax from the lexicon

underspecified for its quantificational force (cf. discussion about QVE in Chinese in Huang et al (2009, Chapter 7), Cheng 2003a and 2003b, Li 1992, Cheng 1992 among others). The *wh*-phrase gets its quantificational force according to which operator it is associated with. In the cases of (7), the *wh*-phrase is considered to be bound by a null operator indicating existentiality²⁹. The demonstrative pronominal in the main clause is a variable and co-indexed with the *wh*-element. The left-peripheral clause is thus semantically linked to the main clause via the demonstrative. In syntax, we can be positive that since there is no gap in the main clause, the left-peripheral clause is not derived by movement.

In addition, the referential *wh*-expression can be topicalized to the sentence initial position. This results in a surface structure resembling that of Hindi correlative, as presented in (8), where the *wh*-expression and the demonstrative are boldfaced:

- (8) a. 哪一本書你喜歡，我就送那一本給你
nǎ yi-ben shu ni xihuan *ec*, wo jiou song **nà** yi-ben gei ni
 [**which** one-Cl. book]_i you like *ec*_i, I then give [**that** one-Cl.]_i to you
 ‘I will give to you whichever book you like.’
 Lit. ‘Whichever book you like, I will give that one to you.’

²⁹ Evidence of such null operators determining the quantificational force of a *wh*-phrase is not clear in Chinese morphology but is clearly demonstrated in Japanese morphology. See the following paradigm of quantificational force realized through suffixes to a *wh*-word in Japanese (Cheng 2003b: 130):

- | | | | |
|-----|--------------|----------------------|---------------------|
| (i) | dare ‘who’ | dare-mo ‘everyone’ | dare-ka ‘someone’ |
| | nani ‘what’ | nani-mo ‘everything’ | nani-ka ‘something’ |
| | doko ‘where’ | doko-mo ‘everywhere’ | doko-ka ‘somewhere’ |

Given the paradigm in (i), Japanese *wh*-words can be considered to consist of an indefinite and a quantifier. The suffix *mo* indicates universal quantification and *ka* indicates existential quantification. It is reasonable to consider that *dare* ‘who’ is made up of the indefinite and a null quantifier/operator, i.e. *dare-Op*, which introduces the interrogative force.

b. 哪一個員工你不喜歡，我就開除那一個

nǎ yi-ge yuangong ni bu xihuan *ec*, wo jiou kaichu **nà** yi-ge
 [which one-Cl employee]_i you Neg. like *ec*_i, I then fire [that one-Cl.]_i
 ‘I will fire whichever employee you don’t like.’
 Lit. ‘Whichever employee you don’t like, I will fire that one.’

In (8a) and (8b), the *wh*-phrase is co-indexed with the empty category in the object position and also with the demonstrative in the main clause. The left peripheral clause is restrictive, and it is connected to the main clause via the demonstrative pronominal.

With respect to interpretation, a difference in definiteness is exhibited between left-peripheral clauses and regular headed relative clauses. Consider the following examples with regular relative clauses:

(9) a. 我會開除你不喜歡的那個(那個)員工

wo hui kaichu ni bu xihuan *ec*_i de (**nà**-ge) yuangong.
 I will fire [[you Neg. like *ec*_i DE Rel.] (**that**-Cl.) employee_i NP]
 ‘I will fire the employee who you don’t like.’

b. 你不喜歡哪一個員工，我就開除那個/*一個

ni bu xihuan **nǎ** yi-ge yuangong, wo jiou kaichu **nà** -ge /***yi**-ge
 you Neg. like [which one-Cl employee]_i, I then fire **that**_i -Cl. /***one**-Cl.
 ‘I will fire whichever employee you don’t like.’
 Lit. ‘Whichever employee you don’t like, I will fire that one.’

In the sentence of (9a), which has a regular head-final relative clause modifying the object *yuangong* ‘employee’, the parentheses indicate that a demonstrative is optionally present in the NP domain. By contrast, in (9b), the asterisk shows that the nominal

variable co-indexed with the *wh*-phrase can only be definite and needs to be in the demonstrative form. This observation is consistent with Lipták's contention (2004, 2009, 2012) that correlatives can be considered generalized quantifiers over maximal entities or individuals in the main clause. Like free relatives in general, correlatives have a characteristic meaning component: They identify a unique or maximal individual or a maximal set of individuals/degrees that have the property denoted by the left-peripheral correlative clause.

Another difference between a left-peripheral correlative clause and a regular headed relative clause lies in their discourse functions. The left-peripheral correlative clause can have an interpretation of 'aboutness'³⁰ while a regular headed relative clause simply modifies and restricts the N^0 . For example, the sentence of (9a) contains a regular head-final relative clause, which modifies the nominal *yuangong* 'employee'. In terms of discourse functions, the 'employee' modified by the relative clause is not meant to be interpreted as the salient topic of the discourse. By contrast, the sentence in (9b) makes the first clause a salient topic, and the second clause is the comment associated to the

³⁰ The aboutness reading of the left-peripheral clause is also observed in Hungarian left-peripheral relative clauses (cf. discussion in Lipták (2004: 288-299)). Two Hungarian examples in (i) and (ii) are given by Lipták (2004) to illustrate the difference in interpretation:

- (i) [Amit Mari tegnap főzött], **azt a levest** nem ette-meg János.
 [REL What-ACC Mari yesterday cooked], **that-ACC the soup-ACC** not ate John
 'As regards the soup Mari cooked yesterday, John didn't eat it.'
- (ii) János azt a levest [amit Mari tegnap főzött] megette.
 John that-ACC the soup-ACC [REL what-ACC Mari yesterday cooked] ate
 'John ate up the soup that Mari cooked yesterday.'

The sentence in (i) has a left-peripheral relative clause whereas in (ii) the relative clause is embedded in the regular position following a nominal. According to Lipták (2004), the difference between (i) and (ii) has to do with discourse function: The left-peripheral relative clause in (i) can be interpreted as an aboutness topic while the regular embedded relative clause in (ii) does not have such a reading at all.

topic. That is, the whole sentence (9b) is meant to talk about an individual the addressee does not like, and the speaker comments that the individual will be fired. This ‘aboutness’ reading is not supported by the regular head-final relative clause in (9a) at all.

4.3.2 Two strategies to realize Chinese CCs

In semantics, comparative correlatives denote a proportional relationship between the degree variable in each clause. Chinese has a type of CCs formed in the same way as the Hindi-type using indefinite wh-phrases (such as the example of (4a) in Section 4.2.1). I therefore refer to this type as ‘wh-type’ CCs throughout the discussion. Consider the following examples:

(10) a. 媽媽買幾個布丁，我就吃幾個(布丁)

Mama mai **jige** buding , wo ?(jiou) chi **jige**

Mom buy **how.many** pudding, I ? (then) eat **how.many**

‘I ate the amount of puddings which Mom bought.’

Lit. ‘Mom bought a certain amount of pudding, I then ate that amount.’

b. 大衛有多生氣 瑪麗*(就)有多高興

Dawei **youdou** shengqi, Mali *(jiou) **youdou** gaoxing

David **how.much** angry, Mary *(jiou) **how.much** happy

‘How angry David is, and that’s the degree how Mary is happy accordingly.’

Lit. ‘David is angry to what degree, Mary is happy correspondingly to that degree.’

c. 瑪麗賺多少錢, 就花多少(錢)

Mali_i zhuan **duoshao** qian, *ec* jiou hua **duoshao** (qian)

Mary_i earn **how.much** money, *pro*_i correspondingly spend **how.much** (money)

‘Mary spends the same amount of money as she earns.’

Lit. ‘Mary earns money of a certain amount, and she spends that amount correspondingly.’

In this type of CCs, the *wh*-phrase, which is non-interrogative, must occur in each clause. As discussed in the previous subsection, the quantificational force of the paired *wh*-words is determined by an abstract operator, which unselectively binds (Heim 1982, Pesetsky 1987, Cheng 2003a and 2003b) the two *wh*-variables in each clause and indicates the co-varying values of the two variables. The nature of unselective binding will be further explicated in Section 4.5.

The second strategy to realize CCs in Chinese is to use the lexical word *yue* in each clause, as English uses *the* in CCs. I will refer to this type as ‘*yue*-type’ CCs.

Examples are given in (12):

(11) a. 媽媽買越多布丁, 我(就)吃越多

Mama mai **yue** dou buding, wo (jiou) chi **yue** dou (buding)

Mom buy [_{DegP} **YUE** many pudding], I (then) eat [_{DegP} **YUE** many (pudding)]

‘The more pudding Mom buys, the more (pudding) I eat.’

b. 大衛越生氣, 瑪麗(就)越高興

Dawei **yue** shengqi, Mali (jiou) **yue** gaoxing

David [_{DegP} **YUE** angry], Mary (jou) [_{DegP} **YUE** happy]

‘The angrier David is, the happier Mary is.’

Lit. ‘David is angry to a certain degree, and Mary is correspondingly happy to

that degree.’

c. 瑪麗賺越多錢, 就花越多

Mali zhuan **yue** duo qian, *ec* jiou hua **yue** duo

Mary_i earn [_{DegP} **YUE** much money, *pro*_i correspondingly spend [_{DegP} **YUE** much]

‘The more money Mary earns, the more she spends.’

As mentioned in Chapter Three, when used outside of the CC, the lexical word *yue* occurs as a bound morpheme in compound words, meaning ‘cross(ing)’. The paired occurrence of *yue* are used uniquely in CCs. Similar lexical idiosyncrasy is also observed in CCs of other languages (cf. the typological differences discussed in Chapter Two).

As presented in Chapter Two and Section 4.2 in this Chapter, the semantic dependence in CCs is denoted in some languages by using a demonstrative in the second clause, and results in a surface form of *how much...that much....* (for example, Hindi, Hungarian, Greek etc.). In Chinese, although the paired wh-words or *yue*-constituents in CCs are morphologically and orthographically identical, the degree/ amount denoted by the second wh-variable or the second *yue*-variable hinges on that of the first wh-variable or the first *yue*-variable. Therefore the second wh-word or *yue*-constituent is considered to have the same function as a demonstrative³¹.

³¹ One thing to note about the syntactic realization of the two types of CCs pertains to occurrence of the complementizer *rugo* or *yaoshi* ‘if’. Even though the conditional reading is shared by both types of CCs, the complementizer *rugo* or *yaoshi* ‘if’ is optionally allowed in the *yue*-type but forbidden in the wh-type, as illustrated in the following examples:

(i) a. (如果/要是)瑪麗賺越多錢, 她就花越多

(*rugo/ yaoshi*) Mali_i zhuan **yue** duo qian, ta_i jiou hua **yue** duo

if Mary_i earn **YUE** much money, she_i then spend **YUE** much

‘The more money Mary earns, the more she spends.’

4.4 Wh-in-situ and DegP-in-situ

The two sets of morphology ('wh-word....wh-word...' vs. '...yue....yue...') used to realize Chinese CCs are in complementary distribution in the DegP. Reconsider the examples in (10c) and (11c), repeated below in (12) below. The asterisk in (12c) indicates that the *wh*-phrase *duoshao* and the *yue*-phrase are in complementary distribution:

(12) a. 瑪麗賺多少錢, 就花多少(錢)。

Mali_i zhuan **duoshao** qian, *ec* jiou hua **duoshao** (qian).

Mary_i earn [**how.much** money], *pro*_i correspondingly spend [**how.much** (money)]

'Mary spends the same amount of money as she earns.'

Lit. 'Mary earns money of a certain amount, and she spends that amount correspondingly.'

b. 瑪麗賺越多錢, 就花越多。

Mali_i zhuan **yue** duo qian, *ec* jiou hua **yue** duo.

Mary_i earn [YUE much money], *pro*_i correspondingly spend[YUE much]

'The more money Mary earns, the more she spends.'

'If Mary earns more money, she spends more.'

b. (*如果/*要是) 瑪麗賺多少錢, 她就花多少

(**rugo*/**yaoshi*) Mali_i zhuan **duoshao** qian, ta jiou hua **duoshao**
(*if) Mary_i earn **how.much** money, she_i then spend **how.much**

'Mary spends the amount of money which she earns.'

'If Mary earns a certain amount of money, she spends that amount.'

I have no explanation for this puzzle and will leave it for future research. A possible explanation is that perhaps *rugo* is the overt realization of the operator, barred in the *wh*-type because in that case they are bound by a *wh*-operator.

c. 瑪麗賺多少(*越多)錢, 就花多少(*越多)(錢)。

Mali_i zhuan **duoshao** (*yue duo) qian,

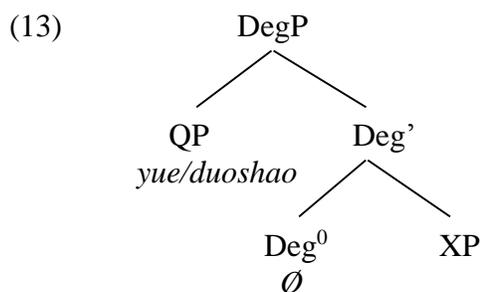
Mary_i earn [**how.much** (*YUE much) money],

ec jiou hua **duoshao** (*yue duo) (qian).

*pro*_i correspondingly spend [**how.much** (*YUE much) (money)]

‘Mary spends the same amount of money as she earns.’

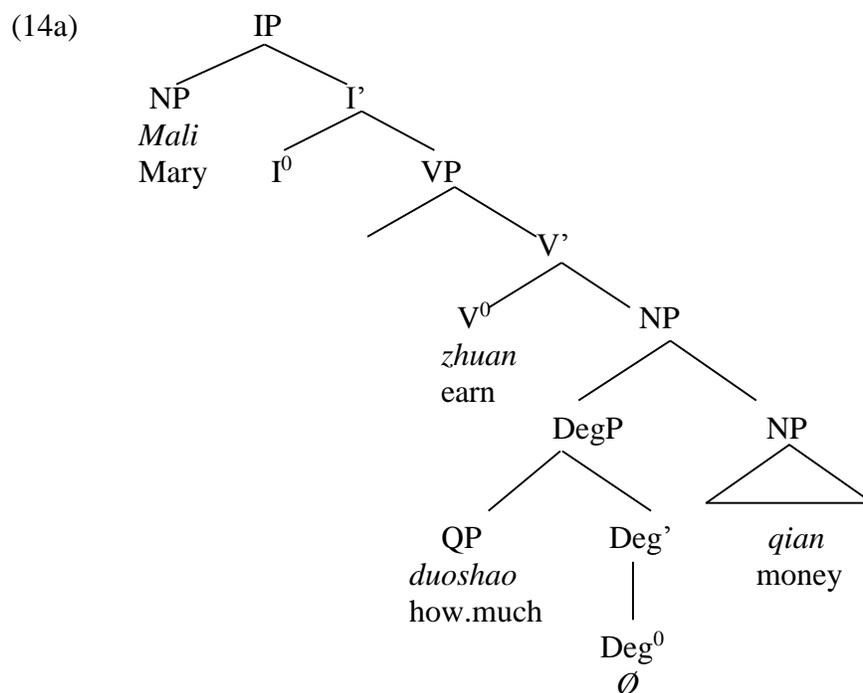
Assuming the internal structure of the DegP proposed by Kennedy (1997), I propose that both *doushao* ‘how much’ and *yue* project a QP, base-generated in [Spec, Deg], as shown in (13):



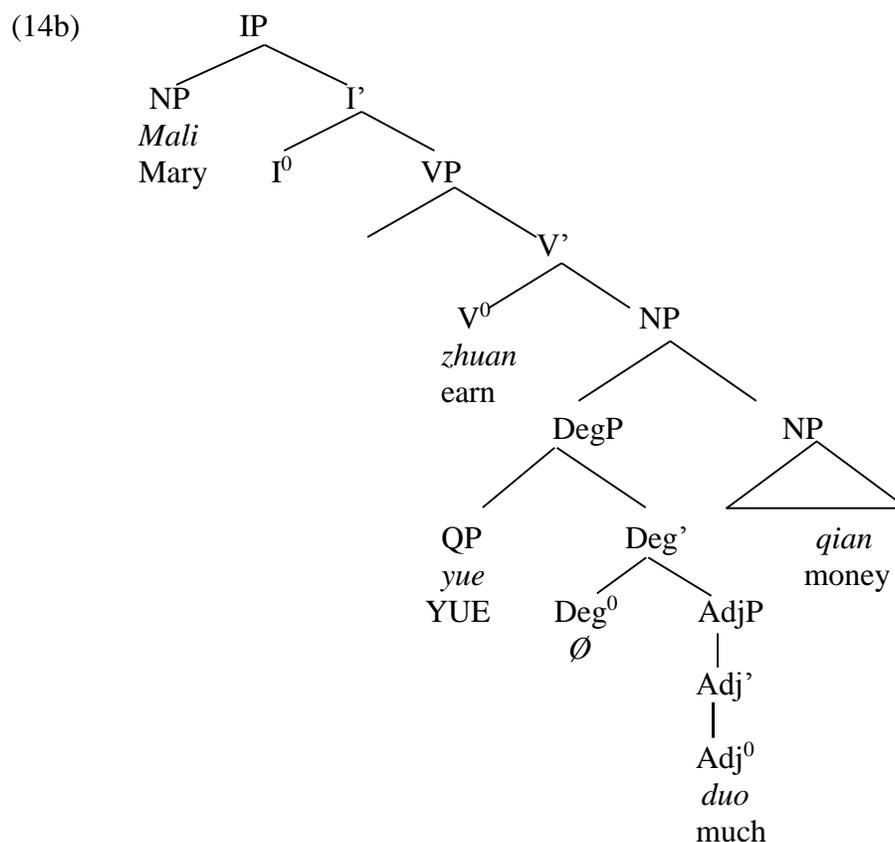
Both Kennedy (1997) and Dikken (2005) suggest the Deg⁰ is realized as the English comparative morpheme *er/more*³². Readers might consider the lexical item *yue* to be the equivalent of the English comparative morpheme *er* or *more*. This is not the case. As shown in Section 3.1 of Chapter Three, the *yue* itself does not indicate comparison. It cannot be attached to an adjective/ adverb or any other expression to form a regular

³² While Kennedy (1997) and Dikken (2005) both analyze the English comparative morpheme *more/-er* as the head of DegP, Culicover and Jackendoff (1999) and Iwasaki and Radford (2009) analyze *more/ -er* the head of QP.

comparative. I therefore propose that the Deg⁰ is null in Chinese CCs. The modified XP may be an AdjP, AdvP or a VP. The first clause in the example of (12a) is illustrated in (14a), and the same structure applies to the second clause, which is omitted here:



By contrast, the first clause in the example of (12b) has the structure of (14b), where readers can see a tree of a *yue*-DegP in parallel to the *duoshao*-DegP in (14a):

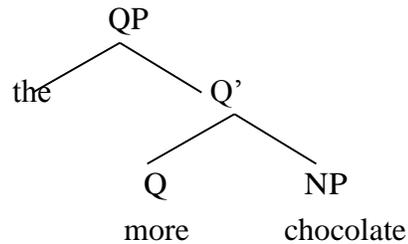


The next question raised here pertains to the in-situ property of the DegP. Unlike its counterpart in English, the DegP in Chinese CCs remains in situ. As described in Chapter Two, crosslinguistic data show typological differences: Languages such as Chinese, Thai, Vietnamese, and Indonesian have the DegP stay in situ whereas languages such as English, Greek, Polish, Hindi, and Hungarian among others have the DegP moved to the left periphery. The following section discusses how A-bar movement is triggered to move the DegP in English CCs proposed in earlier studies, and then I will explicate why such movement is absent in Chinese CCs.

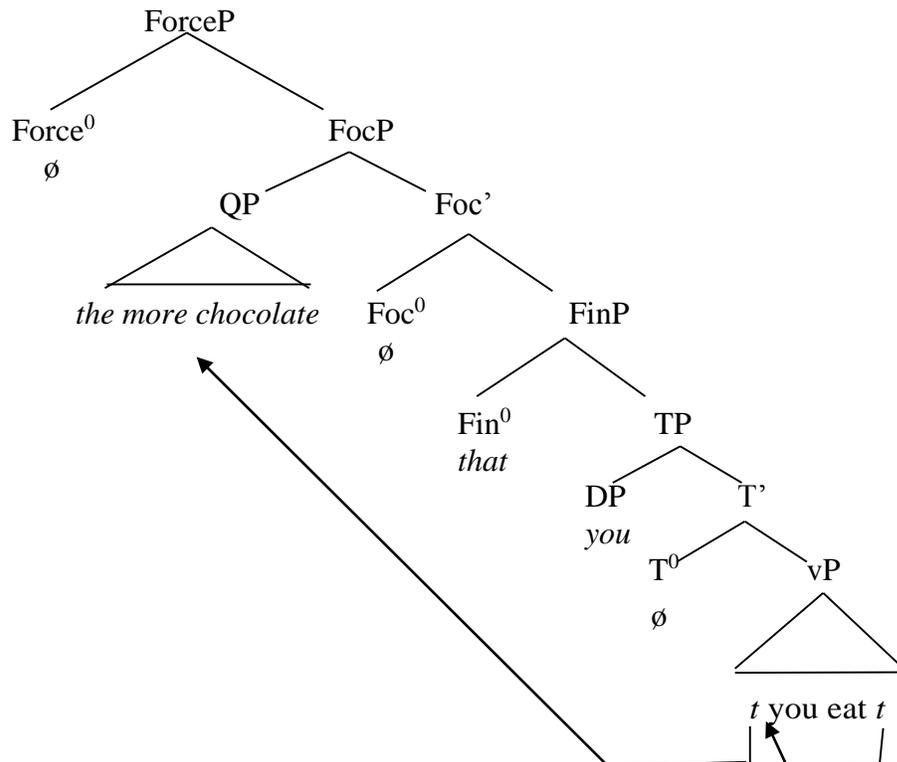
4.4.1 A-bar movement or not?

