

Prosodic Phonology of the Fuzhou Dialect

By

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A dissertation submitted in partial fulfillment of
the requirements for the degree of

Doctor of Philosophy

(Chinese)

at the

University of Wisconsin-Madison

2017

Date of final oral examination: 05/05/2017

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*This dissertation is dedicated to
my parents*

ACKNOWLEDGEMENTS

This dissertation would not have been possible without all the guidance, support, and encouragement from many people. Thanks to their physical or spiritual presence, writing this dissertation has turned out to be an enjoyable and rewarding experience.

Most immediately, I would like express my sincere and deep gratitude to my advisor, Professor Hongming Zhang, who has given me constant support, guidance, and inspiration throughout my graduate studies at the University of Wisconsin-Madison. Professor Zhang is not only my dissertation advisor, but also my teacher in every aspect of learning. He offered me various opportunities to get professional trainings in Chinese linguistics and Chinese language teaching. There would be never any way for me to complete my Ph.D. studies without his valuable expertise, insightful suggestions, and devoted encouragement.

I also want to express sincere appreciation to my committee members, Professors Yafei Li, Eric Raimy, William Nienhauser, and Weihua Zhu, for their intellectual help and compassionate support. I am very grateful to Professor Yafei Li for introducing me to the field of syntax. From the first day when he taught me how to draw a very basic syntax tree, to the day when I finished the last chapter of this dissertation, most of my syntax has been learned from him. Many special thanks also go to Professor Weihua Zhu and Professor William Nienhauser, who have provided much encouragement and support to me during these years. I would also like to thank Professor Eric Raimy for his support and guidance.

I also want to thank the faculty members in the Department of Asian Languages and Cultures and the Department of Linguistics. In particular, I am obliged to Professor Marlys Macken, who retired before my oral defense. She not only helped me build up my phonological knowledge, but also taught me how to conduct linguistic fieldwork, which serves as the foundation of this dissertation.

I wish to give many thanks to Ms. Teresa Nealon, the department administrator in the Department of Asian Languages and Cultures. Her kind assistance and cooperation are extremely important for my graduate studies. I would also like to thank Mr. Mike Bauman, our graduate coordinator, for his help and support. Special thanks also go to Mrs. My Linh Do, our former coordinator, who has been a constant source of encouragement especially in moments of difficulty.

I am also deeply indebted to my informants, Mr. Dexing Chen, Mrs. Ling Chen, and Mrs. Liping Song, who generously helped me with the elicitation of the Fuzhou data. I thank them for their patience and support during my fieldwork in 2016 and their suggestions and comments despite the physical distance ever since 2015.

My friends have given me much support, encouragement, and inspiration. Many thanks go to Youyong Qian for spending time reading my defense materials and offering many invaluable comments and suggestions. I would like to give heartfelt and special thanks to Yanwen Wu, my “younger sister” and my fellow TA during the last year of my Ph.D. studies, for her warm encouragement and kind support. Thanks also go to Yinyin Xue and Yuting Lan, the other two fellow TAs during my last year for their support and assistance. My appreciation also goes to Caitlyn Schuchhardt and Kathleen Daly, my writing instructors, for spending their time polishing the

language in my dissertation. I would also like to express exceptional gratitude to Erin Polnaszek Boyd, Jianyu Chen, Xi Chen, Yu-lin Chiu, Fengmei Du, Mengying Li, Terry Lin, Hai Liu, Junjing Liu, Lu Lu, Yangtian Luo, Xiang Lü, Masami Nagasawa, Michael Naparstek, Ying Qin, Yiwen Shen, Henghua Su, Jun Wang, Rui Wang, Tianlin Wang, Chen Wu, Jun Xu, Fang Yan, Han Yan, Hong Yan, Yuxia Yin, Hui Yu, Bo Zhan, and Lu Zhang for their continuous support and encouragement.

Many thanks are also owed to Professor Hongming Zhang's wife, Mrs. Minhua Li. Thanks to her kind concern, consistent support, and warm encouragement in the past six years, my time in Madison has been so enjoyable and full of fond memories.

It is also my privilege and honor to express my gratitude to the Graduate School of the University of Wisconsin-Madison for the Chancellor's Fellowship for the academic year 2015-2016, which supported part of the research underlying this dissertation. I also sincerely appreciate the financial support provided by Teaching Assistantships in the Department of Asian Languages and Cultures these years, which has made my academic pursuit in Madison possible.

Finally, I would like to acknowledge my debts to all my family members. Without their invaluable and immeasurable support, this dissertation would certainly not have been completed. Particularly, I owe a great debt to my aunts, Biying Lin and Wanxing Zheng, and their families, who have kindly supported me with their encouragement and love. Lastly or rather firstly, I would like to express my deepest gratitude to my parents. They have given me my life and offered me their absolute love, warmest encouragement, and unending support. What they have done for me can never be repaid and I would like to dedicate this dissertation to them.

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Abbreviations

A, AP	adjective, adjectival phrase
AdjR	adjective reduplication marker
Adv, AdvP	adverb, adverbial phrase
C	clitic
CG	clitic group
CL	initial consonant lenition
Cl, ClP	classifier, classifier phrase
Conj, ConjP	conjunction, conjunction phrase
CRS	currently relevant state
DLM	delimitative aspect marker
D, DP	determiner, determiner phrase
DUR	durative aspect marker
EBA	Edge/End-Based Approach
EXP	experiential aspect marker
F/Ft/ Σ	foot
FA	final assimilation
FC	final change
I/INFL, IP	inflection, inflectional phrase
IPh/t	intonational phrase
LOC	locative marker
M/ σ	mora
MOD	modification marker
MTS	morphological tone sandhi
N, NP	noun, noun phrase
NOM	nominalization marker
NOP	null operator
Num, NumP	numeral, number phrase
OT	Optimality Theory