In analyzing English CCs, Iwasaki and Radford (2009) propose that the sentence-initial *the*-constituent in both clauses is a QP, with the comparative morpheme *more/er* being the head, and the QP undergoes A-bar movement out of the IP to the specifier of the FocusP. The internal structure of the QP and the clausal structure (which is applied to either clause) are repeated below in (15) and (16):

(15) Iwasaki and Radford (2009)



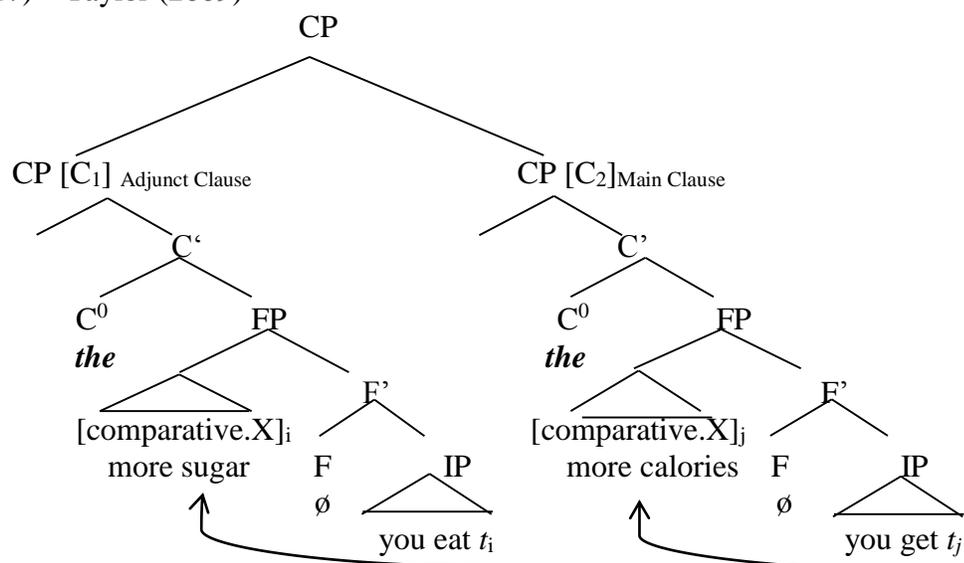
(16)



For Iwasaki and Radford (2009), the A-bar movement is triggered by the degree operator *the*, which pied-pipes the subordinate materials, on a par with wh-operator movement.

Taylor (2009) also posits an A-bar movement of the comparative constituent to the specifier of a functional projection (FP), as illustrated in (17):

(17) Taylor (2009)



Taylor (2009) suggests that semantic features of the functional head must be checked with the DegP, the head of which is the comparative morpheme. Therefore the A-bar movement in Taylor's analysis is triggered by the need for feature checking.

On the other hand, in the case of Chinese CCs, neither the wh-word nor the *yue*-constituent undergoes a similar A-bar movement. Since Chinese is a wh-in-situ language, it is reasonable to hypothesize that the in-situ DegP may reflect the wh-in-situ nature of Chinese. This is what to be addressed in the following section.

4.4.2 In-situ indefinites

Since the work of Huang (1982), a general assumption about wh-in-situ is that wh-movement occurs at LF. However, many scholars have argued that Chinese wh-in-situ does not always implicate covert movement at LF. The idea that Chinese wh-words should be treated as indefinites has been much explored in the literature (cf. Cheng 1991; Li 1992; Aoun and Li 1993b; Huang and Cheng 1996; Cheng and Rooryck 2000; Cheng 2003a, 2003b; Tsai 1994b among others). In this line of research, wh-words in Chinese are regarded as polarity items, that is, indefinite NPs which do not have inherent quantificational force but which obtain their quantificational force through an implicit external operator that licenses and binds them. Two sets of examples are given below to illustrate interrogative and non-interrogative indefinite wh-in-situ, with relevant parts in boldface:

(18) a. 他買了什麼?

ta mai-le **sheme**?

he buy-ASP **what**

‘**What** did he buy?’

b. 他中午沒吃什麼

ta chungwu mei chi **sheme**.

he at.noon Neg. eat **what**

‘He did not eat **anything** at noon.’

(19) a. 誰買了這張票(呢)?

shei mai-le zhe-chang piao (ne)?

Who buy-Asp. this-Cl. ticket (Q.part.) ?

‘**Who** bought this ticket?’

b. 誰都可以為社會做點什麼

shei dou keyi wei shehui zuo dian **sheme**.

who all can for society do a.bit **something**

‘**Everyone** can do **something** for society.’

As mentioned above in Section 4.3.1, the wh-in-situ in (18) and (19) demonstrate quantificational variability effects (QVE). To be interpreted, a wh-element needs a commanding licenser, and felicitous interpretations of a given wh-element hinge on the property of the licenser/binder. When a wh-element is bound by a question operator, it is interpreted as an interrogative, as illustrated above in (18a) and (19a). If bound by a non-overt universal or existential operator, such as the sentences in (18b) and (19b), it gets universal or existential quantification. The schema of (20) below illustrates the cases in which a wh-element is licensed and bound by a question operator (abbreviated as Qu) (cf. detailed discussion in Cheng 2003a and 2003b as well as Chapter 7 on question formation in Huang et al (2009):

(20) [CP Qu_i [IP ... wh_i ...]]

What the schema (20) tells us about Chinese wh-in-situ is that the binding between the implicit question operator (or other quantificational operators) and the wh-element occurs

in the syntax. That is, each *wh*-element enters from the lexicon ‘underspecified for its quantificational force’ (Huang et al 2009: 276).

Tsai (1994a) suggests that English *wh*-elements also exhibit similar quantificational variability effects (QVE) by being associated with different operators. However, as illustrated in (20) above, QVE occurs at the level of syntax in Chinese, whereas English QVE occurs in lexicon. A paradigm demonstrating English QVE is given in (21):

(21) a. Universal	b. Existential	c. Interrogative
<i>whoever</i>	<i>somewhat</i>	<i>who</i>
<i>whatever</i>	<i>somewhere</i>	<i>what</i>
<i>wherever</i>	<i>anywhere</i>	<i>where</i>
<i>whenever</i>	<i>nowhere</i>	<i>when</i>
<i>however</i>	<i>somehow</i>	<i>how</i>

When the *wh*-element is bound by the operator *ever*, it gets the force of universal quantification. Similarly, when bound by the operator *some*, it gets the force of existential quantification. Accordingly, it is reasonable to assume that in (21c) there is a null question operator associated with the *wh*-element to license an interrogative quantificational force.

On a par with the hypothesis that indefinite *wh*-elements are licensed and bound by an abstract operator, I propose that in the two types of Chinese CCs, there exists a covert CORRELATIVITY OPERATOR (abbreviated as Cor.-OP) binding the variable introduced by the *wh*-word or the lexical word *yue* in each clause. The lexical item *yue* is

analyzed as an indefinite degree quantifier³³ whose quantificational force is contributed to by the abstract Cor.-OP. The operator-variable binding relationship is schematized in (22):

$$(22) \text{ Cor.-OP}_{i,j} [\text{CP } [\text{CP } \dots [\text{DegP } yue_i \dots]], [\text{IP } \dots [\text{DegP } yue_j \dots]]]$$

The co-indexation in (22) shows that the Cor.-OP binds the two variables introduced by *yue* in each clause at the same time. The covariance of the value (x) and (y) of the *yue*-variable contained in each DegP is represented as follows:

$$(23) \forall_x \forall_y [\text{ the value of } x \text{ increases}] \rightarrow [\text{ the value of } y \text{ proportionally changes too}]$$

When we juxtapose the binding represented in (20) and that in (22), we notice a salient difference between them: In the former, an abstract question operator binds a *wh*-in-situ, while in the latter an abstract correlativity operator binds two indefinite variables introduced by *yue*. An inquiry is raised here: What evidence is there for the possibility that an abstract operator can bind two indefinite variables simultaneously? Are there other constructions which implicate an (implicit) operator binding more than one variable? The following section will show that the answer to these two questions implicates the notion of unselective binding. It will be demonstrated that indefinite

³³ As discussed in Section 2.2.3 of Chapter Two, Kapetangianni and Taylor's (2009a) explication on *oso*, a non-interrogative *wh*-item in Greek, lends an essential support to my treatment of *yue* in Chinese CCs as an indefinite non-interrogative measure expression.

degree variables in Chinese CCs are unselectively bound in the same way as indefinites in donkey sentences are bound.

4.5 Unselective binding

The discussion in the above section indicates that Chinese indefinite wh-words behave like indefinites and the appropriate interpretations of a given wh-word hinges on the property of its binder. This particular binding relationship between an abstract operator and indefinite variables is reminiscent of ‘unselective binding’, which was first explicated in Lewis (1975) and further developed in Heim (1982).

4.5.1 Unselective binders in Lewis (1975)

Quantifiers such as *every*, *any*, or *some* in English are ‘selective’. They bind an associated variable x and stop there while other variables that may occur free in their scope are left free and are bound by other quantifiers (Lewis 1975:6). Consider the phrase *every boy* in the sentence “Mary saw every boy.” *Every boy* is raised at LF and adjoins to IP via Quantifier Raising (May 1997). The trace it leaves is the variable x , and the raised *every boy* is said to binds x . Such a binding relationship is ‘selective’ because the quantifier binds only one variable that is co-indexed. In contrast to familiar selective quantifiers, a class of English adverbs such as *always*, *usually*, *never*, or *sometimes* are treated as ‘unselective’ quantifiers that can bind more than one variable in their scope. Lewis (1975:6) gives such illustrations as (24a) and (24b) to explain his contention:

- (24) a. *Sometimes*, it happens that *x* sells stolen goods to *y*, who sells them to *z*,
 who sells them back to *x*.
- b. *Usually*, *x* reminds me of *y* if and only if *y* reminds me of *x*.

Lewis argues that the adverbs *sometimes* and *usually* in (24) are interpreted in a non-temporal way, for they quantify not over times, but over cases. The sentence in (24a) is true iff *some* triple of persons (*x*,*y*, *z*) satisfies the open sentence after *sometime*.

Likewise, (24b) is true iff *most* pairs of persons satisfy the open sentence after *usually*.

Lewis suggests that the ‘adverbs of quantification’ such as *sometimes* and *usually* in (24) are operators and simultaneously bind all the variables in their scope unselectively. In other words, ‘unselective quantifiers’ bind not just one particular variable, but multiple variables simultaneously (cf. detailed discussion about English adverbs of quantification in Lewis 1975 as well as reviews in Pesetsky 1987, Authier 1989, Cheng and Huang 1996).

4.5.2 Unselective binding in Heim (1982)

Heim (1982) draws on Lewis's (1975) analysis of unselective quantifiers to account for the interpretation of indefinites. Heim (1982: 84) argues that indefinites do not have quantificational force of their own, but "are rather like variables, which may get bound by whatever quantifiers is there to bind them." Accordingly, Heim's analysis of donkey sentences allows the two indefinites to be unselectively bound by whatever adverbs of quantification are available in the linguistic context, as represented in (25):

(25) a. If a man owns a donkey, he *always* beats it.

b. Always ((x is a man \wedge y is a donkey \wedge x owns y), x beats y)

In other words, the indefinites *a man* and *a donkey* exhibit ‘quantificational variability effects’ depending on the various adverbs of quantification they occur with. This is further illustrated in (26)-(28), in which the interpretation is given in the (b)-line (Huang and Cheng 1996: 124):

(26) a. **Always**, if a farmer owns a donkey, he beats it.

b. **All** farmers (x) and donkeys (y) are such that if x owns y, then x beats y.

(27) a. **Usually**, if a farmer owns a donkey, he beats it.

b. **Most** farmers (x) and donkeys (y) are such that if x owns y, then x beats y.

(28) a. **Sometimes**, if a farmer owns a donkey, he beats it.

b. **Some** farmers (x) and donkeys (y) are such that if x owns y, then x beats y.

When there is no overt quantifier, such as the example in (29) below, Heim argues that the quantificational force is contributed by a morphologically unrealized ‘necessity operator’, i.e. *necessarily*, which gives a universal interpretation of the sentence (Heim 1982: 86):

(29) a. If a man owns a donkey, he beats it.

b. **Necessarily** ((x is a man \wedge y is a donkey \wedge x owns y), x beats y)

The above discussion indicates that in Heim’s analysis, indefinites such as *a man* and *a donkey* as well as their associated pronouns are all treated as variables, bound by an

available adverb of quantification³⁴. The indefinite's quantificational force is therefore determined by a quantifier or operator available in the relevant linguistic context.

4.5.3 Unselective binding in Chinese bare conditionals

In Chinese syntax, the notion of unselective binding is applied to account for 'bare conditionals' by Huang and Cheng (1996) and Huang et al (2009, Chapter 9). Two examples of bare conditionals are given below (cited from Huang et al (2009: 367)):

(30) a. 誰先來, 誰(就)先吃

shei xian lai, **shei** (jiou) xian chi.

who_i first come, **who_i** (then) first eat

'If x comes first, x will eat first.'

(Whoever comes first eats first.)

b. 誰先進來, 我(就)先打誰

shei xian jinlai, wo jiou xian da **shei**

who_i first enter, I (then) first hit **who_i**

'If x enters first, I will then hit x first.'

(I will beat up whoever comes in first.)

A bare conditional does not have an overtly realized complementizer *ruguo* or *yaoshi* 'if', as suggested by the name. As shown in the English translation in (30), these sentences

³⁴ As Huang et al (2009: 365) note, although the mechanism of unselectively binding can nicely capture the phenomenon of quantificational variability exhibited in indefinites in so-called donkey sentences, it is not unproblematic in analyzing the donkey pronoun. Controversy lies in the binding and coindexation between the indefinite NP and its associated donkey pronoun. This issue is not to be addressed in this dissertation since it is beyond the scope of our discussion about comparative correlatives. Readers are referred to detailed explication in Huang et al (2009: 365-371).

have a conditional reading, which is indicated by the optional occurrence of the word *jiou* ‘then’³⁵. The key feature of bare conditionals in (30) is the occurrence of two identical *wh*-words in each clause. They are identical both in morphology and in reference. The *wh*-word in the second clause is an anaphoric element to the *wh*-word in the first clause.

As discussed previously, in-situ *wh*-words in Chinese are generally assumed to be indefinites licensed and bound by an implicit external operator³⁶. With this assumption, Huang and Cheng (1996) propose that the *wh*-indefinites in bare conditionals are unselectively bound by an abstract necessity operator (abbreviated as NEC) in the sense of Heim (1982). The schema in (31) illustrates the binding relationship for the sentence in (30b):

- (31) NEC_i **shei**_i xian jinlai, wo xian da **shei**_i
who_i first enter I first hit **who**_i
 ‘If x enters first, I will then hit x first.’

³⁵ Note that the bare conditionals we are dealing with here are distinguished from regular *if*-conditionals. An example of regular Chinese *if*-conditional introduced by *ruguo* ‘if’ is given in (i):

- (i) 如果誰先來, 他/就先吃
ruguo shei xian jinlai, ta / nage ren jiu xian chi.
if who_i first enter he_i / that person then first eat
 ‘If someone comes in first, then he / that person will eat first.’

Except the occurrence/ absence of the complementizer *ruguo* or *yaoshi* ‘if’, there are other properties that distinguish bare conditionals and regular *if*-conditionals. They are beyond the scope of our current discussion, but readers are referred to detailed explication in Huang and Cheng (1996) as well as Huang et al (2009: 367-370).

³⁶ In addition to works on Chinese *wh*-in-situ by scholars such as Cheng (1991), Li (1992), Aoun and Li (1993b), Huang and Cheng (1996), Cheng and Rooryck (2000), Cheng (2003a, 2003b), Tasi (1994b) among others, readers are also referred to Pesetsky (1987) for discussion of *wh*-in-situ juxtaposed with debates over unselective binding.

Note that in (31), the two identical wh-indefinites *shi* ‘who’ do not c-command each other. The co-reference is established through the implicit NEC operator, which binds directly the two wh-variables in each clause.

The above discussion about the notion of unselective binding and its application in explaining Chinese bare conditionals sheds light on my analysis of the interpretation of the DegP in Chinese CCs. Reconsider the two types of Chinese CCs in (32), where (32a) represents the wh-type and (32b)³⁷ represents the *yue*-type:

(32) a. 瑪麗賺多少錢, 就花多少(錢)。

Mali zhuan **duoshao** qian, *ec* jiou hua **duoshao** (qian).

Mary_i earn [_{DegP} **how.much** money], *pro*_i accordingly spend [_{DegP} **how.much** (money)]

‘Mary spends the amount of money which she earns.’

Lit. ‘Mary earns money of a certain amount, and she spends that amount accordingly.’

b. 瑪麗賺越多錢, 就花越多

Mali_i zhuan **yue** duo qian, *ec* jiou hua **yue** duo (qian)

Mary_i earn [_{DegP} **YUE** much money], *pro*_i accordingly spend [_{DegP} **YUE** much(money)]

‘The more money Mary earns, the more she spends.’

³⁷ Readers may notice that the example (32a) resembles the bare conditional examples in (30) on the surface since they all consist of two identical wh-elements in each clause and have conditional readings. However, the proportional reading, that is, the covariance in values of the two wh-variables is unique in the CC, but not perceived in the bare conditional. Therefore, I still maintain the stance to categorize sentences such as (32a) that denote a proportional reading as CCs.

On a par with the *wh*-words in bare conditionals, each DegP in the examples in (33), either the *wh*-type or the *yue*-type, is proposed to be taken as an indefinite degree expression and function as a variable at LF. Although the DegP in each clause does not c-command each other, there exists a co-variance relationship between the two variables. The mechanism of unselective binding offers a plausible account for this co-variance relationship. In the following two Chapters, I will only focus on the *yue*-type CCs, but the proposed analysis is also applicable to the *wh*-type.

4.5 A summary of this chapter

In this chapter, I have shown that the structure of CCs resembles that of ordinary correlatives and therefore CCs are analyzed as a subset of ordinary CCs. I also show that Chinese has two types of CCs: One is the *wh*-type CC and the other is the *yue*-type CC. In both types, the DegP stays in situ. Referring to quantificational variability effects (QVE) in Chinese syntax, I claim that the in-situ DegP is an indefinite element and functions as a variable at LF on a par with an indefinite *wh*-in-situ expression. To account for the co-variance relationship between the two DegP variables, I propose that the indefinite DegP in each clause of CCs is unselectively bound by an abstract correlativity operator.

CHAPTER FIVE

STRUCTURE OF CHINESE *YUE*-CONSTRUCTIONS

5.0 An overview

The central function of this chapter is to present the macrostructure of the Chinese CC construction as a functional projection of a null Focus⁰. Based on Tsao and Hsiao's (2002) initial work on the Chinese CC construction, the analysis that I propose retains a key insight of their analysis--- the property of topic prominence in Chinese. However, the analysis proposed by Tsao and Hsiao does not account for the obligatory co-occurrence of *yue*₁ and *yue*₂, nor does the structure in their analysis explain how the correlation introduced by *yue*₁ and *yue*₂ arises. In the alternative analysis proposed here, Rizzi's (1997, 2004) cartographic approach to a split CP and earlier studies on Chinese information structure in the left periphery (Grade and Paul 1996; Paul 2005; Badan 2008a and 2008b; Constant and Gu (2010) are made use of.

This chapter consists of four sections. Section 5.1 addresses the role of the lexical word *yue* and the internal structure of the DegP. In addition, the two degree variables constituted by *yue*₁ and *yue*₂ and the predicate they modify will be presented showing how they are bound by a null operator. In Section 5.2, I will first briefly review earlier studies on the macrostructure of the CC construction, particularly the derivation of the first clause. Problematic issues will be examined, too. In Section 5.3, an analysis in an earlier study by Tsao and Hsiao (2002) on the Chinese CC-construction is discussed. The

alternative proposal will be presented in Section 5.4, in which I will show that Chinese CC construction is projection of a FocusP.

5.1 The role of *yue*

This section examines the status of the syncategorematic lexical word *yue* in the DegP³⁸. It is argued that *yue*₁ functions as a quantifier, realized in the position of [Spec, DegP] and takes scope over the intermediate projection of Deg-bar. There is a correlation between the two degree variables constituted by the DegP in each clause; that is, the degree in the first clause (hereafter the *yue*₁-clause) correlates with the degree in the second clause (hereafter the *yue*₂-clause). I will propose that the two degree variables introduced by *yue*₁ and *yue*₂ are unselectively bound by a null CORRELATIVITY OPERATOR, which binds from a higher position in the tree structure.

5.1.1 YUE is an indefinite degree quantifier in the DegP

As explained in Section 3.1, the lexical word *yue* is not analyzed as the equivalent of the English comparative morpheme *er* or *more*. The morpheme *gen* or *(bi)jiao*, but not *yue*, are more likely candidates for the direct equivalent of English *er/ more*³⁹. The lexical word *yue* is uniquely and obligatorily used in pairs in Chinese CC constructions. It has

³⁸ Corver (1991) presents evidence from Dutch and English data supporting the existence of a Degree Phrase structure. Readers are also referred to Lin (2009) and Xiang (2003, 2005) for Chinese comparatives and the DegP.

³⁹ The structure of regular Chinese comparatives is beyond the scope of this study and is not addressed here. Readers can refer to (Liu 1996 ; Xiang 2003; Lin 2009; Liu 2011) for relevant discussion on Chinese regular comparatives and (Liu 2010) for evidence of the DegP projected by an overt positive morpheme *hen* 很 ‘very, in Mandarin Chinese.

scope over the XP to its right. With regard to its overall semantic contribution, we can say that *yue* denotes an increasing degree⁴⁰, which accounts for why this construction lacks an overt comparative morpheme. That the morpheme *yue* introduces degrees can be tested by replacing the *yue*-constituent with a wh-measurement-expression to form a question⁴¹. Consider the following example, with the relevant part being boldfaced:

(2) A: 我要練習多久 技術才會更好?

wo yao lianxi **duo-jiou**, jishu cai hui gen-hao?

I need.to practice **how-long**, skill then will COM-good

‘How long do I need to practice so that my skills will get better?’