P, PP	preposition, prepositional phrase
PASS	passive morpheme
PERF	perfective aspect marker
POSS	possessive marker
PPh/ ϕ	phonological phrase
PVP	post-verbal particle
PW/ ω	prosodic word/phonological word
Q, QP	quantifier, quantifier phrase
Qu	interrogative particle
RBA	Relation-Based Approach
S	sentence
SLH	Strict Layer Hypothesis
SPE	<i>The Sound Pattern of English</i>
t	trace of moved element
T, TP	tense, tense phrase
TS	phonological tone sandhi
UTAH	Uniformity of Theta Assignment Hypothesis
Utt/ v	utterance
V, VP	verb, verb phrase
WFR	word formation rule
X/ X^0 , XP	syntactic head of type X, full syntactic phrase of type X
X'	intermediate syntactic phrase of type X

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Abstract

This dissertation examines the phonological system of the Fuzhou dialect within the framework of prosodic phonology. It is divided into three parts. Chapter I and Chapter II belong to the first part. Chapter I presents a short introduction to the Fuzhou dialect and a brief review of some previous studies on this dialect. Chapter II introduces the theory of prosodic phonology, and provides the descriptive background on the phonological system of the Fuzhou dialect. The second part is composed of six chapters. From Chapter III to Chapter VIII, I discuss one by one, in detail, different prosodic constituents in terms of their definition and role(s) in the Fuzhou dialect, including the syllable, the foot, the prosodic word, the clitic group, the phonological phrase, and the intonational phrase. The third part (Chapter IX) summarizes the discoveries and conclusions drawn in this dissertation.

There are three major issues regarding prosodic constituents discussed in this dissertation: (a) whether these constituents exist and play a role in the phonological system of the Fuzhou dialect; (b) how to define the domain formation of these constituents in the Fuzhou dialect; and (c) what kinds of Fuzhou phonological phenomena make crucial reference to these constituents as the domain of application. The second part of this dissertation is a detailed investigation of these issues. First of all, on the basis of the discussion of Fuzhou phonological rules, including phonological tone sandhi (TS), morphological tone sandhi (MTS), final alternation (FA), final change (FC), and initial consonant lenition (CL), this dissertation provides empirical evidence for the existence of most universal prosodic constituents in the

Fuzhou dialect. Second, through the analyses of these prosodic constituents, this dissertation proves that the domains of different constituents in this dialect are defined by making use of different types of phonological and non-phonological information. Third, this dissertation demonstrates that different Fuzhou phonological phenomena refer to different prosodic constituents as the domain of application—a particular phenomenon may be triggered within one domain while blocked within another, and one phonological phenomenon that applies within more than one domain may exhibit different degrees of application. Moreover, I propose a restriction on rule application for the Fuzhou dialect, which suggests that when a domain is contained in another domain, a given phenomenon specific to the external domain may not freely be triggered within the embedded domain.

With its focus on the prosodic phonology of the Fuzhou dialect, this dissertation not only explores the phonological system of this dialect, but also probes the interactions between phonology and other components of the grammar of this dialect. Thus many aspects of this dialect, such as its phonology, morphology, syntax, and even semantics, are all discussed in this dissertation. As the first attempt to conduct a comprehensive analysis of the Fuzhou phonological system from the perspective of prosodic phonology, I hope that this dissertation will provide a thorough description and analysis of the phonological system of the Fuzhou dialect, and will further our understanding of prosodic phonology in general.

Chapter I. Introduction

1.1 General background on the Fuzhou dialect

The Fuzhou dialect, also known as the Foochow dialect or Fuzhounese, is the representative dialect of the Mindong (Eastern Min) dialect group of Chinese. As the capital city of Fujian, a province in southern China, Fuzhou is located on the northeast coast of Fujian province. While mainly spoken in the capital city Fuzhou and its vicinity including the counties of Minhou, Changle, Fuqing, Pingtan, Yongtai, Mingqing, Lianjiang, Luoyuan, Gutian, and Pingnan with different degrees of mutual intelligibility (Chen 1998, Feng 1998), the Fuzhou dialect is also used as the second dialect outside the Eastern Min area, in the cities and counties such as Jianou, Nanping, Sanming, Shaxian, Shaowu and Youxi. In addition, the Fuzhou dialect is widely used in some countries and regions abroad, especially in South and Southeast Asian countries. It is also spoken by Fuzhou immigrants in Europe and the United States, especially those living in the east coast of the United States. According to the estimate in Li et al (1994), the total number of Fuzhou speakers around the world is about ten million.

Like many other southern dialects of Chinese, Fuzhou also has a complex phonological system. The complexity of the Fuzhou phonological system lies in the fact that sound changes may occur to the initials, finals, and tones of all the participating syllables in a string of sounds. Complicated interactions between Fuzhou phonology and other components of the grammar (e.g., morphology and syntax) make the phonological features of the Fuzhou dialect even more elusive. Ever since it was

first systematically recorded in the 16th century, a considerable amount of literature has been published on the phonological system in the Fuzhou dialect. After several centuries' study, however, we have yet to obtain a complete understanding of the phonology of Fuzhou, which makes it still a great challenge to linguists.

1.2 Previous studies on the Fuzhou dialect

A number of works on the Fuzhou dialect, especially on its phonological system, have appeared in both Chinese and English since the 16th century. The following overview of previous studies will be organized first by region, and then by chronology. Further discussions of particular studies will be presented in relevant chapters.

1.2.1 Previous studies in Chinese-language scholarship

1.2.1.1 *Qi Lin bayin* 戚林八音 (The eight sounds of Qi and Lin)

The earliest known systematic work on the Fuzhou dialect appeared in the 16th century, as a rhyme book compiled by Qi Jiguang 戚继光 (1528-1588). Qi Jiguang was a famous military general in the Ming dynasty (1368-1644), who is also referred to as Qi Canjiang 戚参将 'General Qi' in the literature. The rhyme book is thus entitled *Qi Canjiang bayin ziyi bianlan* 戚参将八音字义便览 (The eight sounds of General Qi and a convenient prospectus of word meaning). According to Luo (1956), this book was then revised and augmented in the 17th century by Lin Bishan 林碧山 (?-?) under the title of *Taishi Lin Bishan xiansheng zhuyu tongsheng* 太史林碧山先生珠玉同声 (The homonyms of pearl and jade by the Grand Scribe Lin Bishan). These two books were combined in 1749 under the title of *Qi Lin bayin* 戚林八音

(The eight sounds of Qi and Lin), containing around ten thousand characters based on the earlier form of the Fuzhou dialect. This combined rhyme book presents the phonological system of the dialect, serving as the starting point of the studies on the Fuzhou dialect. Compiled in the tradition of Chinese rime dictionaries, *Qi Lin bayin* provides no clear phonological representation or phonetic transcription of the sounds of the dialect.