B: 你練習越久, 技術就會越好。

Ni lianxi **yue jiou**, jishu jiou hui yue hao.

you practice **YUE long**, skill then will YUE good

‘The longer you practice, the better your skills will be.’

⁴⁰ It is observed that in Thai CCs, the lexical item *ying* behaves similarly to Chinese *yue*. Leung (2004: 211) proposes that *ying* in Thai CC constructions inherits an increasing degree, and this explains why a comparative morpheme is absent in Thai CCs. By contrast, *the* in the English CC construction does not explicitly express the directionality of comparison, and therefore the comparative morpheme *more/-er* is required.

⁴¹ The replacement is also observed in English CC constructions (Culicover and Jackendoff 1999: 550) The following is the English example given by Culicover and Jackendoff :

(i) ‘How much harder has it rained, the faster a flow you see in the river?’

(cf. ‘The harder it has rained, the faster a flow you see in the river.’)

Similarly, the morpheme *ying* in Thai CC constructions is also analyzed as a degree morpheme and can be replaced with a wh-word *thaw-rai* to form a question. The example given by Leung (2004: 211-212) is reproduced below:

(ii) a. Khaw khít wâa khun **ying** khayan, khaw **ying** diicai
 3sg think that you **YING** hardworking 3sg **YING** happy
 ‘The more hardworking he thinks you are, the happier he is’
 b. khun khayan **thaw-rai**, khaw ca **ying** diicai?
 you hardworking **much-how**, he will **YING** happy
 ‘How much more hardworking you are, the happier he is?’

(6) a. **By** how much the better than my word I am, **by** so much shall I

falsifie mens hope. (Shakespeare, *Henry the Fourth*; 16th century)

b. **By** how much the better man you are yourself, **by** so much the more will you
be inclined to believe me. (Fielding, *Tom Jones*; 19th century.)

Russian demonstrates a more complete DegP than Modern English, with the prepositional measure phrase projected (taken from Dikken 2005:522):

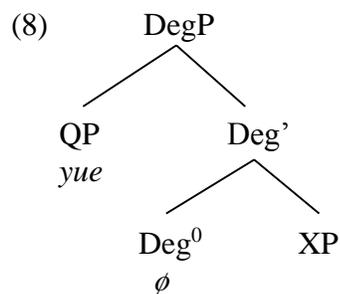
(7) Russian

Naskol'ko luchshe mashina, **nastol'ko** ona dorozhe.

by-how-much better car-NOM **by-that-much** it-F.NOM more.expensive

'The better the car, the more expensive it is.'

Compared with the Russian example in (7), Chinese has a relatively simple DegP structure in the CC construction. Since *yue* denotes an increasing degree, its role is considered to be an INDEFINITE DEGREE QUANTIFIER which functions as a variable: it is an indefinite variable licensed and bound by a null operator (the nature of the operator will be explicated in a latter section). For the internal structure of the DegP, I propose (in Section 4.4) that *yue* projects as a QP in the specifier of the DegP and c-commands the predicate XP to its right. The proposed structure of DegP in Section 4.4 is reproduced below in (8):



As I discussed above, *yue* itself does not function as a comparative morpheme as English *er* or *more* does. Therefore I conclude that the head Deg⁰ is null, taking a predicate XP as its complement⁴². An example and its structure is given in (9):

(9) 天氣越熱,電費越高。

[_{CP} [_{IP} tienqi [_{I'} [_{VP} [_{V'} [_{DegP} [**QP yue**] [_{Deg'} Deg⁰ [_{AP} re]]]]]],
 weather YUE hot,

[_{CP} [_{IP} dian-fei [_{I'} [_{VP} [_{V'} [_{DegP} [**QP yue**] [_{Deg'} Deg⁰ [_{AP} gao]]]]]]]]].
 electricity-fee YUE high

‘The hotter the weather is, the higher the electricity fee is.’

The DegP in English CC constructions is argued to undergo overt A-bar movement as argued by Taylor (2009) and Iwasaki and Radford (2009). By contrast, the Chinese DegP stays in situ. In the following section, I will argue that the in-situ Deg phrases in the two clauses constitute variables at LF, which are bound by a null operator from a higher position.

⁴² In the proposed structure of the DegP, I assume the Functional AP Hypothesis, according to which an AP is embedded (Corver 1991, Lin 2009 among others).

5.1.2 A correlativity operator binding *yue*-variables

The DegP in the *yue*₁-clause⁴³ and the DegP in the *yue*₂-clause both constitute degree variables at LF. The relationship between the two degree variables is subject to a correlation:

- (10) For a degree variable *x* introduced by the *yue*₁-constituent and a degree variable *y* introduced by the *yue*₂-constituent in Chinese CC constructions, when the value of *x* changes, the value of *y* proportionally changes at the same time.

Therefore, a conditional reading is obtained even though an overt complementizer *ruguo* ‘if’ is absent⁴⁴ in the *yue*₁-clause, as shown in (11):

- (11) 天氣越熱,電費越高。

(**ruguo**) tienqi yue re, dian-fei yue gao.

if weather YUE hot, electricity-fee YUE high

‘The hotter the weather is, the higher the electricity fee is.’

Or ‘If the weather is hotter, the electricity fee is higher.’

Liu (2008) points out that in addition to the conditional component, Chinese CC constructions can have a universal interpretation. For the above sentence in (11), a universal interpretation of the conditional is obtained:

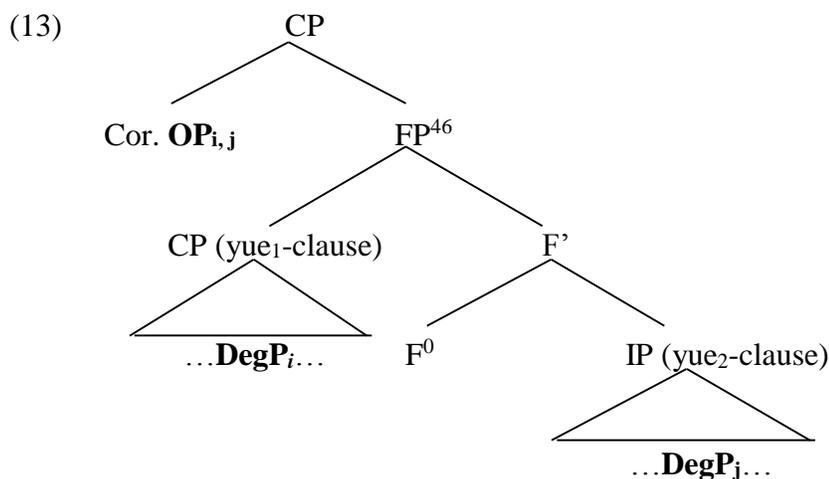
- (12) **Always**, if the weather is hot to a higher degree, the electricity fee is likewise raised to a higher degree.

⁴³ For convenience of explication, the term ‘*yue*₁-clause’ is used to refer to the first clause in Chinese CCs and ‘*yue*₂-clause’ to the second clause.

⁴⁴ As reviewed in Chapter Two, conditional readings are common, if not default, in CC constructions of various languages (McCawley 1988; Culicover and Jackendoff 1999; Leung 2004; Dikken 2005; Liu 2008).

This universal interpretation complies with Beck's (1997) contention that universal quantification is a default in CC constructions (cf. Oda 2008 for detailed discussion).

In addition to the conditional component and universal reading in interpretation, the unique correlation between the two *yue*-variables needs to be explained in the derivation. As presented in Section 4.4 in Chapter Four, I claim that a null operator (hereafter OP), which denotes *correlativity*, occurs in the left periphery in the Chinese CC constructions and it binds the two DegPs⁴⁵ from [Spec, CP]. The structure of binding is illustrated in (13):



The *correlativity operator* is proposed to unselectively bind the two DegPs in a similar way as a variable in a donkey sentence is unselectively bound. The operator-variable

⁴⁵ The two Deg phrases forms two variables. According to May's (1977, 1985) study of quantification within the Government and Binding tradition (Chomsky 1981, 1986), variables need to be bound. May's study highlights the following principles governing scope (c.f. discussion in Dayal (2013)):

a. The condition on Quantifier Binding: every quantified phrase must properly bind a variable.
 b. Condition on Proper Binding: Every variable in an argument position must be properly bound.

⁴⁶ The FP here represents a functional projection, which will be argued to be a FocP in later discussion of this chapter.

binding structure and the universal interpretation are illustrated in (14) (repeated from (22) in Section 4.4.2 in Chapter Four):

(14) Cor-OP_{i,j} [CP [CP ... yue_i ...], [IP ... yue_j ...]]

$\forall_x \forall_y$ [the value of x increases] → [the value of y proportionally changes too].

The operator-variable binding mechanism proposed here is on par with the binding relation in which a null question operator binds an in-situ wh-element in Chinese (Aoun and Li 1993b; Huang et al 2009; and cf. Cheng 1991, 2003a, 2003b for wh-in-situ in Chinese). Chinese wh-words do not have inherent interpretation with respect to their ‘quantificational force’. Depending on the context where they occur, they may be interpreted as universal or existential quantifiers or as interrogative expressions.

Examples are given in (15), with relevant parts boldfaced:

(15) a. 誰都喜歡書

shei dou xihuan shu.

who all like book

‘**Everyone** likes books.’

b. 如果你喜歡誰, 就請他來

ruguo ni xihuan **shei**, jiu qing ta lai.

If you like **who**, then ask him come

‘If you like **someone**, then invite him over.’

c. 誰喜歡你呢?

shei xihuan ni ne?

Who like you Q.part. ?

‘**Who** likes you?’

In other words, a wh-phrase is lexically an “indefinite category.” Similarly, Aoun and Li (1993b) and Tsai (1994b) also suggest that a wh-phrase is not an inherent quantificational expression, but a variable licensed and bound by a proper operator that determines its quantificational force (cf. discussion in 4.4 and 4.5 in Chapter Four).

In the current proposal, the lexical *yue* variable is treated as parallel to wh-words in Chinese. The *yue*-constituent is analyzed as an in-situ indefinite expression, and its semantic content needs to be specified by the null correlativity operator. While wh-in-situ may move at LF in order to be interpreted (Huang 1982a; Cheng 2003a among others), the DegP in the CC construction can be interpreted in situ without ambiguity. As addressed in 3.4 in Chapter Three, the *yue*-constituent is not sensitive to island effects; therefore, covert LF movement of the *yue*-constituent is not proposed in this study.

5.1.3 Obligatory paired occurrence of *yue*₁ and *yue*₂

The next question that needs to be accounted for concerns the obligatory co-occurrence of *yue*₁ and *yue*₂. The co-occurrence of *yue*₁ and *yue*₂ shows that *yue*₁ licenses the occurrence of *yue*₂ in a similar way as can occur in negative and interrogative expressions, which contain an operator licensing a subordinate polarity item such as *any*⁴⁷ (Radford 2009: 330).

⁴⁷ Two examples of licensing the polarity item *any* (cited from Radford 2009: 330):

- (i) What sympathy did *any* of the protestors get?
- (ii) Not a grain of sympathy did *any* of the protestors get.

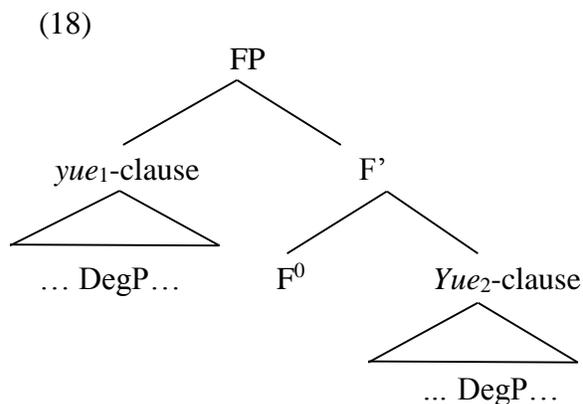
Matushansky (2002) points out that degree can be expressed by a certain sort of dependent constituent, as illustrated in the following English example:

(16) Mt. Everest is **so** tall **that you cannot see the top**.

In (16), the degree operator *so* as well as its dependent *that*-clause predicates the degree of the degree argument, i.e. the adjective *tall*. Following Matushansky's insight, I propose the linking relation between *yue*₁ and *yue*₂ in (17):

(17) The paired *yue* morphemes and the non-coordinated syntactic clauses constitute a degree description.

On a par with the dependent *that*-clause functioning as a complement of the adjective head in (16), the *yue*₂-clause in Chinese CC is treated as a complement of a certain type of head in the derivation. A rough hypothetical structure is proposed in (18):



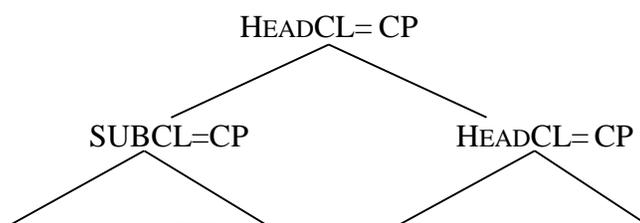
In Section 5.4, I will further argue that the functional projection is a FocP.

5.2 An adjunct approach

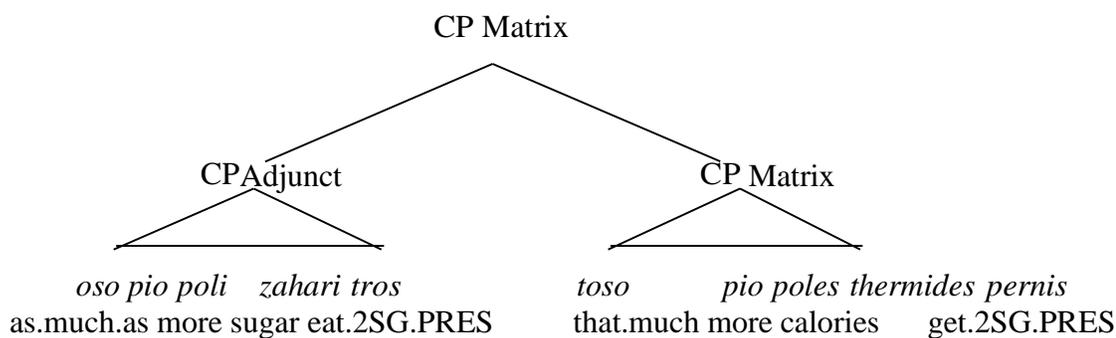
In his proposed macrostructures for the CC constructions, Dikken (2005, 2006) dubs the first clause the 'sub-clause' (SUBCL), adjoined to the 'head clause' (HEADCL).

Similarly, Taylor (2006) proposes that the first clause is subordinate and an adjunct, base-generated and left-adjoined to the main clause, i.e. the second clause. The macro-structures proposed by Dikken (2005) and Taylor (2006) are repeated in (19) and (20) respectively:

(19) Dikken (2005)

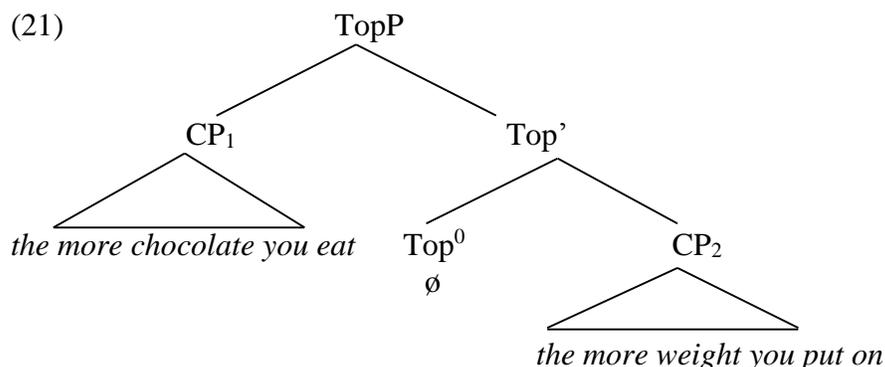


(20) Taylor (2006)



Both Dikken's and Taylor's proposals implicating adjunction emphasize that the two clauses are not coordinated and that the second clause is the main clause in the CC construction. However, as pointed out by Abeillé and Borsley (2008) and Iwasaki and Radford (2009), the adjunct approach cannot account for the fact that the preceding clause is obligatory while adjuncts are optional. Alternatively, following Abeillé and Borsley (2008), Iwasaki and Radford (2009) propose a functional projection---a TopP---

to capture the relative order of the two clauses and their structural dependency on each other. The structure they propose is illustrated in (21):



In Iwasaki and Radford's (2009) analysis, the first clause is in [Spec, TopP] and the second clause is the complement of the null Top⁰. Their analysis, implicating a functional projection, sheds light on the current study. In a later section, I will argue for projection of a FocP in Chinese CC-constructions.

5.3 A Topic-comment approach to Chinese CCs

With respect to the literature of Chinese syntax, research on the CC construction is scarce. Tsao and Hsiao's (2002) initial study on this construction adopts the topic-comment approach, which captures a characteristic property of Chinese grammar: topic prominence (Chao 1968, Xu and Langendoen 1985, Tsao 1988, Her 1991, Shi 1992, Grasse and Paul 1996 among others)⁴⁸. In this dissertation, the term 'topic' is taken as a

⁴⁸ Chao (1968:69) made the widely-adopted contention that 'the grammatical meaning of subject and predicate in a Chinese sentence is topic and comment'. The majority of linguists working on Chinese follow the assumption that both topic and subject exist in Chinese as separate grammatical notions and the both can exist in the same sentence.

grammatical category parallel to ‘subject’ or ‘object’. In syntactic structures of Chinese, the topic precedes the subject if they both occur in a sentence. The topic may encode the semantic function of a ‘frame’, and so may the subject. When a topic is absent, the subject may be interpreted as the frame in semantics or in discourse, which complies with Chao’s contention (1968) (cf. Her 1991 for detailed distinction between syntactic topics and semantic topics in Chinese).

In Tsao and Hsiao’s (2002) analysis of Chinese CCs, the *yue*₁-clause is treated as a topic of the lower IP and is realized as an IP adjunct, left adjoined to the *yue*₂-clause, which functions as the comment. An example they give is reproduced in (22):

(22) 天氣越熱, 他越吃不下。

tianqui **yue** re, ta **yue** chi-bu-xia.

weather YUE hot, 3rd.sing. YUE eat-NEG-down

‘The hotter the weather is, the less he would like to eat.’

In (22), *tianqui yue re* ‘the hotter the weather is’ acts as a clausal topic⁴⁹, an IP adjunct to the second clause. Moreover, there can be another higher topic. For example, in the following sentence in (23), the third personal singular pronoun *ta* ‘he’ appears in the sentence initial position, marked in boldface:

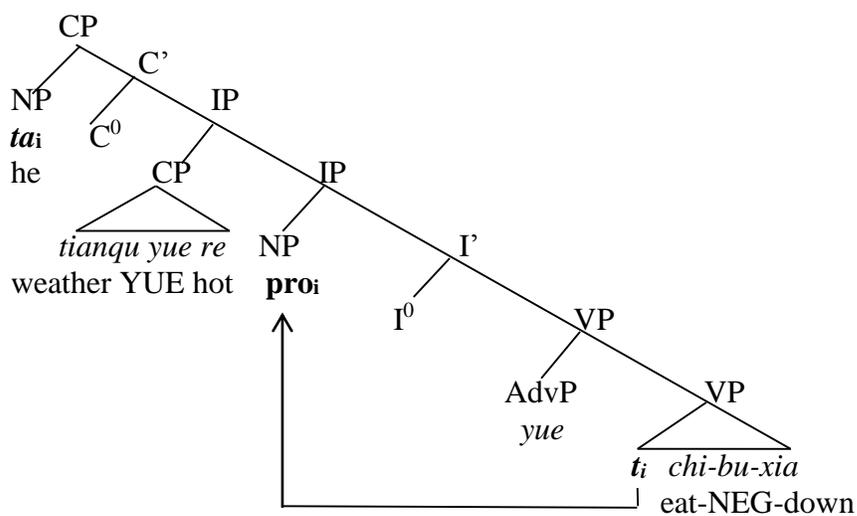
⁴⁹ The idea that clauses of time, location, reason, concession and condition should be treated as the primary topic of the sentence is explicated in Chao’s (1968) and Tsao’s (1998) work on syntactic behaviors of topics in Chinese.

(23) 他天氣越熱，越吃不下。

ta_i tianqui yue re, *ec_i* yue chi-bu-xia.
 3rd.sing._i weather YUE hot *pro_i* YUE eat-Neg.-down
 ‘**For him**, the hotter the weather is, the less he can eat.’

Tsao and Hsiao (2002) propose that for a sentence like (23), the pronoun *ta* ‘he’, as the topic of the whole CP, is base-generated in [Spec, CP] and co-indexed with the empty category *pro*⁵⁰ in [Spec, IP]. The structure they propose for the sentence in (23) is reproduced in (24):

(24)



In the above structure, the *yue*₁-clause is treated as an IP adjunct. The idea that clauses can act as a topic is not new in the literature. Scholars such as Iwasaki and Radford

⁵⁰ Chinese is a subject pro-drop language. Null subjects are taken as a *pro* while null objects should be analyzed as a variable based on the outcome of the test of Principle C (c.f. Huang 1989 for detailed discussion).

(2009) analyze the preceding clause as a Topic in English CC-constructions, and in more recent studies Iwasaki (2011a, 2011b) also takes the left-periphery approach to deal with certain types of German and Dutch CC-constructions⁵¹. Similarly, Lipták (2012) considers correlative clauses in Hungarian to be topical and merged at the edge of the CP.

Tsao and Hsiao's (2002) proposed structure demonstrates the property topic-prominence in Chinese syntax. However, as noted above, the contention that the *yue*₁-clause is an adjunct to the *yue*₂-clause fails to capture a major trait of *yue*-constructions: the syntactic interdependence between the two clauses. A property of adjunction is that it merges constituents that are complete themselves (Haegeman 2006). If the *yue*₁-clause, based on the structure in (24), were an IP adjunct to the *yue*₂-clause, then it would be falsely predicted that the *yue*₁-clause would be optional and the *yue*₂-clause could be an independent clause⁵². This is not the case, as shown in (25):

- (25) *(tianqui yue re,) ta yue chi-bu-xia
 weather YUE hot 3rd.sing. YUE eat-NEG-down
 ‘*(The hotter the weather is,) the less he would like to eat.’