1.2.1.2 Tao (1930)

It was not until the first part of the 20th century that some important modern linguistic analyses of the Fuzhou dialect appeared, e.g., Tao (1930), Gao (1947), and Lan (1953). Among them, Tao (1930) is one of the earliest works that employed the method of descriptive linguistics to study the Fuzhou phonology. Tao's study not only describes the initials, finals, and tones in the Fuzhou dialect, but also roughly generalizes the rules of initial consonant lenition and tone sandhi.

1.2.1.3 Yuan (1960) and Peking University (1962, 1964)

The 1960's saw the beginning of the flourishing of studies on the Fuzhou dialect in China. First published in 1960, and then revised in 1989 and 2001, Yuan's *Hanyu fangyan gaiyao* (An introduction of Chinese dialects) discusses the Fuzhou dialect in its Chapter 11, providing a detailed description of the phonological, morphological, as well as syntactic systems in Fuzhou. The other two books, which were published by Peking University, *Hanyu fangyin zihui* (The syllabary of Chinese dialects) (1962, reprinted in 1989) and *Hanyu fanyan cihui* (The vocabulary of Chinese dialects)

(1964, reprinted in 1995), offer a list of around 3,000 commonly used characters and a list of more than 1,200 commonly used lexical items respectively. Arranging the Fuzhou materials together with materials from other Chinese dialects and providing transcription of the sounds, these books offer a wealth of data for linguistic comparison across Chinese dialects.

1.2.1.4 Li et al (1994)

The *Fuzhou fangyan cidian* (Dictionary of the Fuzhou dialect) edited by Li et al (1994) is an important work, which contains more than 6,000 commonly used words, phrases, and expressions in the Fuzhou dialect. Each entry in this dictionary is provided with IPA transcription, and some are even illustrated with sample sentences. The sandhi tone of each syllable in a word, phrase, or expression, instead of the citation tone, is provided in the dictionary, which serves as a good source for the study on the tone sandhi phenomena in Fuzhou. A description of the Fuzhou phonological system, as well as morphological processes of the reduplication of verbs and adjectives, is provided in its appendix.

1.2.1.5 Feng (1998)

Feng's (1998) *Fuzhou fangyan cidian* (Dictionary of the Fuzhou dialect) is another important dictionary on the Fuzhou dialect. Feng provides IPA transcription of both the citation form and the sandhi form for each entry, making this dictionary a very valuable reference book for the study on phonological rules in the Fuzhou dialect. A brief discussion of the Fuzhou dialect, including its history, regional varieties,

phonological system, and linguistic features, is presented in the introduction of this dictionary.

1.2.1.6 Chen (1998)

On the basis of previous studies, Chen's (1998) book provides a more in-depth analysis of the Fuzhou dialect. This book covers almost all the major linguistic phenomena in the Fuzhou dialect, including final alternation, consonant lenition, tone sandhi, historical development, etymology, reduplication of nouns, verbs, and adjectives, different parts of speech, negations, interrogative sentences, aspect, as well as special sentence structures. Special emphasis is paid to some outstanding issues such as final alternation and tone sandhi, with a great number of examples. Unlike any previous studies reviewed so far, this work provides brief linguistic explanations on all the major linguistic phenomena in this dialect.

1.2.1.7 Li & Liang (2001)

Li & Liang's (2001) *Fuzhou fangyan zhi* (Local records of the Fuzhou dialect) is another important work on the Fuzhou dialect. This book provides a large number of data of Fuzhou phonology, vocabulary, and grammar. Most data of the phonological system in the Fuzhou dialect show sound changes in initials, finals, and tones, together with the citation form, which serves as another important source for further research.

1.2.1.8 Other works in Chinese-language scholarship

Besides the works listed above, there have been many other works on the Fuzhou dialect since 1980's, e.g., Liang (1982, 1983a, b, 1986), Zheng (1983, 1985, 1988a, b, 1995), among others. These linguists have studied different aspects of this dialect including its phonology, morphology, syntax, and historical development, and have presented detailed pictures of some characteristic phonological and morpho-syntactic phenomena in Fuzhou, such as tone sandhi, *qiejiaoci* (sound-splitting words), as well as reduplications of nouns, adjectives, and verbs. Like all the works mentioned above, their studies also help enrich the understanding of the Fuzhou dialect.

1.2.2 Previous studies in English-language scholarship

1.2.2.1 Studies by western missionaries

The earliest works on the Fuzhou dialect with romanization or transcription of the sounds were written by Protestant missionaries and appeared in the second half of the 19th century. One of the most notable works is Maclay and Baldwin's *An alphabetic dictionary of the Chinese language in the Foochow dialect*. The first edition of this dictionary was published in 1870, and then re-published in 1898. This dictionary was revised and enlarged by Leger in 1929, under the title of *Dictionary of the Foochow dialect*. Other important works done by western missionaries include Baldwin's (1871) *A manual of the Foochow dialect* and its revised and enlarged edition in 1909, Adam's (1891, 1905) *An English-Chinese dictionary of the Foochow dialect* as well as several articles by Parker (1879a, b; 1881a, b).