The ungrammaticality of the sentence in (25) shows that the first *yue*₁-clause constituent is obligatory for the second clause to be interpretable.

In addition, a typical clausal adjunct does not select for specific types of clauses it adjoins to, whereas there is restriction on the selection of the two component clauses in

⁵¹ Iwasaki's (2011b) arguments for the Topic-comment approach to analyze German and Dutch CCs are based on observation of verb positions.

⁵² Arguments against the adjunct approach are also presented in Iwasaki (2011a) and Abeillé and Borsley (2008).

the CC constructions: Both clauses needs to contain a *yue*-constituent. In the examples in (26), we see that when a *yue*-clause combines with a regular clause containing no *yue*-constituent, ungrammaticality results:

- (26) a. tianqui *(yue) re, ta yue chi-bu-xia
 weather YUE hot, 3rd.sing. YUE eat-NEG-down
 ‘*The weather is hot, the less he would like to eat.’
- b. pingguo yue tian, wo *(yue) xihuan chi
 apple YUE sweet, I YUE like eat *ec*
 ‘* The sweeter an apple is, I like eating it.’

The above examples demonstrate the two *yue*-constituents’ syntactic interdependence: The first clause licenses the second one and vice versa. An alternative analysis therefore needs to account for the fact that the two *yue*-clauses need to occur in pair with the linear clause order fixed.

5.4 An alternative proposal

This section aims to show that the first clause in Chinese CC constructions is base-generated in the left periphery. Assuming Rizzi’s (1997, 2004) work on split CP, I will argue that Chinese CC constructions are a type of focus construction, projected by a null functional head Foc^0 , which carries a [+focus] feature. The [+focus] feature licenses occurrence of both *yue*₁ and *yue*₂. The first clause contains a focused phrase, which is the DegP, and the second clause is analyzed as the complement of the null Foc^0 .

5.4.1 Information focus and the [+focus] feature

It is widely assumed that in an answer to a wh-question, the constituent which corresponds to the wh-operator is taken as a focus (Badan 2008). Therefore if the *yue*₁-constituent can be an answer to a wh-question, its focus status is borne out. Consider the following examples:

(27) Speaker A: (我)要花多少時間練習,琴藝才會好?

(Wo) yiao hua **DOUSHAO** shijian lianxi, qin-yi cai hui hao?
 (I) need.to spend **how.much** time practice, piano.skill then MOD good
 ‘How much time do I need to spend on practicing so that my skills of playing the piano will be good?’

Speaker B: (你)花越多時間練習,你的琴藝就會越好。

(ni) hua **YUE DOU** shijian lianxi, qin-yi jiao hui yue hao?
 you spend **YUE much** time practice, piano.skill then MOD YUEgood
 ‘The more time you spend on practicing, the better your skills of playing the piano will be.’

(28) Speaker A: 什麼樣的天氣,冰淇淋賣得好?

sheme-yang-de tianqi, bingqilin mai-de-hao?
What-type-Gen. weather,ice-cream sell-DE-well
 ‘In what kind of weather does ice cream sell well?’

Or 天氣多熱,冰淇淋就賣得好?

tianqi **dou-re**, bingqilin jiu mai-de-hao?
 weather **how-hot**,ice-cream sell-DE-well
 ‘How hot is the weather so that ice cream may sell well?’

Speaker B: 天氣越熱, 冰淇淋賣得越好。

Tianqi YUE RE, bingqilin mai-de yue hao

Weather YUE hot, ice.cream sell-DE yue hao

‘The hotter the weather is, the better ice cream sells.’

In (27), the interrogative wh-word *doushao* ‘how much’ is responded to with the DegP *yue-dou* ‘the more’ in speaker B’s answer. Note that in speaker B’s response, the object *shijian* ‘time’ in the first clause and the subject *qinyi* ‘skills of playing the piano’ in the second clause are both old information and construed as the topic in the discourse. The new information given in speaker B’s answer is the amount of time that speaker A needs to spend. Therefore, what is focused in Speaker B’s answer is the amount of time, but not the entire clause. Similarly, in the examples of (28), *yue-re* ‘the hotter’ in speaker B’s answer is the information focus while *tianqi* ‘weather’ is given old information. The observation in (27) and (28) shows that the *yue*₁- clause can consist of a known topic (i.e. *shijian* ‘time’ in (27) and *tianqi* ‘weather’ in (28)) and an information focus, which is realized by the DegP. Now consider the question and the answer in (29) and (30):

(29) Question: 如何讓琴藝變好?

ruhe rang qin-yi bian hao?

How let piano-skills become good

‘How do we make our skills of playing the piano become good?’

Answer: (你)花越多時間練習,你的琴藝就會越好。

(ni) hua yue dou shijian lianxi, qin-yi jiao hui yue hao?

you spend YUE much time practice, piano.skill then MOD YUE good

‘The more time you spend on practicing, the better your skills of playing the piano will be.’

(30) Question: 什麼時候冰淇淋賣得好?

shemeshihou bingqilin mai-de-hao?

When ice.cream sell-DE-well

‘When does ice cream sell well?’

Answer: 天氣越熱，冰淇淋賣得越好。

Tianqi yue re, bingqilin mai-de yue hao

Weather YUE hot, ice.cream sell-DE yue hao

‘The hotter the weather is, the better ice cream sells.’

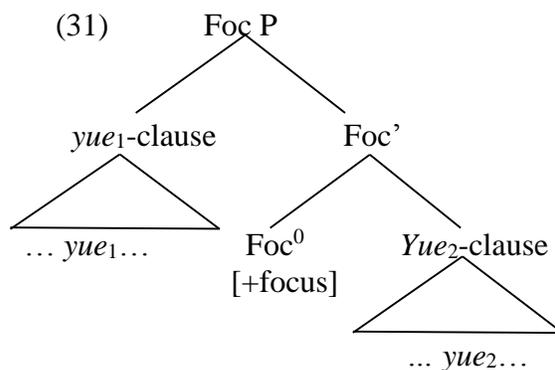
In the example of (29) and (30), the entire *yue*₁-clause can also act as new information in respond to a *wh*-question. This suggests that the morpheme *yue* can be associated with focus in some circumstances. The above examples argue that the *yue*-clauses cannot be required to be topics; that is, they argue against a TopicP analysis. Since they are associated with the left periphery, and they can be foci as in these *wh*-questions, I propose that FocusP is the correct functional projection to analyze them in.

5.4.2 Derivation

The next question is how the *yue*₁-clause is generated in the derivation. As discussed in an earlier section, the adjunct approach fails to account for the obligatory co-occurrence of the two *yue*-clauses. An alternative analysis is to treat the *yue*₁-clause as base-generated in the left periphery. Since Chinese features topic-prominence, the hypothesis seems to be plausible that the *yue*₁-clause functions as a topic in a topic-comment syntactic structure, as proposed by Tsao and Hsiao (2002). However, based on observation of empirical data, moved topics or base-generated gapless topics in Chinese

are generally triggered by certain pragmatic or discourse contexts, but rarely, if not never, triggered by lexical items⁵³. Nevertheless, it is clear that the lexical word *yue* plays the essential role in the CC constructions.

Instead, since Chinese CC constructions are essentially grounded on the lexical word *yue*, it is plausible to analyze it as a type of focus construction. As discussed in Section 5.1, *yue* acts as an indefinite degree variable at LF. I propose that *yue* in the *yue*₁-clause functions as a focus marker and focalizes the constituent it c-commands. The entire *yue*₁-clause is base-generated in [Spec, FocP]. The *yue*₂-clause is the complement of the Focus⁰. The proposed structure is schematized in (31):



In the above structure, the Foc⁰ carries a focus feature⁵⁴. This focus feature is proposed to license the occurrence of the *yue*₁ via the spec-head relation of agreement and at the same time selects as its complement a clause containing the *yue*₂. Here, assuming Feature

⁵³ Topic particles, such as *a* 啊, *ne* 呢, *dehua* 的話, are not considered to trigger the presence of a topic. On the contrary, they are by-products of a topic's presence.

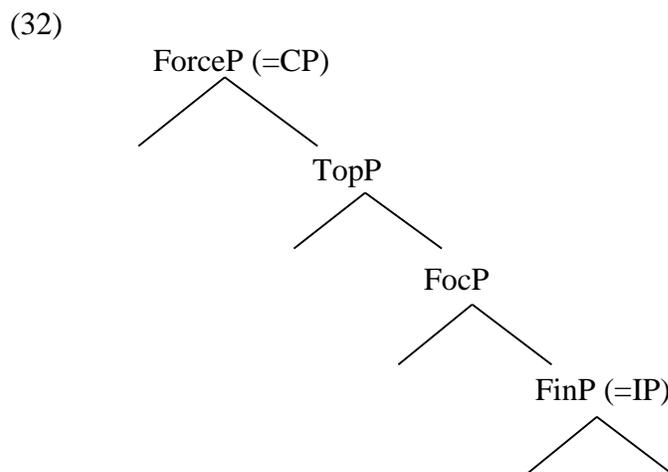
⁵⁴ In Section 2.2.3 of Chapter Two, Taylor's (2006, 2009) study on English CCs and Kapetangianni and Taylor's (2009) study on Greek CCs are reviewed. The analysis they propose also involve [focus] features. For Taylor and Kapetangianni, the [focus] feature is checked in each clause independently, but in my proposal for Chinese CCs, they are both checked in the matrix clause.

Percolation Principles (Cooper 1986, Cole et al 1993)⁵⁵, I propose that the [+focus] feature on the focus head Foc^0 is checked via the spec-head relation. In the process of derivation, yue_1 projects into a QP, base generated in [Spec, DegP]. The feature [+Focus], generically inherited in yue_1 , percolates to its maximal projection (QP), then to the maximal projection of the category it is in construction with, i.e. the DegP, via Agree. Yue_2 checks the [+Focus] feature on Foc^0 in the same way. The obligatory paired occurrence of the yue_1 and yue_2 is thus accounted for.

5.4.3 The split CP

The above proposed structure is grounded on Rizzi's (1997, 2004) work on the split CP hypothesis, in which the internal constitution of the CP can be split into several functional projections (c.f. discussion in Cinque and Rizzi 2008 and in Radford 2009). A fully-fledged split CP in Rizzi's analysis is schematized bellow:

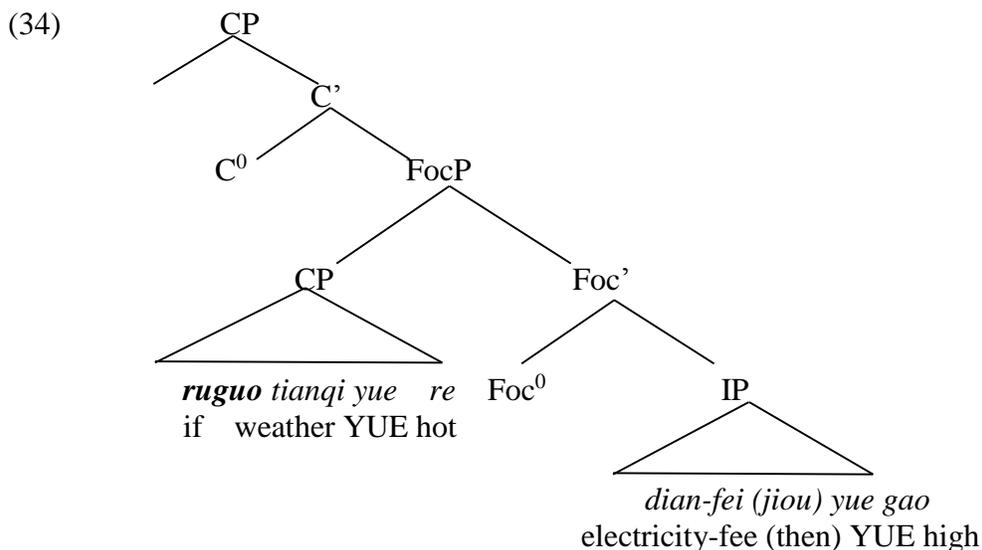
⁵⁵ Feature percolation is a hypothesis, which requires that "in syntactic derivation all the features of the head are also on the mother, but the mother may have additional features" (Cooper, 1986:32). In fact, there is a hidden problem in applying feature percolation to account for feature-checking between the lexical head yue and the functional head Foc^0 . Typically percolation only goes to the maximal projection of the head bearing the features, e. g. from Q^0 to QP. However, the yue -phrase is embedded inside maximal projections of another category (IP) in [Spec, FocP]. Percolation from DegP to the maximal category IP in the relationship to the Foc^0 would be a difficult implementation. I do not have solution to this problem and will leave it for future research.



With the hypothesis of a split CP assumed, it is proposed that Chinese CC constructions are the projection of the FocP. The next question concerns the nature of the first *yue*-clause: Are they CP or IP projections⁵⁶? Consider the following example and its structure in (33) and (34):

- (33) (如果/要是/當)天氣越熱,電費(就)越高
 (ruguo/iaoshi/dang) tienqi yue re, dian-fei (jiou)yue gao
 if / if/ when weather YUE hot, electricity-fee YUE high
 ‘The hotter the weather is, the higher the electricity fee is.’
 Or ‘If the weather is hotter, the electricity fee is higher.’

⁵⁶ For convenience and clarity in explication, I stick to using the conventional terminology of CP and IP throughout the entire dissertation, instead of using ForceP and FinP.



That complementizer *ruguo* / *iaoshi* 'if' or *dang* 'when' can optionally appear and introduce the first clause indicates that the *yue*₁-clause is a CP. In addition, the entire CC construction is a CP (i.e. ForceP in Rizzi's terminology) and can be embedded below CP-selecting verbs. Two examples are given in (35) and (36), where the embedded CC construction is bold-faced:

(35) 瑪麗相信主管的領導能力越好，部屬的效率就越高

Mali xiangxin zhuguan-de lingdaonengli yue hao,
Mary believe [_{CP} **supervisor –Gen. leadership YUE good,**

bushu-de xiaolu jiou yue gao
subordinate-Gen. efficiency then YUE high]

'Mary believes that the better the supervisor's leadership, the better the subordinate's efficiency.'

(36) 我們必須接受[投注越多時間和金錢 結果不一定越好]的事實

Ni bixiu jieshou ec touchu yue dou shijian han jinqian, jiahuo
 you need.to accept [CP *pro* spend YUE much time and money, result
 bu-yiding yue hao] -de shishi
 Neg.-necessary YUE good –Nom. fact

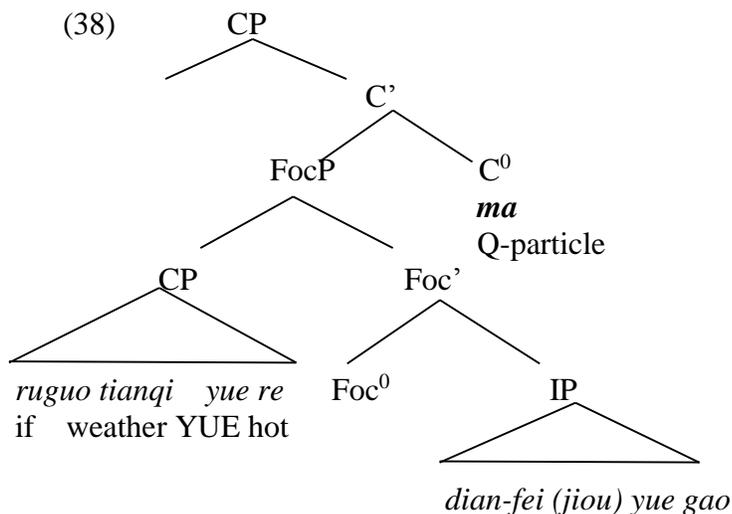
‘You need to accept that fact that it is not necessary the more time and money
 you spend, the better the result will be.’

In (35), the CC construction is the complement of the verb *believe* of the matrix clause, and in (36) it is the complement of the complex NP with *shishi* ‘fact’ being the head.

The claim that the entire CC construction is a CP can also be tested by yes-no question formation. To form a yes-no question in Chinese, the sentence-final question particle *ma*, assumed to be the C⁰, is attached to the end of the clause (c.f. Chapter 7 in Huang et al (2009) for detailed discussion about question formation in Chinese). To make the example of (33) into a yes-no question, *ma* appears at the end of the clause and is realized as the C⁰, as shown in (37). The structure is illustrated in (38)⁵⁷:

(37) 如果天氣越熱,電費(就)越高嗎?
 (ruguo) tienqi yue re, dian-fei (jiou) yue gao **ma**?
 if weather YUE hot, electricity-fee then YUE high
 ‘Is it the case that the hotter it is, the higher the electricity fee is?’

⁵⁷ In Chinese, there are cases in which a CP is head initial, as shown in example (33) in the text. On the other hand, there are also cases in which the head of a CP is head-final, as illustrated by the example in (37) with the question particle *ma*. The issue whether the Chinese CP is head-initial or head-final has been under debate. I assume both exist in this dissertation.



The above structure shows that the question particle *ma* scopes over the entire construction. No ambiguity arises in the *ma*-question (yes-no question)⁵⁸. On the other hand, note that formation of tag questions can cause ambiguity. To form a tag question, another particle *shima* is attached to the end of a clause. Consider the example and its structure in (39) and (40):

- (39) 我們吃得越多，媽媽越高興，是嗎？
 women chi-de yue duo, mama yue gauxing, *shima*?
 we eat-DE⁵⁹ YUE much, mom YUE happy Q.Part.
 ‘It is (always the case): the more we eat, the happier Mom is, **isn’t it?**’

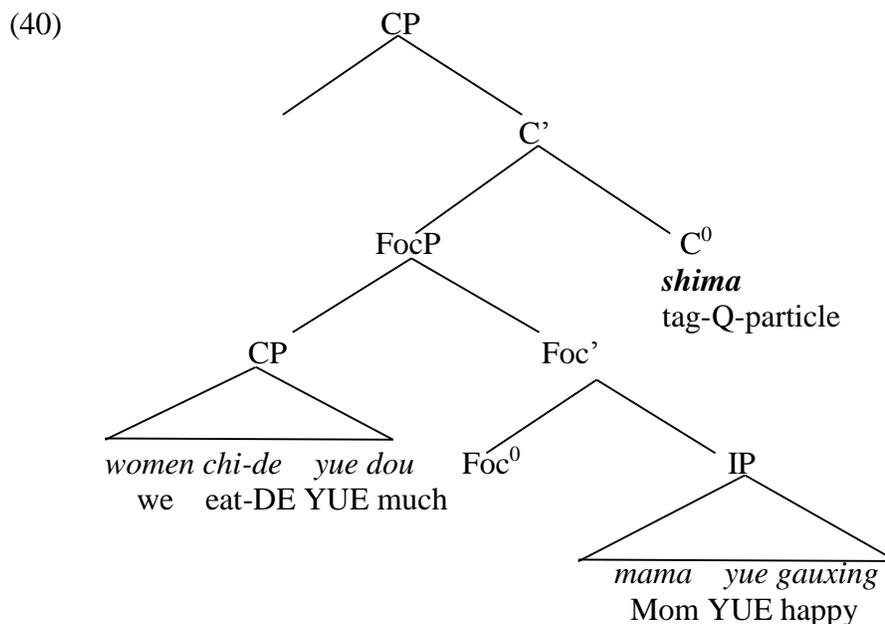
⁵⁸ Dr. Heidi Harley (p.c.) points that in English if “yes” or “no” follows at the end of the sentence, it sets a whole-clause reading, as shown in (i):

“The more we eat, the happier she is, yes/no?”

The *yes* in this example then corresponds to Chinese sentence final question particle *ma*.

⁵⁹ The morpheme *de* (得) here is a different one from the genitive case marker *de* (的) in footnote 6. The former *de* is bound morpheme attached to the end of a verb and before an adverbial phrase/a resultative state, for example:

wo zo-de hen kuai
 I walk-DE very fast
 ‘I walked/walk every fast.’

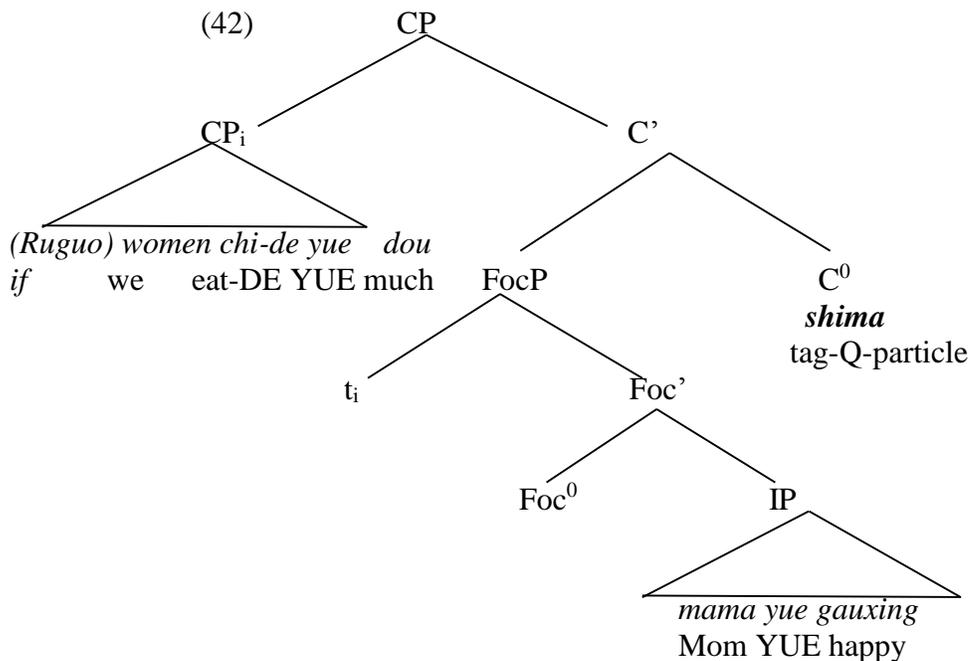


The above structure shows that the tag-question particle *shima* has a scope over the entire CC construction, and the tag question is interpreted as such: It is true that the more we eat, the happier Mom is, *isn't it?* Nevertheless, the sentence is ambiguous in that the tag-question may also be formed based on the second *yue*-clause, with the tag-question particle *shima* only scoping over the second *yue*-clause. The English translation in (41) demonstrates the different interpretation:

- (41) (如果)我們吃得越多, 媽媽越高興, 是嗎?
 (ruguo)women chi-de yue duo, mama yue gauxing, *shima?*
 (If) we eat-DE YUE much, mom YUE happy Q.Part.
 ‘The more we eat, the happier Mom is, *isn't she?*’

To explain this ambiguity, I propose that the first *yue*-clause CP is moved upward to [Spec, CP] and is thus out of the scope of the tag-question particle *shima*. Accordingly,

the tag question is interpreted based on the lower IP, i.e. the *yue*₂-clause. The structure is schematized in (42):



The tag questions in (39) and (41) demonstrate ambiguity; they can either be based on the whole structure or on only the second clause. By contrast, in English CCs, tag questions are only formed based on the 2nd clause of the CC construction (Culicover and Jackendoff 1999: 548). No ambiguity is caused, as shown in (43):

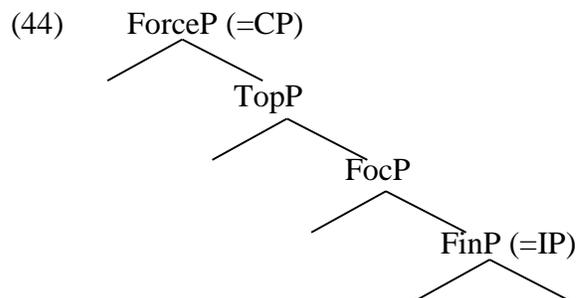
- (43) *The more we eat, the angrier you get, isn't it? (cf. the Chinese example in (39))
 The more we eat, the angrier you get, don't you? (cf. the Chinese example in (41))

The above discussion is mainly to show that the *yue*₁-clause is a CP, in which a complementizer *ruguo* 'if' or *dang* 'when' is optional. The *yue*₂-clause, on the other

hand, is an IP, and question formation can be based on the IP or on the entire CC construction.

5.4.4 When a Topic is involved in the left periphery

In this section, I further argue that Chinese CC constructions not only contain focused elements, introduced by the lexical word *yue*, but also demonstrate the characteristic *topic-prominence* in Chinese. As mentioned earlier, the focusP projection is grounded on Rizzi's (1997, 2004, 2008) cartographic structure of the split CP, in which another functional projection above the FocP is an iterative TopP. Rizzi's cartographic structure of the left periphery in (32) is repeated below⁶⁰:



An argument that sustains the proposed Focus projection of the CC construction implicates the occurrence of a topic. Assuming the split CP hypothesis predicts that there can be a topic in a higher position than the focused *yue*₁-clause. The following example

⁶⁰ In addition to Rizzi's split CP in the left periphery, Paul (2005) and Badan (2008) point that the TopP and FocP are possible in the IP domain, which is referred to as the low periphery. This study of Chinese CC constructions only concerns the left periphery in the CP domain.

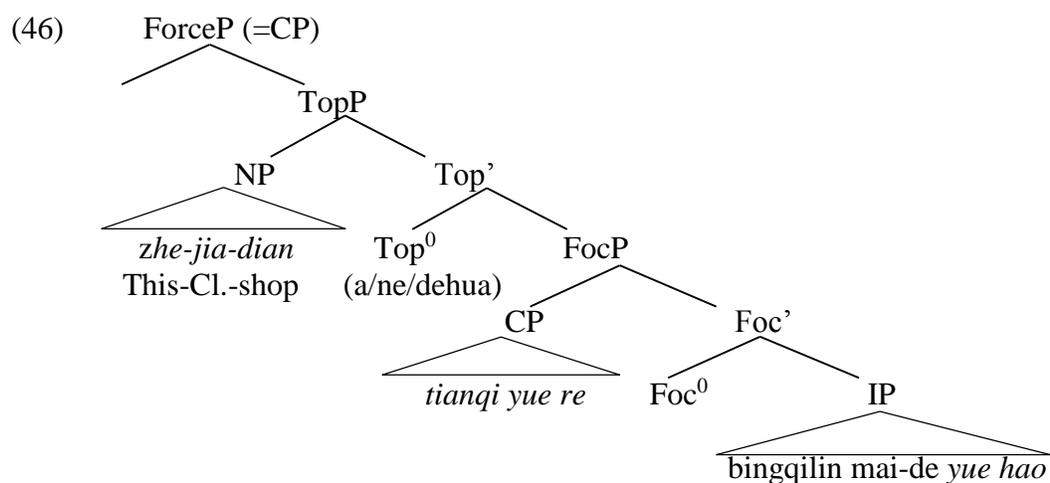
bears out the prediction, in which a non-gap topic (marked bold-faced) appears in the initial position, and its structure is presented in (46):

(45) **這家店**, 天氣越熱, 冰淇淋賣得越好

zhe-jia-dian(a/ne/dehua), tianqi yue re, bingqilin mai-de yue hao

This-Cl.-shop PART. , weather YUE hot, ice.cream sell-DE YUE well

‘For this shop, the hotter the weather is, the better (its) ice cream sells.’



The NP *zhe-jia-dian* is an instance of a non-gap topic; that is, it bears no anaphoric relationship with a constituent in the *yue*₁-clause or in the *yue*₂-clause. No movement is implicated, and it is analyzed to be base-generated in [Spec, TocP]. Note that a particle *a/ne/dehua* can optionally attach to the end of the NP and realizes as the Top⁰.

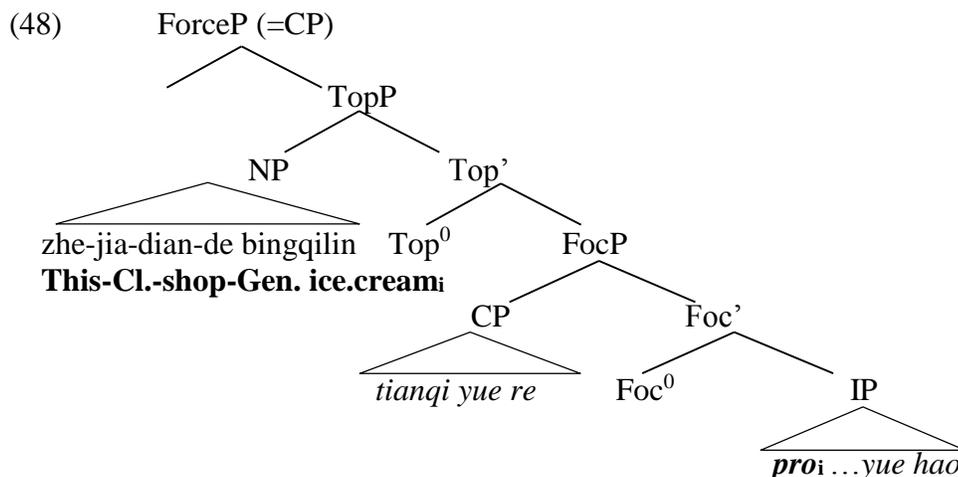
Furthermore, it is observed that an argument which is co-indexed with an empty category in either one or both *yue*-clauses is also able to be topicalized⁶¹ and occurs in [Spec, TopP]. Examples are given in (47):

(47) 這家店的冰淇淋, 天氣越熱, 賣得越好

Zhe-jia-dian-de bingqilin_i, tianqi yue re, *ec_i* mai-de yue hao
 This-Cl.-shop-Gen. ice.cream_i, weather YUE hot, *pro_i* sell-DE YUE well
 ‘For ice cream of this shop, the hotter the weather is, the better *(it) sells.’

In (47), the NP *zhe-jia-dian-de bingqilin* ‘ice cream of this shop’ is considered to be base-generated in [Spec, TopP] and coindexed with the empty category, which is a *pro*, in the subject position of the second clause. With the topic in the initial position, the entire CC-construction acts as its comment. The presupposition is “when the weather is hot, ice cream of this shop sells well.” Based on this presupposition, the co-occurrence of the lexical word *yue*₁ and *yue*₂ brings in an emphatic interpretation: The degree of hotness correlates with the amount of ice cream consumed. If the *yue*₁-clause were a topic to the *yue*₂-clause, according to Tsao and Hsiao’s (2002) analysis, such correlation based on the presupposition could not be captured. Instead, it is proposed that the [+focus] feature in the head *Foc*⁰ licenses *yue*₁ and selects *yue*₂. The structure for (47) is represented in (48):

⁶¹ In the literature of Chinese syntax, movement or base-generation are both possible approaches to address the issue of topicalization (Xu and Langendoen 1985; Shi 1992; Qu 1994; Shyu 1995; Badan and Gobbo 2010 among others). In this dissertation, I take a broader concept with respect to topicalization: It refers to the operation, either movement or base-generation, which makes a constituent stand out in the left periphery.



The following example further demonstrates the property of topic prominence, in which the initial topic NP co-indexes with empty categories in the topic chain (Li 2004, Shi 1989)⁶²:

(49) 那幅畫, 我越看越喜歡

na-fu-hua, wo yue kan *ec ec* yue xihuan *ec*
that-Cl.-picture_i, [_{CP} I_j YUE see **t_i** pro_j YUE like **t_i**]

‘That picture, the more I look at it, the more I like it.’

⁶² A typical example (originally in Li 2004: 25) of a topic chain in Chinese discourse is given in (i), in which the symbol \emptyset represents empty categories and two topics are bold faced:

那輛車 _i, \emptyset _i 價錢太貴 \emptyset _i 顏色也不好 我不喜歡 \emptyset _i 不想買 \emptyset _i
Na-liang che_i jiaqian tai gui, \emptyset _i yanse ye bu hao, **wo**_j bu xihuan \emptyset _i, \emptyset _j bu xiang mai \emptyset _i.
that-CL car_i, price too high, *ec_i* color also not good, **I**_j not like *ec_i*, *ec_j* not want buy *ec_i*.
昨天去看了一下 還開了一會兒 還是不喜歡
 \emptyset _j Zuotian qu kan le yixia \emptyset _i, \emptyset _j hai kai le yihuir \emptyset _i, \emptyset _j haishi bu xihuan \emptyset _i.
ec_j yesterday go see PRT a-bit *ec_i*, *ec_j* also drive PRT a-while *ec_i*, *ec_j* still not like *ec_i*.

In (i), 10 empty categories are identified. Those subscribed with “i” are coreferential with *na-liang che* ‘that car’ in the first clause; the ones subscribed with “j” are coreferential with *wo* ‘I’ in the third clause. In Chinese linguistics, the clause(s) with the phonetically null NP(s) and the one with the overt coreferential NP are considered to form a chain with the phonetically null NP being the topic of the chain. This structure is commonly referred to as the *topic chain* (c.f. Li (2004) and Shi (1989) and references cited there for detailed discussion about Chinese topic chains).

(50) 這件褲子, 越穿越鬆

zhe-jian-kuzi, ec yue chuan *ec* *ec* yue song
this-Cl.-pants_i, [_{CP} *pro*_j YUE wear **ti**] [_{IP} *pro*_i YUE become.loose]
 ‘This pair of shoes, the further *(I) wear them, the looser it becomes.’

In (49), *na-fu-hua* ‘that picture’, as the head in the topic chain, coindexes with the two empty categories in both object positions of the *yue*₁-clause and the *yue*₂-clause. In (50), the head topic NP is coindexed with the empty category in the object position of the *yue*₂-clause but with that in the subject position of the *yue*₂-clause. Such coreferential relationships between the initial overt topic and the empty categories cannot be accounted for by a movement approach. Therefore, the initial NP is considered to be base-generated in these examples.

5.5 A summary of this chapter

In this chapter, I have reviewed and presented the internal structure of the DegP proposed in earlier studies on CCs of different languages. I propose that the DegP in Chinese CCs is headed by a null Deg⁰ and that the lexical word *yue* acts as an indefinite degree quantifier and is realized as a QP in [Spec, DegP]. The DegP in each clause constitutes a degree variable at LF. To account for the correlation between the two degree variables, I argue that they are bound by a null correlativity operator. The operator-variable binding mechanism proposed here is on par with the binding relation in which a null question operator binds an in-situ *wh*-element in Chinese, which is much discussed in the literature of Chinese syntax.

For the macrostructure of the CC construction, I have addressed the problematic issues with respect to the adjunction approach and to the analysis proposed by Tsao and Hsiao's (2002) initial work on Chinese CCs. The alternative analysis I propose in this study assumes Rizzi's (1997, 2004) cartographic approach to a split CP, and I argue that the Chinese CC is a functional projection of a null Focus⁰. I also show that the alternative structure can accommodate presence of a topic; therefore the property of topic prominence in Chinese syntax is retained in the proposed analysis.

CHAPTER SIX

A VARIANT OF CHINESE *YUE*- CONSTRUCTIONS

6.0 An overview

The canonical CC construction in both English and Chinese consists of two non-coordinated clauses. As we have seen in previous chapters, the *yue*₁ and the *yue*₂ are embedded in the first and the second clause respectively in the canonical Chinese CC construction. This chapter concerns a variant of the Chinese CC-constructions, in which *yue*₁ is not contained in a clause, but in a left-dislocated NP. I will argue that the left-dislocated NP containing *yue*₁ is not derived via movement. Instead, it is a base-generated focused NP, licensed by the [+Focus] feature in the head *Foc*⁰. The proposed analysis will be shown to be unitary with the analysis I presented in Chapter Five.

This chapter contains five subsections. Section 6.1 presents structures of the variant *yue*-construction. In Section 6.2, through diagnostics of movement, I argue against a movement approach to deriving the position of the left-dislocated *yue*₁-NP. The status of the *yue*₁-NP in the left periphery and its interaction with a topic is accounted for in Section 6.3. In Section 6.4, I present the proposed analysis and structure of derivation. A summary of this chapter is given in Section 6.5.

6.1 A variant of Chinese *yue*-constructions

In the variant Chinese CC construction, the *yue*₁-constituent and the *yue*₂-constituent can form a structure in which the *yue*₁-morpheme precedes an adjective or an adverb or is embedded in a relative clause modifying an NP (hereafter the *yue*₁-NP for short) while the *yue*₂-constituent is contained in the IP. The structure is schematized in (1):

- (1) a. [CP [[[...*yue*₁ Adj...] N⁰] NP], [IP ...*yue*₂ ...]].
 b. [CP [[[...*yue*₁ ...**Rel**] N⁰] NP], [IP ...*yue*₂ ...]].

Examples illustrating the structure of (1a) are given in (2):

- (2) a. 越簡單的設計，我越喜歡。
 Yue₁ jiandan-de sheji, wo yue₂ xihuan *ec*.
 [YUE₁ simple-DE design NP]_i, [IP I YUE₂ like *ec*_i]
 ‘The simpler a design_i is, the more I like it_i.’
 Lit. ‘A design which is simpler, I like better.’
- b. 越勤奮的員工，越有機會升遷。
 yue₁ qinfen-de yuangong, [IP *ec* yue₂ you jihui shenqian].
 [[YUE₁ diligent-DE employee NP]_i, [IP *ec*_i YUE₂ have opportunity get.promoted]
 ‘The more diligent an employee is, the more opportunities he may have to get promoted.’
 or ‘An employee who is more diligent has more opportunities to get promoted.’
 Lit. ‘The more diligent an employee, the more opportunity he has to get promoted.’

In (2a), *yue*₁ is contained in an NP headed by *shiji* ‘design’, and the NP is co-indexed with the empty category in the object position of the main verb *xihuan* ‘like’. In Section

6.2, it will be argued that the empty category in (2a) is not a trace, but a variable. For the example in (2b), the left-dislocated NP *yue qinfen-de yuangong* ‘a more diligent employee’ is coindexed with the empty category, which is a *pro*⁶³, in the subject position of the IP where *yue*₂ scopes over the VP *you jihui* ‘have opportunities’. The English translations for (2a) and (2b) indicate that this variant has no counterpart in English CC constructions.

For the structure in (1b), where the left-dislocated NP is a complex NP with the head N^0 modified by a relative clause containing *yue*₁, examples are given in (3):

(3) a. 越多名人推薦的書，越多人買。

yue₁ duo mingren tueijia de shu yue₂ duo ren mai ec.
 [[YUE₁ many celebrity recommend t_j DE_{Rel}] book_j NP]_i, [IP YUE₂ many people buy *ec*]
 ‘The more celebrities recommend a book, the more people buy it.’
 or ‘For those books which more celebrities recommend, more people buy them.’
 Lit. ‘Books which more celebrities recommend, more people buy.’

b. 越多名人推薦的書，賣得越好。

yue₁ duo mingren tueijia de shu ec mai-de yue₂ hao.
 [[YUE₁ many celebrity recommend t_j DE_{Rel}] book_j NP]_i, [IP *pro*_i sell-DE YUE₂ well]
 ‘The more celebrities recommend this book, the better it sells.’
 or ‘For those books which more celebrities recommend, they sell better.’
 Lit. ‘Books that more celebrities recommend sell better.’

In (3a), the complex NP consists of a relative clause which modifies the head *shu* ‘books’, and the entire NP is coindexed with the empty category in the object position of

⁶³ Readers are reminded here that Chinese is a subject pro-drop language.

the verb *mai* 'buy' while it is coindexed with the empty category in the subject position in (3b).

We must determine whether the complex NP undergoes movement or is base-generated in the surface position. If it is derived via movement, then what triggers the movement? It might be plausible to hypothesize that the complex NP is moved, via topicalization, from an argument position to an A-bar position in the left periphery. However, topicalization of an argument in regular Chinese sentences is an optional operation and the overall meaning is not affected, as illustrated in (4) and (5):

(4) a. 我喜歡簡單的設計。

wo xihuan **jiandan-de sheji**.

[_{IP} I [_{VP} like [_{NP} simple-DE design]]]

'I like simple designs.'

b. 簡單的设计, 我喜歡。

jiandan-de sheji, wo xihuan *ec*.

[_{NP} **simple-DE design**]_i [_{IP} I [_{VP} like *ec*_i]]

'Simple designs, I like (*them).'

(5) a. 很多人買名人推薦的書。

henduo ren mai **mingren tueijian ec de shu**.

[_{IP} [many people] [_I [_{VP} buy [[**celebrities recommend t_i DE_{Rel} book_i NP]]]]]**

'Many people buy books which celebrities recommend.'

b. 名人推薦的書, 很多人買。

mingren tueijian ec de shu, henduo ren mai *ec*.

[[**celebrities recommend t_i DE_{Rel} book_i NP]_j, [_{IP} many people [_I [_{VP} buy *ec*_j]]]]]**

'Books which celebrities recommend, many people buy (*them).'

The sentences in (4a) and in (5a) are regular sentences with the canonical SVO word order, whereas the sentences in (4b) and (5b) demonstrate an OSV word order. The examples indicate that no matter whether the object NP is topicalized to the periphery or not, the sentence is grammatical.

On the contrary, when *yue*₁ and *yue*₂ are inserted, in the examples of (4a) and (5a), into the position of the empty categories with which they are coindexed, ungrammaticality arises, as illustrated in (6a) and (7a):

(6) a. *我越喜歡越簡單的設計。

* wo **yue** xihuan **yue** **jiandan de** **sheji**.

[_{IP} I [_{VP} YUE like [[YUE simple DE] design_{NP}]]

Lit. *‘*The more I like the simpler design.*’

Intended meaning is as it is in (7b) below.

b. 越簡單的設計，我越喜歡。

Yue₁ **jiandan-de** **sheji**, wo *yue*₂ xihuan *ec*.

[YUE₁ simple- DE design_{NP}]_i, [_{IP} I YUE₂ like *ec*_i]

‘The simpler a design is, the more I like it.’

or ‘A design which is simpler, I like (*it) better.’

(7) a. *越多人買越多名人推薦的書。

* yue duo ren mai **yue duo** **mingren tueijian** **de** **shu**.

[_{IP}[YUE many people] [_r[_{VP}[buy[YUE many celebrities recommend DE_{Rel}] book_{NP}]]]]

Lit. * ‘The more people buy books the more celebrities recommend.’

Intended meaning is as it is in (7b) below.

- b. 越多名人推薦的書，越多人買。

yue duo mingren tueijia de shu, yue duo ren mai ec.
 [[YUE many celebrity recommend t_j DE_{Rel}]book_{j NP}]_i, YUE many people buy *ec_i*
 ‘The more celebrities recommend a book, the more people buy it.’
 or ‘Those books which more celebrities recommend, more people buy (*them).’

The examples in (6) and (7) demonstrate an anti-c-command restriction: The *yue* in the matrix clause is prohibited from c-commanding the *yue* contained in the left-most NP. If the left-dislocated object NP in (6b) and (7b) were derived via topicalization movement, the sentence in (6a) and (7a) with the NP reconstructed back to the original object position would be incorrectly predicted to be grammatical.

Two points should be emphasized about the above phenomenon. First, there is a mandatory anaphoric relationship between the *yue*₁-(complex) NP and a gap in the main clause. Second, an argument in regular Chinese sentences can be optionally topicalized to the sentence-initial position without changing the intended meaning. However, *yue*-constructions behave differently because the dislocation is obligatory. The above data are meant to show that this variant CC construction cannot be derived via normal Chinese topicalization processes.

6.2 Arguments against the movement approach

The following subsections present diagnostics of movement in the variant *yue*-construction. Overridden locality constraints, lack of reconstruction effects and absence of weak crossover effects, structures without a gap, and the availability of a resumptive

pronoun will be introduced in support of the proposal that the *yue*₁-NP is base-generated, but not moved to the periphery.