1.2.2.2 Chen & Norman (1965a)

Among previous studies in English-language scholarship, Chen & Norman's (1965a) Fuzhou textbook, *An introduction to the Foochow dialect*, lays the foundation for many later studies of the Fuzhou dialect. In their book, Chen and Norman provide a very detailed description of the Fuzhou phonological system. The book provides the romanization and IPA of initials and finals, presents the seven citation tones in Fuzhou with the five-point scale based on Chao (1930), and discusses topics such as tone sandhi within a word, the four types of tone sandhi junctures, consonant changes, as well as final alternations. In addition to the phonology of Fuzhou, Chen and Norman's book also offers a lot of details of Fuzhou syntax, including parts of speech in Fuzhou, sentence elements, different types of questions, and aspect and tense. As a textbook, Chen and Norman's work contains a great number of examples, ranging from words and phrases to sentences and stories. With the elaborate description of the phonological and syntactic systems in the Fuzhou dialect as well as the rich corpus of Fuzhou data, Chen and Norman's book is the earliest work in English which describes the Fuzhou dialect within the framework of structural linguistics, and thus has shed light on many subsequent analyses.

1.2.2.3 Yip (1980)

Yip's (1980) work is one of the earliest attempts to employ the theory of Autosegmental Phonology to deal with Chinese dialects including Fuzhou. In her dissertation, *The tonal phonology of Chinese*, Yip discusses the issues of final alternation and tone sandhi in the Fuzhou dialect. She posits two autosegmental tiers

in her study: Register and Tone. Register has the feature [\pm Upper], and Tone has the feature [\pm High]. Thus she argues that the interaction between register and tone can be represented as follows (Yip 1980: 125):

(1)

<u>Register</u>	<u>Tone</u>
+Upper	+High (H)
	-High (L)
-Upper	+High (H)
	-High (L)

She then argues in her Section 4.4 that final alternations of Fuzhou are tonally conditioned and could be accounted for by a rule raising vowels in the context of [+Upper] Register. With the notions of Register vs. Tone, Yip also examines the tone sandhi system of Fuzhou in her Section 5.4, providing an autosegmental description and analysis of the tones and tone sandhi processes.

1.2.2.4 Wright (1983)

Wright's (1983) dissertation, *A metrical approach to tone sandhi in Chinese dialects*, is a study of tone sandhi in four Chinese dialects (Fuzhou, Shanghai, Chaozhou and Xiamen), with major emphasis on the Fuzhou dialect. Her analysis of tone sandhi in Fuzhou depends on the Metrical Theory on stress developed in Liberman & Prince (1977), Hayes (1980), Prince (1982) and Selkirk (1978, 1981). Wright argues that the tone sandhi in Fuzhou is the result of an interaction between duration and tone and that empirical evidence from spectrographic measurements

demonstrates a significant difference in syllable duration in pre-terminal position of tone sandhi spans versus terminal position: the former is regularly shorter than the latter. Thus Fuzhou is argued to have disyllabic or trisyllabic stress-feet, with the strongly stressed syllables having longer duration while the weakly stressed syllables having shorter duration. With this weak-strong feet construction, Wright examines the Fuzhou tone sandhi on both the word level and the phrasal level, and claims that this metrical approach can account for all the tone sandhi facts.

1.2.2.5 Chan (1985)

K.-M. Chan's (1985) dissertation, *Fuzhou phonology: A non-linear analysis of tone and stress*, investigates the phonology of the Fuzhou dialect with particular emphasis on tone, stress and related issues. Two theoretical frameworks are used in her dissertation: one is Autosegmental Phonology and the other is Metrical Theory. The former is used for tonal analysis, while the latter is for the analysis of stress. Like Wright (1983), Chan also argues for the interaction between tone and stress underlying the tone sandhi process in the Fuzhou dialect. With the Autosegmental Theory and Metrical Theory, Chan analyzes the tonal system, historical sources for the glottal stop coda, the interaction between tone sand stress, tone sandhi changes, the condition for tone sandhi domain, and final alternations in Fuzhou.

1.2.2.6 Shih (1986)

In Shih's (1986) dissertation, *The prosodic domain of tone sandhi in Chinese*, she suggests that some tone sandhi rules in Chinese dialects are reflections of a

typological change from tone languages to accentual languages. Shih contends that Fuzhou is one of the languages that exhibit such kind of change. She proposes that Fuzhou tone sandhi has the effect of eliminating all but the last peak within a tone sandhi domain and argues that Fuzhou tone sandhi rules regulate the tonal outputs to the effect that they resemble pitch-accent languages. Shih also argues that Fuzhou employs both syntactic and prosodic devices to determine its tone sandhi domains.

1.2.2.7 Hung (1987)

Hung's (1987) dissertation, *Syntactic and semantic aspects of Chinese tone sandhi*, is another important work which deals with the tone sandhi phenomenon in Fuzhou. In his dissertation, Hung proposes a hypothesis that the constituents of a tone group must stand in some sort of head-modifier or head-complement relation to each other. In other words, syntactic/semantic functional relations should be taken into consideration in the formation of a tone sandhi domain. More specifically, he argues that in Fuzhou, only modifiers preceding the head and a single argument following the head, can form a tone group with the head. Hung also proposes some other principles in order to cover all the Fuzhou tone sandhi data.

1.2.2.8 Zhang (1992)

Different from Hung (1987), Zhang's (1992) analysis of Fuzhou tone sandhi phenomenon is more straightforward. In the third chapter of his dissertation, *Topics in Chinese phrasal tonology*, Zhang discusses the interaction between phonology and the functional distinction between arguments and adjunct, especially how tone sandhi is

sensitive to functional relations. He divides Fuzhou tone sandhi into lexical and phrasal levels and argues that the former is sensitive only to the phonological environment while the latter requires other factors, including functional categories, the c-command condition, as well as the direction of rule application. Zhang's study demonstrates that Fuzhou tone sandhi shows that functional relations with the head play an important role, making Fuzhou tone sandhi a typical case in which a syntactic process is effective within a functional domain.

1.2.2.9 Chan (1998)

L.-L. Chan's (1998) dissertation, *Fuzhou tone sandhi*, is another work that examines the tone sandhi phenomena in the Fuzhou dialect. She discusses the disyllabic tone sandhi patterns, trisyllabic and quadrisyllabic tone sandhi patterns, as well as the issue of Fuzhou tone sandhi domain on the phrasal level. In dealing with the derivation of tone sandhi patterns at the lexical level, she argues that a stress tier in addition to a tonal tier is needed in which a right prominent foot is formed. To account for the tone sandhi domain at the phrasal level, she uses the principles of Optimality Theory to show that the Fuzhou tone sandhi domain corresponds to a post-lexical foot. The post-lexical foot is built within the phonological phrase and defined with respect to the word length of a morpho-syntactic word as well as the position of the morpho-syntactic word within the phonological phrase. Chan employs the notion of Lexical Government (cf. Hale & Selkirk 1987, Lin 1994) to define the phonological phrase in the Fuzhou dialect.

1.2.2.10 Li (2002)

Li's (2002) *Fuzhou phonology and grammar* is a comprehensive work that characterizes both the phonological and syntactic components of the Fuzhou dialect. With abundant examples, the phonology part in her book presents a complete picture of the Fuzhou phonological system, with particular emphasis on sandhi rules in various parts of a syllable, namely, the tone, the initial, and the final. The syntax part only studies some unique features of Fuzhou syntax. Li also deals with the interactions between phonology and syntax in her book, which is one of the most prominent features of the Fuzhou dialect.

1.2.3 A reflection on previous studies

Based on the brief review of the representative works in both Chinese and English, we can find some common problems in previous studies. It should be noted that the major problem in previous studies in Chinese lies in the lack of modern linguistic theories in conducting analyses of phonological phenomena in the Fuzhou dialect. All the previous studies in Chinese-language scholarship provide a number of data and a very detailed description of certain phonological phenomena. However, an adequate linguistic analysis should be able to capture the common nature of a set of complicated contexts rather than simply describe them. Most previous studies in Chinese-language scholarship discussed above are still at a stage when phonological phenomena are simply presented without further explanations. Therefore, these works are observationally adequate or at most descriptively adequate, but not explanatorily adequate.

By contrast, most previous studies in English try to account for the phonological phenomena in the Fuzhou dialect within a specific framework of modern phonological theory, such as Autosegmental Phonology (Yip 1980), Metrical Theory (Wright 1983, Chan 1985), and Prosodic Phonology (Zhang 1992, Chan 1998). This is why these studies can offer more in-depth analyses of the phonological phenomena in Fuzhou as compared to previous studies in Chinese-language scholarship. However, most of the studies in English-language scholarship only focus on a couple of the most outstanding issues in the Fuzhou dialect, such as the tone sandhi and final alternation, rather than provide a more comprehensive analysis of the Fuzhou phonological system as a whole.

To conclude, as we can see from the review of previous studies above, there has been much work on the phonological system of the Fuzhou dialect in both Chinese-language and English-language scholarship. These works, descriptive or theoretical, all contribute to our understanding of the Fuzhou phonology, either providing a detailed description of Fuzhou phonological phenomena on the basis of a number of raw data, or proposing effective theoretical analyses on some specific phenomena within a particular phonological framework. However, in order to deal with the complex phonological system in Fuzhou as well as its interactions with other components of the grammar, a more comprehensive work which is both descriptively and explanatorily adequate is needed.

1.3 The purpose of this dissertation

In order to improve our understanding of the phonological system of the Fuzhou dialect, more comprehensive works conducted within the framework of modern phonological theories are needed. This dissertation is a modest attempt to fill this void. The major framework employed in this study is the theory of prosodic phonology, which has developed since 1980s and deals with the domains of phonological phenomena as well as the interactions between phonology and other components of the grammar (the theoretical background of this study will be discussed in more detail in Chapter II).

Therefore, the purpose of this study is two-fold. On the one hand, this study is an attempt to provide a thorough description and analysis of the phonological system of the Fuzhou dialect. On the basis of published materials and my own data collection, phonological phenomena in Fuzhou such as tone sandhi, initial consonant lenition, and final alternation will all be discussed. By capturing the defining phonological characteristics of the Fuzhou dialect, I hope we can obtain a more complete picture of phonological phenomena in this dialect.

On the other hand, I hope to enhance our understanding of prosodic phonology in general through this study. Since it was developed in the 1980's, a great deal of research has been conducted from many perspectives to improve the theory of prosodic phonology. Based on the description of phonological phenomena, I will define different prosodic domains and discuss the role they play in the application of phonological rules and phonetic processes in the Fuzhou dialect. Phonological, morphological, syntactic, semantic, and pragmatic information in the Fuzhou dialect

will be probed in the definition of prosodic domains. This study is thus expected to provide evidence for the prosodic phonology theory from the Fuzhou dialect, and improve our understanding of phonology as well as the relationship between the phonological component and other components of the grammar.

Since this is the first attempt to establish a systematic analysis of the Fuzhou phonological system from the perspective of prosodic phonology, it may raise more questions than it can solve. However, I still hope that this study will faithfully present the features of the Fuzhou phonological system, and will further our understanding of prosodic phonology with respect to the domain formation of prosodic constituents, the Prosodic Hierarchy, as well as the interface of phonology and other components of the grammar.

1.4 Data in this dissertation

In writing this dissertation, data of the Fuzhou dialect from published materials (e.g., Fuzhou textbooks, dictionaries, local records, and monographs on the Fuzhou dialect) and my own data collection are both used.