6.2.1 Extraction from *wh*-islands

Subjacency specifies locality constraints on movement. In Chomsky (1981), constraints on extraction from *wh*-islands are subsumed under the Subjacency Condition. For the variant of YUE- constructions, I will show that the link between the *yue*₁-NP and the empty category that is coindexed with can cross a *wh*-island. This link would violate the Subjacency Condition if it were created by movement⁶⁴. Therefore, the *yue*₁-NP is base-generated, not created by movement.

⁶⁴ For the Subjacency Condition, Huang (1982a, b) proposes that while Chinese does not have *wh*-movement in overt syntax, it employs a covert movement process in Logical Form (LF) (cf. Huang et al 2009: 260-268 for detailed discussion and review about covert *wh*- movement in Chinese). One of the arguments for LF-movement hypothesis is evidenced by the following examples in (i) and (ii). The sentence in (i) is not ambiguous and interpreted as a statement containing an embedded question while the sentence in (ii) is ambiguous and can be either interpreted as a question or a statement:

- (i) 張三想知道李四買了什麼。
 Zhangsan xiang-zhidao Lisi mai-le shenme.
 Zhangsan wonder Lisi buy-Asp. What
 ‘Zhangsan wonders what Lisi bought.’
- (ii) 張三記得李四買了什麼。 / ?
 Zhangsan jide Lisi mai-le shenme?
 Zhangsan remember Lisi buy-Asp. What
 ‘Zhangsan remembers what_{*t*} Lisi bought *t*_{*i*}.’
 ‘What_{*i*} does Zhangsan remember Lisi bought *t*_{*i*}?’

Assuming that the *wh*-phrase in (i) and (ii) undergoes movement in LF as it does in overt syntax, the following structures may be derived from (i) and (ii):

- (iii) a. *[shenme_{*i*} [Zhangsan xiang-zhidao [[Lisi mai-le *t*_{*i*}]]]]
 ‘For which *x*: *x* a thing, Zhangsan wonders Lisi bought?’
 b. [[Zhangsan xiang-zhidao [shenme_{*i*} [Lisi mai-le *t*_{*i*}]]]]
 ‘Zhangsan wonders [for which *x*: *x* is a thing, Lisi bought *x*].’
- (iv) a. [shenme_{*i*} [Zhangsan jide [[Lisi mai-le *t*_{*i*}]]]]
 ‘For which *x*: *x* a thing, Zhangsan remembers Lisi bought *t*_{*i*}?’
 b. [[Zhangsan jide [shenme_{*i*} [Lisi mai-le *t*_{*i*}]]]]
 ‘Zhangsan remembers [for which *x*: *x* a thing, Lisi bought *x*].’

The examples in (8) contain an embedded *wh*-question introduced by *shifo* ‘whether’. Consider the islandhood and compare the position of the NP *yue jiandan-de shiji* ‘the simpler design’ in (8a) and (8b):

(8) a. *張三想知道是否顧客會越喜歡越簡單的設計

*Zhangsan xiang-zhidao shifo guke hui yue xihan yue jiandan-de shiji

ZS wonder [CP whether clients may YUE like [NP YUE simple-DE design]]

‘Zhangsan wonders whether clients like a simpler design more.’

The non-ambiguity of (i) follows because it corresponds to only one LF representation (i.e. (iii) b) that satisfies the selectional requirement of the matrix verb. By contrast, the two LF representations shown in (iv) indicate that there are two sites for the *wh*-movement and therefore the sentence in (ii) is ambiguous.

A second argument is related to extraction of a *wh*-adjunct out of a syntactic island. In English, such extraction causes ungrammaticality, as shown in (v):

(v) a. *How_i do you like [the man who fixed the car t_i]?

b. *How_i did you feel satisfied [after he fixed the car t_i]?

Consider now Chinese examples in (vi):

(vi) a. 大衛喜歡為什麼買書的瑪莉?

Dawei xihuan weishenme mai shu de Mali?

David like [why buy books DE] Mary?

*‘Why_i does David like Mary who bought books t_i?’

b. 他在李四為什麼買書以後生氣了?

ta zai Lisi weishenme mai shu yihou shengqi-le?

he [at Lisi why buy books after] get.angry-Asp.

*‘Why_i did he get angry [after Lisi bought the books t_i]?’

The asterisks in (vi) indicate that the *wh*-adjunct *weishenme* ‘why’ inside the syntactic island cannot be used to form a direct question about the adjunct. That is, the *wh*-adjunct cannot move out of the syntactic island (a complex NP in (vi) a and an adjunct island in (vi) b).

Another evidence is related to an argument/adjunct asymmetry observed in extraction out of an indirect question. In English, it is more difficult to move an adjunct out of a *wh*-island than it is to move an argument, as shown in (vii):

(vii) a. ?? What_i did you wonder [how to fix t_i]?

b. *How_i did you wonder [what to fix t_i]?

A similar argument/adjunct asymmetry is also observed in Chinese. Consider the example in (viii):

(viii) 張三想知道李四為什麼買了什麼?

Zhangsan xiang-zhidao [Lisi weishenme mai-le shenme]?

Zhangsan wonder Lisi why buy-Asp. what

‘What is the x such that Zhangsan wonders why Lisi bought x.’

Not: ‘What is the reason x such that Zhangsan wonders what Lisi bought for x?’

The example in (viii) shows that with the two *wh*-phrases *shenme* ‘what’ and *weishenme* ‘why’ being in situ, it can be interpreted as a direct question about ‘what’, but not about ‘why’.

In short, English and Chinese are both subject to island restrictions. The main difference is that the restrictions are observed in overt syntax in English whereas they are observed in LF in Chinese.

- b. 張三想知道是否越簡單的設計,顧客會越喜歡。

Zhangsan xiang-zhidao shifo **Yue jian-dan-de shiji**, guke hui

Zhangsan wonder [CP whether [NP **YUE simple-DE design**]_i, clients may

yue xihan *ec*.

YUE like *ec*]_i

‘Zhangsan wonders whether the simpler a design is the better clients may like it.’

- c. 越簡單的設計, 張三想知道是否顧客會越喜歡。

Yue jian-dan-de shiji, Zhangsan xiang-zhidao shifo guke hui yue xihan *ec*.

YUE simple-DE design, ZS wonder [CP whether clients may YUE like *ec*]

‘For a design which is simpler, Zhangsan wonders whether clients may like it more.’

Lit. *‘The simpler a design is, Zhangsan wonders whether clients may like it more.’

The embedded *wh*-clause of the sentence in (8a) has a regular SVO word order, with the NP *yue jian-dan-de shiji* ‘a design which is simpler’ in the object position. The ungrammaticality of (8a) indicates that the *yue*₁-NP is not allowed in the object position. In (8b), the *yue*₁-NP is left-dislocated in the embedded clause, and it can even cross further as shown in (8c). The surface structure of (8c) shows that the *yue*₁-NP is left-dislocated in the left periphery of the matrix clause while the *yue*₂-clause remains in the embedded clause. The empty category in object position of the embedded clause is co-indexed with the *yue*₁-NP. If the empty category were a trace left behind, the movement of the *yue*₁-NP would cross the *wh*-island and violate the subjacency condition. If the subjacency condition holds true, then the movement approach is refuted. The empty

category is thus proposed not to be a trace, but a variable bound by the *yue*₁-NP from an A-bar position.

6.2.2 No reconstruction effect

As generally assumed in generative grammar, A-bar movement involves binding reconstruction. Therefore, reconstruction effects can be diagnostics for movement (Fox 1999). Consider the following examples in (9) and (10):

- (9) a. 傑克認為他一定很喜歡大衛常看的書。

Jeike renwei **ta** yiding hen xihuan **Dawei** chang kan de shu.

Jack thinks [_{CP} **he**_{*i} definitely very like [**David**_i often read DE_{Rel}] book_{NP}]

‘Jack thinks that **he**_{*i} definitely likes those books **David**_i often reads.’

- b. 大衛越常看的書，傑克認為他一定越喜歡。

Dawei_i yue chang kan de shu_k,

[[**David**_i YUE often read DE] book_{NP}]_k,

Jieke renwei **ta**_i yiding yue xihuan *ec*_k.

Jack thinks [_{CP} **he**_i definitely YUE like *ec*_k]

‘Those books which **David**_i reads more often, Jack thinks **he**_i definitely likes *t* more.’

- (10) a. 他常出錢贊助大衛喜歡的畫家。

Ta chang chu-qian zanzhu Dawei xihuan de huajia.

He_{*i} often donate-money sponsor [David like DE_{Rel}] artist_{NP}]

‘**He**_{*i} often donates money to sponsor the artists **David**_i likes.’

b. 大衛越喜歡的畫家，他越常出錢贊助。

Dawei yue xihuan de huajia, ha chang chu-qian zanzhu.

[**David** YUE like DE_{Rel}] artist_{NP}], **he**_i often donate-money sponsor

‘The artists David_i likes more, he_i donates money more often to sponsor *t*.’

The examples in (9a) and (10a) are regular sentences without *yue* and have the canonical SVO word order. Principle C in Binding Theory is observed: The referential nominal *Dawei* ‘David’ cannot be bound by the pronominal *ta* ‘he’. By contrast, Principle C is irrelevant in the *yue*-construction sentences. For instance, in (9b) and (10b), the referential nominal *Dawei* ‘David’ in the complex *yue*₁-NP can be co-indexed with the pronominal *ta* ‘he’ in the main clause. Therefore, we conclude that it isn’t reconstructed as a movement approach would predict. The two examples show that there is no reconstruction effect, which indicates the complex *yue*₁-NP is not moved from the object position.

6.2.3 No weak crossover effect

Another way to diagnose movement is to examine whether a weak crossover (WCO) effect is displayed (Chomsky 1976; Higginbotham 1980; Reinhart 1983; Lasnik and Stowell 1991; Postal 1993; Shyu 1995)⁶⁵. The general assumption about the WCO effect concerns proper binding---the impossibility of interpreting the pronoun as

⁶⁵ Readers are also referred to Badan and Gobbo (2010) and Shyu (1995) for detailed discussion about WCO in topic and focus structures in Chinese.

anaphoric to the *wh*-element or the quantifier (Chomsky 1976, cited in Aoun's (1993:2) discussion concerning Chinese data), as illustrated in the examples of (11):

(11) a. *Who_i did his_i mother see?

b. *His_i mother saw everyone_i.

Ungrammaticality in (11) is caused when the pronoun is coindexed with the *wh*-operator. Interpretation is considered to crash because the *wh*-operator crosses over the pronoun and leaves a trace, which is a variable. Such configuration makes the pronoun unable to covary with the variable, and it thus is termed the crossover effect. Reinhart (1983, cited in Shyu 1995: 85-6) proposes the restriction in (12):

(12) A pronoun must be c-commanded by its binder in order to be interpreted as a bound variable.

This accounts for the contrast between the two examples in (13):

(13) a. * His_i mother wonders who_i Mary likes t_i.

b. Everyone_i loves his_i mother.

The sentence in (13a) crashes in interpretation, for the pronoun *his* is not c-commanded by its antecedent *who*. By contrast, the pronoun in (13b) is c-commanded by the binder *everyone* and can get interpreted as a variable.

Given the generally-accepted assumption that Chinese is a *wh*-in-situ language, the condition on proper binding stated in (11) is observed in PF, as illustrated in the following example in (14)⁶⁶:

- (14) 他的顧客信賴誰?
 *tade_i guke xinlai shei_i?
his_i client trust *who**_i?
 *‘Who_i does his_i client trust t_i?’

Since crossover effects are caused by movement, it can be used to diagnose movement. If there is no WCO effect in a sentence, it indicates that no movement occurs. Consider the example in (15):

- (15) a. 越謹慎的設計師，他的顧客越信賴。
 yue jinshen-de shijishi, tade_j guke hui yue xinlai *ec_j*.
 [NP YUE prudent-DE **designer**]_j, [IP **his_j** client will YUE trust *ec_j*]
 ‘The more prudent a designer is, the more his clients trust him.’
 Lit. ‘Those designers who are more prudent, their clients trust more.’

⁶⁶ For the interrogative Chinese sentence in (14) to be interpretable, it should be changed into the sentence in (i), and the corresponding paired answer is given in (ii):

(i) Question: 誰的顧客信賴誰?
 Shei_i-de guke xinlai shei_i?
 Who_i-Pos. client like who_i?
 ‘Whose_i client likes who_i?’

(ii) Answer: 張三的顧客信賴張三; 李四的顧客信賴李四...
 Zhangsan-de guke xinlai Zhangsan; Lisi-de guke xinlai Lisi...
 Zhangsan-Pos. client like Zhangsan; Lisi-Pos. client like Lisi...
 ‘Zhangsan_i’s clients trust him_i; Lisi_j’s clients trust him_j...’

In (i), the *wh*-element *shei* ‘who’ in the object position is c-commanded and bound by the *wh*-quantifier *shei-de* ‘whose’ and thus can be interpreted as a variable.

b. 創意越多的作家_i 他的讀者越樂於支持。

chuangyi yue dou de zuojia, tade duzhe yue leyu zhichi ec.
 [idea YUE many DE Rel] writer NP]_i, his_i readers YUE happy.to support ec_i
 ‘The more ideas a writer has, the happier his readers are to support him.’
 Lit. ‘Those writers who have more ideas, his readers are happier to support.’

The possessive pronoun *tade* ‘his’ in above two examples covaries with the left-dislocated NP, which is co-indexed with the empty category in the object position. The coindexation between the nominals in (15) has the following schema:

(16) yue_1 -NP_i...pronoun_i...ec_i

If the yue_1 -NP were moved from the object position, the WCO effect would be displayed, and the empty category (the trace) could not be bound by the pronoun. That the empty category is freely bound by the pronoun indicates that the WCO effect is absent, and accordingly the empty category is not a trace left after movement⁶⁷. This lends support to the contention that the empty category is base-generated; no movement occurs here.

Without movement, the binding relation that holds between the empty category in the object position and the left-dislocated yue_1 -NP should be an antecedent-pronoun relation, with the yue_1 -NP A-bar binding the empty category. This is evidenced by the following example:

⁶⁷ Lasnik and Stowell (1991) suggest that WCO effects occur only when the pronoun and the trace are locally A'-bound by a true QP (or by a trace of a true QP). Since the yue_1 -NP is not a true quantifier phrase (QP), but rather an indefinite degree expression, Lasnik and Stowell's contention may help account for absence of WCO in the variant of yue-constructions discussed in this Chapter.

(17) 越謹慎的設計師，張三認為顧客越信賴。

Yue jinshen-de shejishi, Zhangsan renwei guke yue xinlai *ec*.
 [YUE prudent-DE designer NP]_i, Zhangsan think [_{CP} clients YUE trust *ec*]_i
 ‘The more prudent a designer is, the more Zhangsan thinks clients trust him.’

If the empty category in the example of (17) is pronominal, it could refer to the *yue*₁-NP, Zhangsan, or even some other person in the discourse according to Principle B. However, grammaticality judgment shows that the empty category can only refer to the referential expression represented by the *yue*₁-NP. Therefore, the empty category in the main clause is analyzed as a variable⁶⁸ (Hou and Kitagawa 1987; Huang 1989).

6.2.4 Lack of an anaphoric relation

The movement approach is also refuted by evidence from sentences in which the fronted *yue*₁-NP does not have an anaphoric relation to a gapless main clause, as shown in (18):

⁶⁸ In Huang (1989) explication of the pro-drop phenomenon in Chinese, he argues that the Chinese null subject is regarded as a genuine null pronominal whereas the null objects should be best analyzed as a variable. The evidence is based on identification of the empty category in the object position of the sentence in (i):

(i) Zhangsan shou [Lisi hen xihuan *ec* le]
 Zhangsan_i say [Lisi_j very like *ec*_{*i/*j} Perf]
 ‘Zhangsan_i said Lisi_j likes him_{*i/*j/k} very much.

In (i), the null object must refer to some other person (a discourse topic understood in context), but not to the matrix subject *Zhangsan*, and it is A-bar bound by a null operator.

(18) a. 越有名的餐廳，食物不一定越好吃。

Yue youming de canting, shiwu bu-yiding yue haochi.
 [YUE famous DE restaurant_{NP}], food not-necessary YUE tasty
 Lit. ‘For a more famous restaurant, (its) food is not necessarily tastier.’
 or ‘It’s not necessary that the more famous a restaurant is, the tastier (its)
 food is.’

b. 我越喜歡的餐廳，生意越好。

wo yue xihuan de canting, shenyi yue hao.
 [I YUE like DE restaurant_{NP}], business YUE good
 ‘For the restaurant I like better, (its) business is better.’

c. 颱風越多的季節，蔬菜的價格越高。

[[taifong yue dou de_{Rel}] jiji_{NP}], shucan-de jiage yue gao.
 Typhoon YUE dou DE season, vegetables-Gen. price YUE high
 ‘For the seasons when there are more typhoons, the price of vegetables is
 higher.’

In all the three examples, the left dislocated NP is not linked to an argument in the main clause. Therefore, movement does not occur here, and the left dislocated NP is derived by the base-generation strategy.

With respect to interpretation, the left located NP seems to function as an ‘aboutness’ topic or a gapless topic and the main clause in which the *yue*₂ is contained is the comment. However, as noted in Chapter Five, the occurrence of Chinese topics is not dependent on a particular lexical item, but we nonetheless observe that the lexical word *yue* is obligatory in the left-located NP. That is, if an analysis assumes the entire left-

dislocated NP is a topic, it needs to account for the crash of interpretation when *yue*₁ is absent from the left-dislocated NP. Alternatively, I propose that the entire *yue*₁- NP is analyzed as a focused phrase, with the N⁰ head alone taken as a topic or given information. The structure will be presented in a later section.

6.2.5 Resumptive pronouns are possible

It is generally assumed that a trace left behind cannot host an overt pronoun, that is, a resumptive pronoun (Aoun and Li 2003, Gasde and Paul 1996, Kuong 2006 among others). In other words, occurrence of a resumptive pronoun indicates the absence of movement. Consider the following examples in (19):

- (19) a. 能力越好的部屬 老闆越願意給他機會。

Nengli yue hao de bushu, laoban yue uanyi
[Capability YUE good DE subordinator NP]_i, boss YUE willing

gei (ta) jihui.
give (him)_i opportunity

‘The more capable a subordinator_i is, the more willing the boss is to give him_i opportunities.’

- b. 越能吸引讀者的作家, 出版商越有興趣和他合作。

yue neng xiyin duzhe de zuojia, chubanshang yue you-xingqu
[YUE can attract readers DE Rel] writer NP_i, publisher YUE have-interest

han ta hezuo.
with him_i cooperate

‘The more able to attract readers a writer_i is, the more interested the publisher will be in cooperating with him_i.’

- c. 風格越獨特的設計師 推薦他的顧客越多

fengge yue dude de shejishi, tueijian (ta) de guke
 [style YUE unique DE designer NP]_i, [recommend (him_i) DE Rel] clients NP]

YUE dou

YUE many

‘The more unique a designer’s style is, the more clients there are who recommend him.’

- d. 越有才華的畫家, 越多人買他的作品

yue you-caihua de huajia, yue duo ren mai *(ta-de) zuopin
 [YUE have-talent DE] artist NP]_i, YUE may people buy *(his_i) works

‘The more talents an artist shows, the more people there are buying his works.’

All the above examples demonstrate that a resumptive pronoun can occur in the position where the *yue*₁-NP is construed. That indicates the *yue*₁-NP is derived by a base-generation strategy, but not through movement.

6.3 The *yue*₁-NP in the left periphery

The previous section presents arguments against a movement approach to the derivation of the *yue*₁-NP. This section addresses the status of the *yue*₁-NP as a focused phrase in the left periphery and how it interacts with a topic. Empirical data will show that a topic may be embedded in the *yue*₁-NP or occur in a higher position.

6.3.1 The *yue*₁-NP functions as a focus

In Chapter Five, for the canonical Chinese CC construction consisting of two clauses, I argue that the *yue*₁-clause is a focused clause in the specifier of the FocP, with the *yue*₂-clause being the complement. The argument pertains to the observation that a focused expression corresponds to a *wh*-element in *wh*-questions (cf. Section 5.4 in Chapter Five). Similarly, in the variant *yue*-construction, the *yue*₁-NP can also act as an information focus in answering a *wh*-question. An example is given in (20), with the focused NP boldfaced:

(20) Speaker A: 什麼樣的書 越多人買?

Shenme-iang-de shu, yue dou ren mai *ec*?

[_{NP}What-kind-DE book]_i, YUE many people buy *ec*_i

‘What kinds of books are purchased by more people?’

Lit. *‘What kinds of books, the more people buy them?’

Speaker B: 越多名人推薦的書 越多人買

yue duo mingren tueijia de shu

[[YUE many celebrity recommend *t_j* DE_{Rel}] book_j NP]_i,

yue duo ren mai *ec*

[_{IP} YUE many people buy *ec*_i]

‘Those books which *more* celebrities recommend, *more* people buy.’

In the above example, the given topic in the question is *shu* ‘book’. The complex *yue*₁-NP in Speaker B’s answer corresponds to the *wh*-element *sheme-iang-de* ‘what kinds of’ in Speaker A’s question. This suggests that the complex *yue*₁-NP is a focused NP, with the given topic, i.e. *shu* ‘books’, embedded in it.

Note that the *yue*₂ is present in the question of (20), and an answer without *yue*₁ embedded in the complex NP would be invalid, as shown in (21):

(21) *很多名人推薦的書 越多人買

* **hendou** mingren tweijian shu, **yue** dou ren mai *ec*
 [[**many** celebrities recommend DE_{Rel}] book_{NP}]_i, **YUE** many people buy *ec*_i
 Lit. ‘Those books that *many* celebrities recommend, *more* people buy.’

A native speaker’s answer which correctly contains the *yue*₁ indicates the selectional restriction imposed by *yue*₂ in the derivation.

6.3.2 When a topic is involved

The property of topic-prominence is demonstrated in this variant *yue*-construction. A topic may be embedded in the *yue*₁-NP. In the example of (22), Speaker A raises a wh-question, with the N⁰ *shine sheji* ‘interior design’ being the (discourse) topic. Three possible answers are given in Speaker B’s reply. For clarification, the focused element is boldfaced and the topic is underlined:

(22) Speaker A: 瑪麗喜歡什麼樣的室內設計?

Mali xihuan **sheme-iang-de** shine sheji?

Mary like **what-kind-of** interior design

‘What kind of interior design does Mary like?’

Speaker B: a. 瑪莉喜歡簡單的室內設計

Mali xihuan **jiandan-de** shine sheji

Mary like **simple-DE** interior design

‘Mary likes simple interior design.’

b. 越簡單的室內設計, 瑪麗越喜歡

yue jiandan-de shine sheji, Mali yue xihuan *ec*
 [YUE simple-DE interior design_{NP}]_i, Mary YUE like *ec_i*
 ‘The simpler the interior design is, the more Mary likes it.’

c. 室內設計, 越簡單的, 瑪麗越喜歡

shine sheji, **yue jiandan-de** *ec*, Mali yue xihuan *ec*
interior design_i, YUE simple-DE *ec_i*, Mary YUE like *ec_i*
 ‘For interior design, the simpler (it is), the more Mary likes.’

In Speaker B’s first answer (a), both the focus and the topic are in-situ. The answer (b) has the topic contained in the *yue*₁-NP, which is co-indexed with the empty category in the object position of the main clause. The topic *shine sheji* ‘interior design’ can also occur higher than the *yue*₁-constituent, as shown in the answer (c). Since NPs are island, the topic *shine sheji* ‘interior design’ in the (c) answer cannot be derived via movement. Therefore, the topic is treated as base-generated. It is the head of the topic chain (Shi 2000, Li 2004) and is coindexed with the empty category in the *yue*₁-NP and in the main clause respectively.

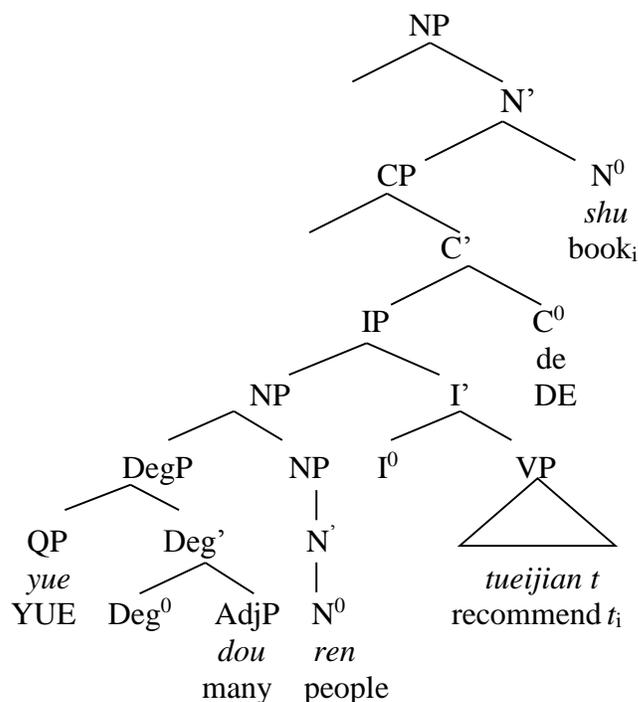
6.4 The proposed analysis

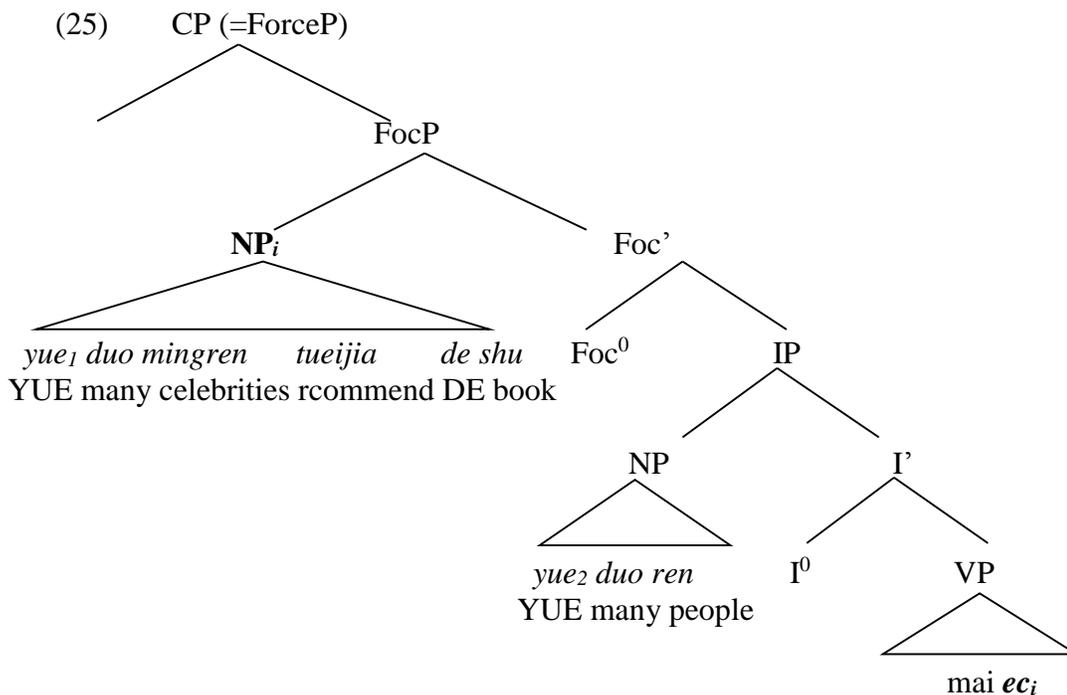
For the variant Chinese CC construction examined in previous sections, this section presents an analysis, which is unitary with the analysis of the canonical Chinese CC construction proposed in Chapter Five. In Section 5.4 in Chapter Five, I propose that the *yue*₁-clause is analyzed as a focused clause in the specifier of the FocP. In semantics, a null correlative operator binds the degree variable expressed by *yue* in each clause.

Similarly, for the current variant construction, I assume Rizzi's (1997, 2004) cartographic approach to the left periphery and propose that the *yue*₁-NP is a focused NP in [Spec, FocP] and that the null *Foc*⁰ selects a clause containing *yue*₂. The feature [+focus] in the *Foc*⁰ makes co-occurrence of *yue*₁ and *yue*₂ obligatory. For the sentence in (3a), repeated below as (23), the internal structure of the complex *yue*₁-NP and the entire construction's structure are schematized in (24) and (25):

- (23) 越多名人推薦的書, 越多人買
*yue*₁ duo mingren tueijia de shu *yue*₂ duo ren mai ec
 [[YUE₁ many celebrity recommend *t_j* DE_{Rel}] book_jNP]_i, [IP YUE₂ many people buy *ec*]
 'The more celebrities recommend a book, the more people buy it.'

- (24) The structure of the complex *yue*₁-NP





In the structure of (25), the *yue₁*-NP is the A-bar antecedent binding the variable in the object position. It may also co-index with a *pro* in the subject position of the *yue₂*-clause. An example is given in (26) and its structure is shown in (27):

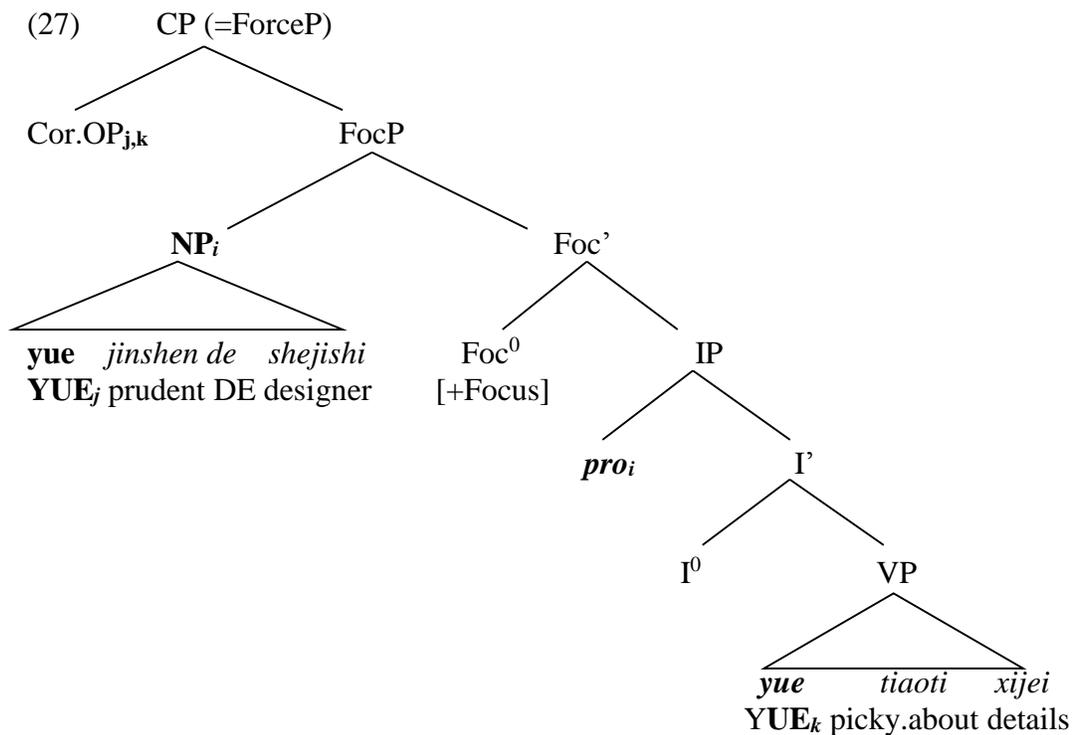
(26) a. 越謹慎的設計師(,) 越挑剔細節

Yue jinshen-de shejishi (,) *ec* yue tiaoti xijei

[YUE prudent-DE designer NP_i] (,) *pro_i* YUE be.picky.about details

‘Designers who are more prudent are pickier about details.’

or ‘The more prudent a designer is, the more pickier he is about details.’



The pause is optional in articulation. Readers might conjecture that the *yue*₁-NP is derived as a regular subject and spelt out in [Spec, IP]. However, the feature [+Focus] in the Foc⁰ needs to be checked by *yue*₁ via the spec-head relation. Therefore, the *yue*₁-NP is required to be generated in [Spec, FocP].

In both derivation schematized in (25) and (27), the feature [+Focus] needs to be checked by *yue*₁ and *yue*₂ via agreement, which explains their co-occurrence. In Section 5.1.2 in Chapter Five, it is mentioned that the values of the *yue*₁ variable and the *yue*₂ variable correlate with each other. The statement of (10) in Chapter Five is repeated below as (28):

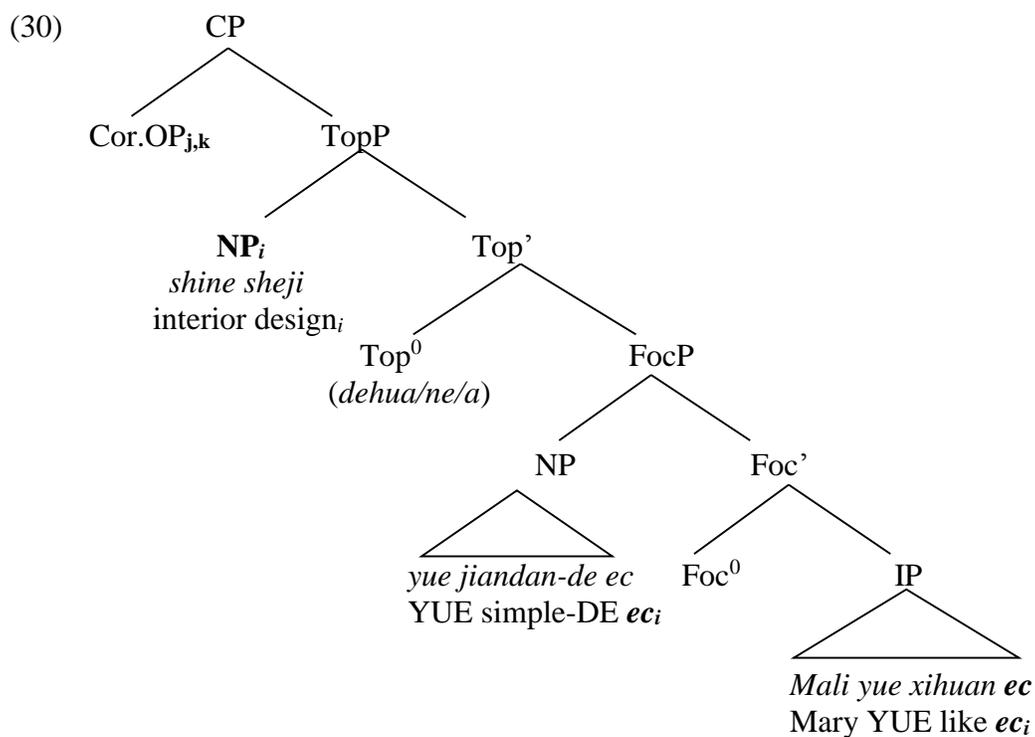
- (28) For a degree variable *x* introduced by the *yue*₁-constituent and a degree variable *y* introduced by the *yue*₂-constituent in Chinese CC constructions, when the value of *x* changes, the value of *y* proportionally changes at the same time.

For the correlation to be established, a correlative operator (Cor. OP) in [Spec, CP] unselectively binds the two variables denoted by yue_1 and yue_2 .

As presented in Section 6.3.2, a topic can precede the focused yue_1 -NP. The example presented in Section 6.3.2 is repeated here as (29):

- (29) 室內設計 (的話/呢/啊), 越簡單的, 瑪麗越喜歡
 shine sheji (dehua/ne/a), yue jiandan-de ec , Mali yue xihuan ec
 interior design _{i} Part., YUE simple-DE ec_i , Mary YUE like ec_i
 ‘For interior design, the simpler (it is), the more Mary likes.’

A topic particle *dehua*, *ne*, or *a* can optionally be attached to the topic *shine sheji* ‘interior design’, and if present, the particle is realized as the Top^0 , as shown in the following structure:



As mentioned earlier, the focused *yue*₁-NP is an island, and therefore the topic is not derived by movement, but by base generation, and has an anaphoric relation with the empty categories in the *yue*₁-NP and in the IP.

6.5 Summary

In this chapter, I first present a variant of Chinese CC-constructions. What distinguishes the variant construction from the canonical CC construction is that its *yue*₁ is contained in a left-dislocated nominal phrase. I argue that the left-dislocated NP containing *yue*₁ is not derived via movement, but via base-generation. Arguments against the movement approach are based on the results of diagnoses of *wh*-island constraints, reconstruction effects, and weak crossover effects. The empirical data illustrating the possibility of including a resumptive pronoun and the lack of an anaphoric relation between the left-dislocated NP and a gap also indicate evidence against the movement approach. I propose that the left-dislocated NP is a base-generated focused NP in the left periphery, licensed by the [+Focus] feature in the head *Foc*⁰. The proposed structure assumes a split CP and therefore can accommodate possible presence of a topic in a higher position above the focused NP. The analysis is shown to be unitary with the analysis I presented for the canonical CC construction in Chapter Five.

CHAPTER SEVEN

CONCLUSION

7.1 A summary of the proposal

In this dissertation, I reviewed and evaluated earlier studies on comparative correlatives, examined the lexical properties of the lexical word *yue*, investigated the structural dependency of the constitutive clauses, and then proposed an analysis for the syntactic derivation of Chinese CCs. Specifically, I have sought to analyze three major properties of Chinese CCs: 1) The in-situ property of the *yue*-constituent, 2) the correlation between the two degree variables represented by the *yue*₁-constituent and the *yue*₂-constituent in each clause, and 3) the structural relationship between the constitutive clauses and the overall syntactic derivation.

For the property of the lexical word *yue*, I first argued that it is not the equivalent of the comparative morpheme *er/more* in English (Section 3.1 in Chapter Three). Instead, I treated *yue* as an in-situ INDEFINITE DEGREE EXPRESSION. In the internal structure of DegP in CCs, I proposed that the lexical word *yue* (and the indefinite *wh*-in-situ of the *wh*-type CCs) projects into a QP in [Spec, DegP] whereas the head Deg⁰ is null. Crosslinguistically, the idea of distinguishing the degree/measure expression from a comparative morpheme in CCs is not unique. It is also discussed, for example, by Iwasaki and Radford (2009) and Kapetangianni and Taylor (2009a, 2009b) in their analysis for English and Greek CCs (Section 2.2 in Chapter Two as well as Section 4.4 in Chapter Four).

Similar to indefinite *wh*-in-situ expressions, the *yue*-phrase also demonstrates quantificational variability effects (QVE, discussed in Section 4.4.2 in Chapter Four). I proposed that the semantic content of the *yue*-constituent needs to be specified by an implicit operator on a par with non-interrogative *wh*-in-situ, the quantificational variability of which is determined by a null binding operator (Section 4.4 in Chapter Four and Section 5.1 in Chapter Five).

Even though the paired *yue*-constituents in CCs are morphologically and orthographically identical, the degree denoted in the preceding *yue*-constituent designates an ‘indefinite’ degree whereas the one in the second *yue*-constituent designates an ‘anaphoric’ expression of degree. In other words, the degree denoted by the second *yue*-variable hinges on that of the preceding *yue*-variable (Section 4.5.3 in Chapter Four). To account for the correlational relationship between the two degree variables represented by the DegP in each clause, I proposed that the implicit binding operator is a CORRELATIVITY OPERATOR. It unselectively binds the two indefinite *yue*-variables such that the following correlational relationship is established: for a degree variable *x* introduced by the *yue*₁-constituent and a degree variable *y* introduced by the *yue*₂-constituent in Chinese CC constructions, when the value of *x* changes, the value of *y* proportionally changes at the same time (Section 4.5 in Chapter Four and Section 5.1.2 in Chapter Five). It is noted that since the *yue*₁-variables does not c-command the *yue*₂-variable, the binding relationship between the abstract operator and indefinite variables is not a regular type, but it is established via the operation of ‘unselective binding’ (Heim 1982; Pesetsky 1987; Cheng and Huang 1996).

For the contrast in the position of the DegP between English (and many other languages') CCs and Chinese CCs, we have seen that the comparative constituent in English CCs undergoes A-bar movement and is restricted by locality constraints on movement (Section 3.4 in Chapter Three). On the other hand, the *yue*-constituent in Chinese CCs remains in situ and can be interpreted in situ without ambiguity. A covert movement is not proposed since the *yue*-constituent is immune to island effects (Section 3.4 and Section 5.1.2).

I also evaluated the theoretical adequacy of extant treatments of CCs with respect to the structural relationship between the two constitutive clauses. I first argued against the prevailing adjunct approach to the derivation of the preceding clause. A property of adjunction is that it merges constituents that are complete themselves (Haegeman 2006). If the *yue*₁-clause were an IP adjunct to the *yue*₂-clause, then it would be falsely predicted that the *yue*₁-clause would be optional and the *yue*₂-clause could be an independent clause. The topic-comment approach, proposed in Tsao and Hsiao's initial work on Chinese CCs, can correctly capture the lineal order of the constitutive clauses and also reflect the property of topic prominence in Chinese grammar. However, their analysis also treats the *yue*₁-clause as an adjunct to the *yue*₂-clause, and therefore fails to account for the syntactic interdependence between the two clauses. It does not account for the obligatory paired occurrence of *yue*₁ and *yue*₂, either. In Chinese, moved topics or base-generated gapless topics are generally triggered by certain pragmatic or discourse contexts, but are rarely, if not never, triggered by lexical items. Nevertheless, it is clear that the lexical word *yue* plays the essential role in the CC constructions.

The results of applying the diagnostics for the Coordinate Structure Constraint showed that extraction from either *yue*-clause is permissible, and therefore the coordinate-structure approach was also ruled out (Section 3.5 in Chapter Three). Instead, assuming Rizzi's (1997, 2004) split CP hypothesis, I argued that the entire CC construction involves information structure in the left periphery. Empirical data showed that the *yue*₁-constituent can correspond to the *wh*-element and be taken as the answer in *wh*-questions. This argument is a proof of the plausibility that the *yue*₁-constituent can be associated with a focus (Section 5.4.1 in Chapter Five). Since the *yue*₁-constituent is associated with the left periphery, and it can be a focus in answering *wh*-questions, I therefore proposed that FocP is the correct functional projection to analyze Chinese CCs in. The FocP is projected by a null functional head Foc⁰, which carries a pair of [+focus] features. The first clause is focused, base-generated in the left periphery, and contains the *yue*₁-constituent while the second clause containing *yue*₂-constituent is the complement of the null Foc⁰. The [+focus] feature is checked by *yue*₁ and *yue*₂, and their co-occurrence is therefore accounted for (Section 5.4 in Chapter Five). The proposed analysis can also accommodate possible presence of a topic in a higher position above the FocP. The characteristic topic prominence in Chinese grammar is thus retained.

After investigating the canonical two-clause structure of Chinese CCs, I presented a variant structure, which does not have an equivalent in English CCs. The variant structure features a left-dislocated nominal phrase in which the *yue*₁-constituent is embedded. I argued that the left-dislocated NP is not derived via movement, but via base-generation. My arguments against the movement approach are based on the results of

applying the diagnostics of *wh*-island constraints, reconstruction effects, and weak crossover effects (Section 6.2 in Chapter Six). The empirical data illustrating the possibility of including a resumptive pronoun and the lack of an anaphoric relation between the left-dislocated NP and a gap also indicate evidence against the movement approach. I proposed that the left-dislocated NP is a base-generated, focused NP in the left periphery, licensed by the [+Focus] feature of the head *Foc*⁰. The proposed analysis for the variant structure is unitary with the analysis I proposed for the canonical two-clause structure: I argued that both are the functional projection of *FocP*.