1.4.1 Published materials on the Fuzhou dialect

The main data used in this study come from some of the most important published materials. The main ones I consult include Chen & Norman (1965a, b), Li et al. (1994), Chen (1998), Feng (1998), Li (1998)¹, Li & Liang (2001), and Li (2002), since they all provide a large number of data in the Fuzhou dialect. It should be noted

¹ Li's (1998) dictionary is a Fuzhou-English dictionary based on the dictionary compiled by Li et al (1994).

that early sources before Chen & Norman (1965a, b), such as Maclay and Baldwin (1870, 1898), Baldwin (1871, 1909), Adam (1891, 1905), and Tao (1930), do not provide IPA transcription of sounds, and thus will not be consulted in this study. Moreover, these early sources only present the polysyllabic forms in the Fuzhou dialect in the way that each syllable in the polysyllabic forms is given in its citation form, with no sound changes in initials, finals, or tones. Therefore, in order to obtain a full picture of Fuzhou phonology, more attention is paid to materials that present the data in the sandhi form in various phonological environments, for example, the dictionaries compiled by Chen & Norman (1965b), Li et al. (1994), Feng (1998), and Li (1998). In addition to these dictionaries, I also consult Chen & Norman's (1965a) textbook, Chen's (1998) and Li's (2002) monographs for more data since they not only provide data in phonological environments, but also provide those appearing in syntactic environments.

Apart from the main sources mentioned above, additional published materials containing raw data on the Fuzhou dialect which are used in this dissertation include, but are not limited to, Li et al.'s article (1979), Liang's (1982, 1983a, b, 1986) articles, Peking University's cross-dialectal syllabary (1962, 1989) and vocabulary (1964, 1995), Lin (2002)'s book on the morphology and syntax in Eastern Min dialects, as well as Wright's (1983) and Chan's (1985) dissertations.

1.4.2 Data collection

Besides the published materials mentioned above, additional information was collected from Dexing Chen, Ling Chen, and Liping Song, three native speakers of

the Fuzhou dialect. Dexing Chen is a university professor who was born in 1932. Mr. Chen was born and raised in the city of Fuzhou. He can only speak the Fuzhou dialect and Mandarin Chinese, with the Fuzhou dialect as his daily language.² Mrs. Ling Chen is Mr. Chen's daughter, who was born in 1961, is working as a surgeon. She was also born and raised in the city of Fuzhou. She only speaks Fuzhou and Mandarin Chinese in her daily life.³ Mrs. Liping Song is Mr. Chen's daughter-in-law. She was born in 1960 in Fuzhou and only speaks the Fuzhou dialect and Mandarin Chinese.⁴ These three informants mainly speak the Fuzhou dialect at home, and their speech is quite similar.

1.5 Organization of this dissertation

This dissertation's investigation of the prosodic phonology of the Fuzhou dialect will consist of nine chapters. As presented above, the first chapter provides the general background on the Fuzhou dialect, the brief review of previous studies, and the information about data used in this study. The purpose of this study is also discussed in this chapter.

Chapter II is divided into two parts. A critical survey of the theoretical framework I assume in this dissertation, namely the prosodic phonology, will be provided in the first part of Chapter II. The history and the basic tenets of the prosodic phonology theory will be presented. Some outstanding issues of the prosodic phonology theory such as the organization of the prosodic hierarchy, the relations between different

² Mr. Dexing Chen's parents and wife are all native Fuzhou speakers. He has been spending his adult years working in Fuzhou, with only short trips outside the city.

³ In her youth, Mrs. Chen spent several years in Nanjing. She learned some English and Japanese when she was young, but can only recall a few words now.

⁴ Mrs. Song never studied or worked in other cities.

prosodic units, and the status of a particular prosodic unit, are covered in this chapter. The second part is dedicated to the descriptive background on the Fuzhou dialect. Major phonological phenomena in the Fuzhou dialect, including tone sandhi rules, final alternation, final change, and initial consonant lenition, will be presented with examples.

From Chapter III to Chapter VIII, I will discuss different prosodic constituents in the Fuzhou dialect. The definition of each prosodic domain as well as Fuzhou phonological phenomena relevant to each domain will be discussed.

Specifically, Chapter III is an investigation of the lowest constituents in the prosodic hierarchy, that is, the syllable and the foot. It will be shown that the distribution of two groups of Fuzhou finals is sensitive to the domain of the syllable and hence the syllable should be treated as an indispensable constituent in the prosodic hierarchy of the Fuzhou dialect. Then the issue of whether the prosodic constituent of the foot exists in the prosodic hierarchy of the Fuzhou dialect will be investigated. It will be demonstrated that the foot is not a necessary prosodic constituent in Fuzhou because of the lack of independent evidence for stress and the fact that the foot cannot be considered as the domain for the application of any phonological phenomena in this dialect.

Chapter IV explores the prosodic word. Major morpho-syntactic words in the Fuzhou dialect will be examined with respect to the application of various phonological rules and phonotactic constraints. On the basis of the investigation of Fuzhou morpho-syntactic words and major phonological phenomena, the definition of the prosodic word domain in this dialect will be proposed.

Chapter V is a formal analysis of enclitics and the clitic group composed of the host plus the enclitic in the Fuzhou dialect. A detailed analysis of the sound, distribution, morpho-syntactic properties, and phonological behaviors of Fuzhou enclitics and the clitic group composed of the host plus the enclitic will be provided. The Restriction on Rule Application across domain boundaries in the Fuzhou dialect will be tentatively proposed and briefly discussed in this chapter.

Chapter VI concerns itself with the phonological phrase. The major Fuzhou phonological phenomenon discussed in this chapter is the application of tone sandhi rules at the phrasal level. I will try to demonstrate that the complicated tone sandhi phenomena at the phrasal level can be accounted for with the notion of the phonological phrase domain formation as well as the Restriction on Rule Application in this dialect. Other phonological phenomena will be discussed as well on the basis of the definition of the phonological phrase in this dialect.

Chapter VII discusses proclitics and the other subtype of clitic group, namely the clitic group composed of the proclitic plus the host, in the Fuzhou dialect. It will be seen that the clitic group consisting of the proclitic plus the host exhibits very different phonological behavior from the clitic group composed of the host plus the enclitic discussed in Chapter V. I will show that although the two subtypes of clitic groups in Fuzhou pose a problem for the well-formedness condition on prosodic constituency in the prosodic phonology theory, namely the Strict Layer Hypothesis, this problem can be resolved by assuming a slight weakening of the Strict Layer Hypothesis. Further discussions on the Restriction on Rule Application will also be presented in this chapter.