7.2 Contributions of this study

In the literature, the idiosyncratic properties of English CCs with respect to the mismatch between the semantic interpretation and the syntactic configuration led Culicover and Jackendoff (1999: 567) to claim that the CC construction does not comply with the general patterns of X-bar theory (Section 2.2.1 in Chapter Two). Culicover (1999) further categorized it to be a 'syntactic nut'--- an idiosyncratic construction whose properties do not derive from general properties of English grammar. In contrast, Dikken (2005: 498) maintains that CC constructions exhibit a high degree of crosslinguistic consistency and is "well-behaved... analyzable in keeping with the principles and parameters of UG." In the same line of reasoning, Taylor (2006) and Iwasaki and Radford (2009) also analyze the construction in the Principles-and-Parameters framework. My investigation of Chinese CC-constructions has shown that Chinese data demonstrate many crosslinguistic commonalities in syntax and in semantics and therefore

further support Dikken's (2005, 2009) contention regarding generality in syntactic configurations. Among the three categories of CC constructions that I described in Chapter Two, Chinese CCs feature the in-situ DegP. Thai, Indonesian, Vietnamese, and Cantonese also demonstrate a similar syntactic pattern. The typological contrast between the moved DegP and the in-situ DegP does not undermine the generality of CCs. Instead, it reflects the parameter of *wh*-in-situ.

Another major contribution of this study is to reveal that in addition to the well-known *yue*-type CCs, there exists the *wh*-type CC construction, which also denotes the correlational relationship between the paired degree/ amount variables (Section 4.3.2). The *wh*-type features a pair of non-interrogative *wh*-in-situ expressions. Chinese is not the only language which uses non-interrogative *wh*- expressions to form CC construction. As described in Chapter Two, crosslinguistic data show that CC constructions of languages such as Greek, Hindi, Latin, Spanish, Italian, Russian, etc. also employ non-interrogative *wh*- expressions. What distinguishes Chinese from those languages is the position of the DegP. In the case of Chinese, it stays in situ, while for those languages, it is fronted to the clause-initial position. I proposed that the in-situ DegP in Chinese CCs reflects the *wh*-in-situ property in Chinese internal grammar. The parallelism between the *wh*-type and the *yue*-type CCs, both employing in-situ indefinite expressions, leads us to a better understanding of *wh*-in-situ expressions in the Chinese grammar.

7.3 Issues for future research

There some issues pointed out by colleagues and conference reviewers at different times that I will leave for future research. First, I will consider and investigate whether other Deg heads in Chinese can appear in CC constructions. Second, in Chapter Five, I proposed that the feature [+Focus] percolates from the lexical head *yue* up to its maximal projection QP and all the way up to the entire IP in [Spec, FocP]. However, there is a hidden problem. Typically percolation only goes to the maximal projection of the head bearing the features. However, the *yue*-phrase is embedded inside maximal projections of another category (IP). This is a difficulty that must be addressed. I will further investigate the issue regarding the [Focus]-feature-checking between the lexical word *yue* and the Foc⁰ and evaluate the theoretical adequacy of appealing to feature percolation. Third, Chinese CCs can contain three clauses, as shown in the following example:

天氣越熱，電費越高，我的開銷越大。
 tienqi yue re, dian-fei yue gao, wode kaixiao yue da.
 weather YUE hot, electricity-fee YUE high, my expense YUE big.
 ‘The hotter the weather is, the higher the electricity fee is, the poorer I am.’

I will seek to accommodate the configuration exemplified by the above example in my analysis. Fourth, I plan to consider whether the proposed analysis in Chapter Five and Six can also account for a similar construction realized in the pattern of ‘…*zai* (再) …*ye* (也) …’. The following is an example of this construction:

你買再貴的禮物，我也不會接受。
 ni mai zai-kuei-de liwu, wo ye bu-huei jieshou ec.
 you buy **ZAI**-expensive-DE gift_i, I **YE** Neg.-Mod. accept ec_i
 ‘No matter how expensive a gift_i you buy (for me), I will not accept it.’

I did not incorporate this construction into my dissertation. However, by intuition, there may be shared properties between this construction and CCs. My future research will examine whether this construction may also be treated as projection of FocP. Last but not least, I will investigate whether other *wh*-in-situ languages also demonstrate a similar correspondence between the general language-internal *wh*-in-situ property and in-situ DegP in CC constructions.

REFERENCES

- Abeillé, A., Borsley, R. D., & Espinal, M. T. 2006. The syntax of comparative correlatives in French and Spanish. In *Proceedings of the HPSG06*. Stanford: CSLI Publications.
- Abeillé, A., R. Borsley. 2008. Comparative correlatives and parameters. *Lingua* 118. 1139-1157.
- Alrenga, P. 2005. A sentential subject asymmetry in English and its implications for complement selection. *Syntax* 8: 3. 175-207.
- Aoun, J. and Yen-hui A. Li. 1993a. *Syntax of Scope*. Cambridge, MA: The MIT Press.
- 1993b. Wh-elements in-situ: syntax or LF? *Linguistic Inquiry*, 24. 199–238.
- 2003. *Essays on the representational and derivational nature of grammar: The diversity of wh-constructions*. Cambridge, MA: MIT Press.
- Authier, J-Marc P. 1989. Arbitrary null objects and unselective binding. In *The Null Subject Parameter*. 45-67. Netherlands: Springer.
- Badan, L. 2008a. The even-construction in Mandarin Chinese. *Chinese Linguistics in Leipzig*, R. Djamouri, and R. Sybesma (eds.). 101-116.
- 2008b. Preposed object and low periphery in Mandarin Chinese. *Studies in Linguistics: CISCL Working Papers on Language and Cognition Vol. 2*. 19-42.
- Badan, L. & F. Del Gobbo. 2010. On the Syntax of Topic and Focus in Chinese. In *Mapping the Left Periphery*, Benincà P. & Munaro N. (eds.). 63-90. Oxford-New York: Oxford University Press.
- Beck, S. 1997. On the Semantics of Comparative Conditional. *Linguistics and Philosophy* 20. 229-271.
- Bhatt, Rajesh. 2003. Locality in correlatives. *Natural Language and Linguistic Theory* 21. 485-541.
- Boarsley, R. 2004. On the periphery: Comparative Correlatives in Polish and English. In *Proceedings of Formal Approaches to Slavic Linguistics* (Vol. 12), Olga Arnaudova et al (eds.). 59-90. Michigan Slavic Publications.

- Chao, Y. R. 1968. *A Grammar of Spoken Chinese*. Los Angeles and Berkeley, CA: University of California Press.
- Cheng, Lisa. 1991. *On the Typology of Wh-questions*. Doctoral dissertation, MIT.
- 2003a. Wh-in-situ. *Glott International*, 7(4). 103-109.
- 2003b. Wh-in-situ. *Glott International*, 7(5). 129-136.
- Cheng, L. L. and C. J. Huang. 1996. Two types of donkey sentences. *Natural Language Semantics*, 4(2). 121-163.
- Cheng, L.-S. and J. Rooryck. 2000. Licensing wh-in-situ. *Syntax*, 3(1). 1-19.
- Cheng, L. L. S., & Sybesma, R. 2005. A Chinese relative. *Organizing Grammar: Studies in Honor of Henk van Riemsdijk*. Broekhuis, Hans et al (eds.). 69-76. Berlin: Mouton de Gruyter.
- Chomsky, N. 1973. Conditions on transformations. In *A Festschrift for Morris Halle*. Stephen Anderson & Paul Kiparsky (eds.). 232-286. New York: Holt, Rinehart and Winston.
- 1976. Conditions on rules of grammar. *Linguistic Analysis* 2. 303-51.
- 1981. *Lectures on Government and Binding*. Dordrecht: Foris.
- 1982. *Some Concepts and Consequences of the Theory of Government and Binding*. Cambridge, MA: MIT Press.
- 1986. *Barriers*. Cambridge: MIT Press.
- 2000. Minimalist inquiries: the framework. In *Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik*, R. Martin, D. Michaels, J. Uriagereka (eds.). 89-155. Cambridge, MA: The MIT Press.
- Cinque, G., & Rizzi, L. 2008. The cartography of syntactic structures. *Studies in Linguistics* 2. 42-58.
- Citko, B. 2009. What don't wh-questions, free relatives, and correlatives have in common?. In *Correlatives Cross-linguistically*, A. Lipták (ed.). 49-80. Philadelphia: John Benjamins.

- Cole, P., G. Hermon, and L. M. Sung. 1993. Feature percolation. *Journal of East Asian Linguistics* 2. 91-118.
- Constant, N. and Chloe C. Gu. 2010. Mandarin even all and the trigger of focus movement. In *Proceedings of the 33rd Annual Penn Linguistics Colloquium Vol. 16* (1). 21-30.
- Cooper, Robin. 1986. Swedish and the head-feature convention. *Topics in Scandinavian Syntax*, L. Hellan and K. Koch Christensen (eds.). 31-52.
- Corver, Nobert. 1991. Evidence for DegP, *Proceedings of NELS*, Vol. 21. 33-47.
- Culicover, P. W. 1999. *Syntactic nuts: Hard cases in syntax*. Oxford University Press.
- Culicover, P., R. Jackendoff. 1999. The View from the Periphery: The English Comparative Correlative. *Linguistics Inquiry* 40. 543-571.
- Dayal, Veneeta. 2013. The syntax of scope and quantification. In *The Cambridge Handbook of Generative Syntax*, Marcel den Dikken (ed.). Cambridge, MA: University Press.
- Dikken, Marcel den. 2005. Comparative Correlative Comparatively“, *Linguistic Inquiry* 36. 497-532.
- 2006. *Comparative correlatives and successive cyclicity*, Manuscript, CUNY Graduate Centre.
- 2009. Comparative correlatives and successive cyclicity. In *Correlatives Cross-linguistically*, Anikó Lipták (ed.). 263-306.
- Downing, Bruce T. 1973. Correlative clauses in universal grammar. In *Minnesota Working Papers in Linguistics and Philosophy of Language* 2. 1-17.
- Ernst, T. 1995. Negation in Mandarin Chinese. *Natural Language & Linguistic Theory*, 13(4). 665-707.
- Fillmore, Charles J. 1987. Varieties of conditional sentences. Eastern States Conference on Linguistics. Vol. 3. 163-182.
- Fox, Danny 1999. Reconstruction, interpretation and the binding theory of chains. *Linguistic Inquiry* 30. 157-196.
- Gasde, H. D. and Waltraud Paul. 1996. Functional categories, topic prominence, and

- complex sentences in Mandarin Chinese. *Linguistics* 34. 263-294.
- Haegeman, Liliane. 2006. *Thinking Syntactically: A Guide to Argumentation and* . Malden, MA: Blackwell Publishing.
- Haspelmath, Martin. 2007. Coordination. In *Language Typology and Syntactic Description Vol. 2: Complex Constructions Complex Constructions*. Timothy Shopen (ed.). 1-51. Cambridge, MA: Cambridge University Press.
- Heim, I. 1982. *The Semantics of Definite and Indefinite Noun Phrases*. Doctoral dissertation. University of Massachusetts, Amherst.
- Her, One-Soon. 1991. Topic as a grammatical function in Chinese. *Lingia* 84. 1-23.
- Higginbotham, J. 1980. Pronouns and bound variables. *Linguistic Inquiries* 11. 679-708.
- Hou, John Y. and Chisato Kitagawa. 1987. Null operator and the status of empty categories in Chinese. *Linguistic Inquiry*, 18 (3). 518-523.
- Hsiao, Su-ying. 2002. *Negative Sensitivity in Chinese: A Comparative Study of Mandarin Chinese and Holo Taiwanese*. Doctoral dissertation, National Tsing Hua University.
- Hsiao, S.-Y. 2003. On proportional correlative constructions in Chinese and Mongolian. *Journal of Taiwanese Language and Literature* 1 (1). 243-272.
- Huang, C. T. James. 1982a. Move *wh* in a language without WH movement. *The Linguistic Review* 1. 369-416.
- 1982b [1998]. Logical relations in Chinese and the theory of grammar. Doctoral dissertation, MIT; edited version published by Garland, New York, 1998.
- 1984. On the distribution and reference of empty pronouns. *Linguistic Inquiry* 15 (4). 531- 574.
- 1989. Pro-drop in Chinese: A generalized control theory. In *The Null Subject Parameter*. 185-214. Springer Netherlands.
- 2003. The distribution of negative NPs and some typological correlates. In *Functional Structure(s), Form and Interpretation*, Audrey Li, and Andrew Simpson (eds.). 262-280. London/New York: Routledge Curzon.
- Huang, C.T. and Y.H. Li and Y.F. Li. 2009. *The syntax of Chinese*. Cambridge:

Cambridge University Press.

- Iwasaki, Eiichi & Radford, Andrew. 2009. Comparative Correlatives in English: A Minimalist-Cartographic Analysis. *Essex Research Reports in Linguistics* 57 (6).pp.1-14
- Iwasaki, E. 2011a. Comparative Correlative Constructions Revisited. *The Economic Journal of Takasaki City University of Economics*, 54, 39-55.
- Iwasaki, E. 2011b. Comparative Correlatives in German and Dutch: Germanic Word Order and Some Asymmetry. *The Economic Journal of Takasaki City University of Economics*, 54, 17-34.
- Izvorski, Roumyana. 1996. The Syntax and Semantics of Correlative Proforms. In *Proceedings of NELS 26*. 133-147. University of Massachusetts, Amherst: GLSA.
- Kapetangianni, Konstantia, & Taylor, H. L. 2009a. Comparative correlatives in Greek: The syntax of *oso*. In *Proceedings of the 2007 Workshop in Greek Syntax and Semantics at MIT. MIT Working Papers in Linguistics*, Vol. 57. 91-105.
- Kapetangianni, Konstantia, & Taylor, H. L. 2009b. Focus, degree, and quantification: Comparative correlatives and equative comparatives. *Proceedings of the 8th International Conference on Greek Linguistics (ICGL 8)*. 207-220.
- Keenan, Edward 1985. Relative clauses. In *Language typology and syntactic description*, Timothy Shopen (ed.). 141–70. Cambridge, MA: Cambridge University Press.
- Kennedy, C. 1997. *Projecting the Adjective: The Syntax and Semantics of Gradability and Comparison*. Ph.D. Dissertation, UC Santa Cruz.
- Kuong, Io-Kei. 2006. *Clausal Peripheries and Resumptives: A Cross-Linguistic Study of Topic-Comment Structures*. Doctoral dissertation, Georgetown University.
- Lasnik, H. and T. Stowell. 1991. Weakest Crossover. *Linguistic Inquiry* 22. 687-721.
- Leung, T. T.-C. 2004. Thai *ying* and the syntax-semantic mapping of comparative correlatives. *SEALS XIV: papers from the 14th meeting of the Southeast Asian Linguistics Society (2004)*. 205-217. Pacific Linguistics.
- 2005. Typology and universals of comparative correlatives (handout). *The Sixth International Conference of the Association for Linguistic Typology*. Padang Indonesia.

- Lewis, D. 1975. Adverbs of Quantification. In *Formal Semantics of Natural Language*. Edward Keenan (ed.). 3-15. Cambridge, MA: Cambridge University Press.
- Li, C. N. and S. Thompson. 1976. Subject and topic: A new typology of language. In *Subject and Topic*, (ed.) Charles N. Li, 457-489. New York: Academic Press.
- 1981. *Mandarin Chinese: A Functional Reference Grammar*. Berkeley: University of California Press.
- Li, Wenda. 2004. Topic chains in Chinese discourse. *Discourse Processes* 37 (1). 25-45.
- Li, Y. H. Audrey. 1992. Indefinite Wh in Mandarin Chinese. *Journal of East Asian Linguistics* 1(2). 125-155.
- 2007. Theories of empty categories and Chinese null elements. *Yuyan Kexue [Linguistic Sciences]* 6. 37-47.
- Lin, J. W. 2007. On the semantics of comparative correlatives in Mandarin Chinese. *Journal of Semantics* 24. 169-213.
- Lin, J. W. 2009. Chinese comparatives and their implicational parameters. *Natural Language Semantics* 17(1). 1-27.
- Lipták, Anikó. 2004. On the correlative nature of Hungarian left peripheral relatives. In *ZAS Papers in Linguistics: Proceedings of the Dislocated Elements Workshop*. 287-313.
- Lipták, Anikó. 2009. The landscape of correlatives: An empirical and analytical survey. In *Correlative Cross-linguistically*, Anikó Lipták (ed.). 1-48. Philadelphia: John Benjamins.
- Lipták, Anikó. 2012. Correlative topicalization. *Acta Linguistica Hungarica* 59 (3). 245-302.
- Liu, Chen-sheng L. 1996. A note on Chinese comparatives. *Studies in the Linguistic Sciences* 26. 217-235.
- 2008. The view from *yue*: Chinese comparative correlatives. *Lingua* 118(8). 1033-1063.
- 2010. The positive morpheme in Chinese and the adjectival structure. *Lingua* 120(4). 1010-1056.
- 2011. The Chinese *bi* comparatives. *Lingua* 121. 1767-1795.

- Matushansky, Ora. 2002. *Movement of Degree/degree of movement*. Doctoral dissertation. Massachusetts Institute of Technology.
- May, Robert. 1977. *The Grammar of Quantification*. Doctoral dissertation, Massachusetts Institute of Technology. Cambridge, Massachusetts.
- 1985. *Logical Form: Its Structure and Derivation*. Cambridge, MA: MIT Press.
- McCawley, J. D. 1988. The comparative conditional construction in English, German and Chinese. *Proceedings of the 14th Annual Meeting of the Berkeley Linguistics Society*. 176-187.
- Michaelis, L. 1994. A case of constructional polysemy in Latin. *Studies in Language* 18. 45-70.
- Mitrenina, O. 2010. Correlatives: Evidence from Russian. *Formal studies in Slavic linguistics. Proceedings of Formal Description of Slavic languages*, 7. 135-152.
- Oda, Toshiko. 2008. *Degree Constructions in Japanese*. Doctoral dissertation. University of Connecticut.
- Paul, Waltraud. 2005. Low IP and left periphery in Mandarin Chinese. *Recherches Linguistiques de Vincennes* 33. 111-134.
- Pesetsky, D. 1987. Wh-in-situ: Movement and unselective binding. In *The representation of (in) definiteness*, Eric J. Reuland and Alice G. B. ter Meulen (eds.). 98-129. Cambridge, MA: MIT Press.
- Postal, P. Martin. 1993. Remarks on weak crossover effects. *Linguistic Inquiry* 4(3). 539-556.
- 1998. *Three Investigations of Exrtraction*. (Current studies in linguistics series Vol. 29). MA: MIT Press.
- Qu, Yanfeng. 1994. *Object Noun Phrase Dislocation in Mandarin Chinese*. Doctoral Dissertation. University of British Columbia, Vancouver.
- Reinhart, Tanya. 1983. Coreference and bound anaphora: A restatement of the anaphora questions. *Linguistics and Philosophy* 6. 44-87.
- Rizzi, L. 1997. The fine structure of the left periphery. In *Elements of Grammar. Handbook of Generative Syntax*, Haegeman L. (ed.). 281-337. Dordrecht:

Kluwer.

- 2004. Locality and left periphery. *Structures and beyond: The cartography of syntactic structures*, Vol. 3. 223-251.
- Rodman, Robert. 1977. Constraints on Coordination in Thai, Korean, and Mandarin Chinese. *Linguistica Antverpiensia* Vol. 11. 143- 154.
- Ross, J. Robert. 1967. *Constraints on Variables in Syntax*. Doctoral dissertation, Cambridge, MA: MIT Press.
- Shi, D. 1989. Topic chain as a syntactic category in Chinese. *Journal of Chinese Linguistics* 17. 223–261.
- 1992. *The Nature of Topic-Comment Constructions and Topic Chains*. Doctoral dissertation. University of Southern California, Los Angeles.
- 2000. Topic and topic-comment constructions in Mandarin Chinese. *Language* 76 (2). 383-408.
- Shyu, S. 1995. *The Syntax of Focus and Topic in Mandarin Chinese*. Doctoral dissertation, University of Southern California.
- Smith, C. 1997. *The Parameter of Aspect*, 2nd ed. Dordrecht: Kluwer Academic Publishers.
- Srivastav, Vaneeta. 1991. The Syntax and Semantics of Correlatives. *Natural Language and Linguistic Theory* 9. 637-686.
- Tang, Ting-Chi. 1979. *Studies in Chinese Syntax*. Taipei: Studednt Books.
- Taylor, Heather L. 2006. Can comparative correlatives be derived under minimalist assumptions? In *Proceedings of the 36th meeting of the North East Linguistics Society (NELS)*, C. Davis, A. R. Deal, Y. Zabbal (eds.). 587- Amherst, MA.
- 2009. The syntactically well-behaved comparative correlative. In *Merging Features: Computation, Interpretation, and Acquisition*, José M. Brucart, Anna Gavarró, and Jaume Solà (eds.). 254-275. New York: Oxford University Press.
- Tsai, W.-T. D. 1994a. *On Economizing the Theory of A-bar Dependencies*. PhD Dissertation, MIT.

- 1994b. On nominal islands and LF extractions in Chinese. *Natural Language and Linguistic Theory* 12. 121–175.
- Tsao, Feng-Fu. 1977. A functional study of topic in Chinese. Doctoral dissertation, University of Southern California.
- Tsao, F.F., and Su-ying Hsiao. 2002. Lun hanyu liang-zhong guanlian jushi de yufa yu yuyi [On the syntax and semantics of two correlative constructions in Mandarin Chinese]. *Language and Linguistics* 3 (4). 811–838.
- Xiang, Ming. 2003. A phrasal analysis of Chinese comparatives. In *Proceedings from the Annual Meeting of the Chicago Linguistic Society*, Vol. 39 (1). 739-754. Chicago Linguistic Society.
- 2005. *Some Topics in Comparative Constructions*. PhD dissertation, Michigan State University.
- Xu, Liejiong and Langendoen, D. T. 1985. Topic structures in Chinese. *Language* 61(1). 1-27.
- Zhang, Niina Ning. 2006. On the configuration issue of coordination. *Language and Linguistics*. 7.1. 175-223.