Chapter VIII will focus on the intonational phrase. Phonological phenomena related with semantic and/or pragmatic information, such as the rate of speech, the style of speech, and contrastive prominence, will be explored in this chapter. This chapter is concluded with a formal analysis of the Restriction on Rule Application.

Chapter IX will provide a complete model of prosodic hierarchy in the Fuzhou dialect based on the discussion on each prosodic constituent in previous chapters. Containing some concluding remarks, this chapter will summarize the discoveries and conclusions drawn in this study.

Chapter II. Background

This dissertation is an investigation of the Fuzhou phonological system within the framework of the prosodic phonology theory. This chapter is thus intended to provide some theoretical and descriptive background before we move on to the major topics in the following chapters. Section 2.1 focuses on the theoretical framework assumed in this study. The development and the basic claims of the prosodic phonology theory, as well as some of the most outstanding issues in the literature, are discussed in Section 2.1. Section 2.2 offers a basic introduction to the Fuzhou phonological system. Tonal inventory and segmental inventory in the Fuzhou dialect are presented in this part. A survey of a number of phonological phenomena in Fuzhou is also provided.

2.1 Theoretical background: the prosodic phonology theory

2.1.1 Introduction

We proceed now to a critical survey of the theoretical framework assumed in this dissertation, namely, the prosodic phonology theory, which in particular is the theory of phonological domains and interactions between phonology and other components of the grammar. This part presents the development of the prosodic phonology theory (Section 2.1.2), its basic tenets (Section 2.1.3), as well as some outstanding issues concerning this theory which are relevant to the topics under discussion in this dissertation (Section 2.1.4). This part is concluded with a summary in Section 2.1.5.

2.1.2 The development of the prosodic phonology theory

In the “standard theory” proposed in Chomsky & Halle’s (1968) *The sound pattern of English*, namely the SPE model, phonology was treated as a linear organization of segments and a set of phonological rules. In the SPE model, the surface syntactic structure and the phonological representation are related via a set of readjustment rules, which introduce boundary symbols into the surface syntactic structure. The domains of phonological rules were thus defined in terms of the boundaries of the surface syntactic structure. This view of phonology has been demonstrated to be inadequate. On the basis of the developments in phonological theory, it is now argued that the phonological component of the grammar should be treated as a set of interacting subsystems, including lexical phonology, autosegmental phonology, metrical theory, and prosodic phonology.

Developed over 30 years ago, the prosodic phonology still stands as a representative phonological theory of the interactions between phonology and other components of the grammar. The earliest precursor of the theory of prosodic phonology is commonly taken to be Selkirk (1978/1981).⁵ Selkirk developed the first model of prosodic phonology, based on the central idea of Liberman (1975) and Liberman & Prince (1977) that segments are dominated by a multi-layered structure which expresses rhythmic properties of the linear string and assigns relative prominence to individual chunks. In Selkirk’s (1978/1981) model, a suprasegmental, hierarchically arranged organization (namely, prosodic structure) of phonological

⁵ This article is commonly quoted as Selkirk (1978) or Selkirk (1981). The content of this article was first presented at an Amherst conference in 1978, while the first published version is the text that appeared in the proceedings of the Nordic Prosody conference in 1981.

representation is proposed. A six-layer prosodic hierarchy was introduced in this article: the syllable, the foot, the phonological word,⁶ the phonological phrase, the intonational phrase, and the phonological utterance.

After introducing the idea of prosodic structure into the field of the syntax-phonology interface in her early works (Selkirk 1978/1981, 1980a, b), Selkirk (1984), nevertheless, abandons prosodic constituency under the influence of Prince's (1983) grid-only approach. She proposes a version of prosodic phonology without prosodic constituency and holds that the function of all prosodic categories except the intonational phrase is taken over by the metrical grid (Selkirk 1984: 29ff). The famous condition on prosodic constituency, the Strict Layer Hypothesis (SLH), is also formally proposed in Selkirk (1984: 26ff).

However, two years later, Selkirk (1986) returns to prosodic constituency, arguing that there is a "peaceful coexistence" of prosodic constituency and the metrical grid. She claims that the metrical grid is defined not with respect to syntactic domains but with respect to prosodic structure instead, which is required in the analysis of Chi Mwi:ni stress (Selkirk 1986: 376). This system thus acknowledges two distinct mapping mechanisms that are serially ordered: (a) prosodic constituency is the output of regular mapping rules, with morpho-syntactic structure as its input; and (b) the metrical grid construction is performed on prosodic structure domains by a second set of mapping rules. Following Chen (1985), Selkirk (1986) also argues for a single-edge-based approach (namely Edge/End-Based Approach; EBA henceforth; to

⁶ In this dissertation, I use the term "prosodic word", instead of the phonological word. These two are synonymous and thus interchangeable. It should be pointed out that the term "phonological word" actually had been at use before the theory of Prosodic Phonology was developed (e.g., Dixon 1977a).

be discussed in more detail in Section 2.1.4.3), claiming that between the foot and the intonational phrase, the relation between syntactic structure and prosodic structure is defined in terms of the ends/edges of syntactic constituents of designated types (Selkirk 1986: 385). To be specific, it calls for the right or left edges of designated syntactic constituents to match up with edges of prosodic constituents.

Built on Selkirk's work, Nespor & Vogel's (1986) book is another fundamental pioneering and authoritative work on prosodic phonology. In this book, Nespor & Vogel concentrate the insights they obtained based on the data elicited from a number of languages such as Italian and English. Seven prosodic constituents are proposed: the syllable, the foot, the phonological word, the clitic group, the phonological phrase, the intonational phrase, and the phonological utterance. Different from the Edge/End-Based Approach advanced by Selkirk, the Relation-Based Approach (RBA henceforth; to be discussed in more detail in Section 2.1.4.3) proposed in this book makes reference to X-bar notions of phrase structure, such as head-complement, modifier-head, and specifier-head relations, as well as syntactic branching.

Other pioneering works on the theory of prosodic phonology in the early period include Hayes (1984/1989),⁷ Booij (1983, 1985a, b, 1986), Neijt (1985), Itô (1986), Chen (1985, 1987), and others.

After the advent of Optimality Theory (OT), prosodic phonology has been translated into the constraint-based environment (to be discussed in more detail in Section 2.1.4.3). Selkirk (1996) adopts the OT framework of ranked constraints and

⁷ Hayes (1984) is an unpublished paper, which is later published in 1989.

extends it to the area of the phonology-morphosyntax interface. After the articulation of a generalized theory of alignment in McCarthy & Prince (1993), Selkirk (1996) defines a family of alignment constraints, namely $A_{\text{ALIGN-XP}}$, which define edges of prosodic constraints in terms of edges of surface syntactic structure. Moreover, Selkirk (1996) factors out the monolithic Strict Layer Hypothesis into four more primitive component constraints that can be manipulated independently. Truckenbrodt (1995, 1999) introduces other constraint families into the prosodic phonology theory, including $W_{\text{RAP-XP}}$, which requires that each XP be contained in the same phonological phrase, and $A_{\text{ALIGN-FOC}}$, which demands that each focused constituent is right-aligned with a phonological phrase boundary.

In addition to these constraints, other constraints have also been proposed for prosodic phonology, such as $B_{\text{INARY-MAP}}$ (a major phrase must consist of at most and/or at least two minor phrases; cf. Selkirk 2000, Prieto 2005, 2006), $U_{\text{NIFORMITY}}$ (a string is ideally parsed into units of the same length; cf. Ghini 1993, Sandalo & Truckenbrodt 2002, Prieto 2005, 2006), and $I_{\text{NCREASING UNITS}}$ (phonological phrases on the recursive side are heavier than those in the nonrecursive side; cf. Ghini 1993).

Over the past 30 years, there have been a number of developments in the prosodic phonology theory. Some early assumptions have been revised, discarded, or replaced by new ones. As we can see above, even the basic hypothesis, the Strict Layer Hypothesis, has been adapted into the constraint-based environment and thus some aspects of the hypothesis are not that “strict” today. However, basic tenets of the prosodic phonology theory, such as prosodic constituents as domains of application,

and the notion of the prosodic hierarchy, have not been modified and thus still remain almost unchallenged.

2.1.3 Basic tenets of the prosodic hierarchy theory

2.1.3.1 Indirect reference: the prosodic structure

There is a wealth of literature concerning interactions between phonology and other components of the grammar, or in other words, the issue of how phonological processes can make reference to morpho-syntactic information as domains for their application. Theories of the interface can be divided into two major groups according to the role they attribute to morpho-syntactic information in the process of the creation of phonological domains. The first group of interface theories, the Direct Reference Theory, insists that phonological processes should be allowed to make direct reference to morpho-syntactic information (cf. Manzini 1983, Kaisse 1985, Odden 1987, 1990, 1996, Rizzi & Savoia 1993, among others). By contrast, the second group, the Indirect Reference Theory, represented by the prosodic phonology theory, holds that phonological processes are not directly sensitive to syntactic information (cf. Selkirk 1978/1981, 1980a, b, 1984, 1986, Nespor & Vogel 1986, 2007, Hayes 1984/1989, among others).

The main claim of prosodic phonology is that syntactic and phonological representations are not isomorphic and that morpho-syntactic constituents do not determine the domains of the application for phonological rules and phonetic processes. Within the model of the prosodic phonology theory, there exists a hierarchically arranged organization called Prosodic Structure between the

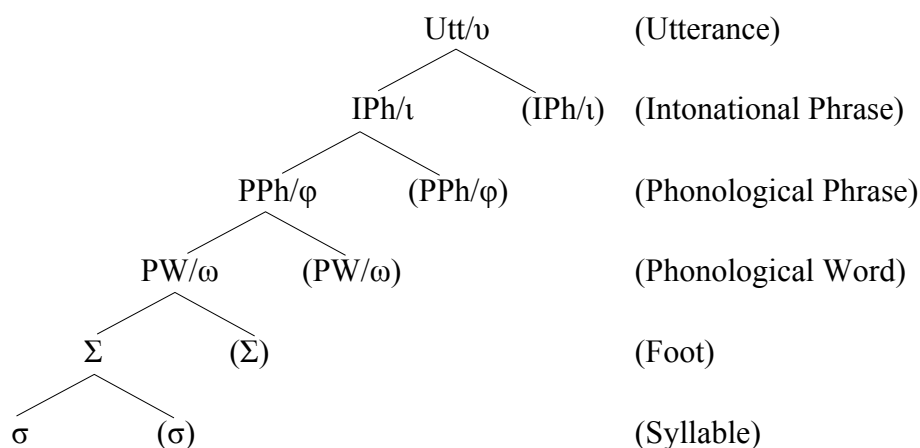
morpho-syntactic and phonological components. A given string of sounds is thus organized into a series of hierarchically arranged prosodic constituents, with each prosodic constituent serving as the domain of application for specific phonological rules and phonetic processes. Thus phonological operations themselves do not refer to syntactic constituents in a direct way, but instead to the already created prosodic constituents of the prosodic structure. Hence, the existence of phonological rules and phonetic processes that make reference to a particular prosodic constituent is also viewed as one significant motivation of the establishment of the prosodic constituent itself in a given language. The domain of each prosodic constituent is built with reference to different types of phonological and non-phonological information, but the resulting prosodic constituents that make reference to non-phonological notions are not necessarily isomorphic to any morpho-syntactic structures (cf. Nespor & Vogel 1986, 2007, Zhang 1992, 2017, among others).

2.1.3.2 Prosodic hierarchy

Prosodic constituents of the prosodic structure are arranged in hierarchical order, and thus form the prosodic hierarchy. Within the hierarchy, prosodic constituents at a given level are composed of constituents on the next lower level. The prosodic hierarchy was first proposed in Selkirk (1978/1981), as presented in Figure 1.⁸

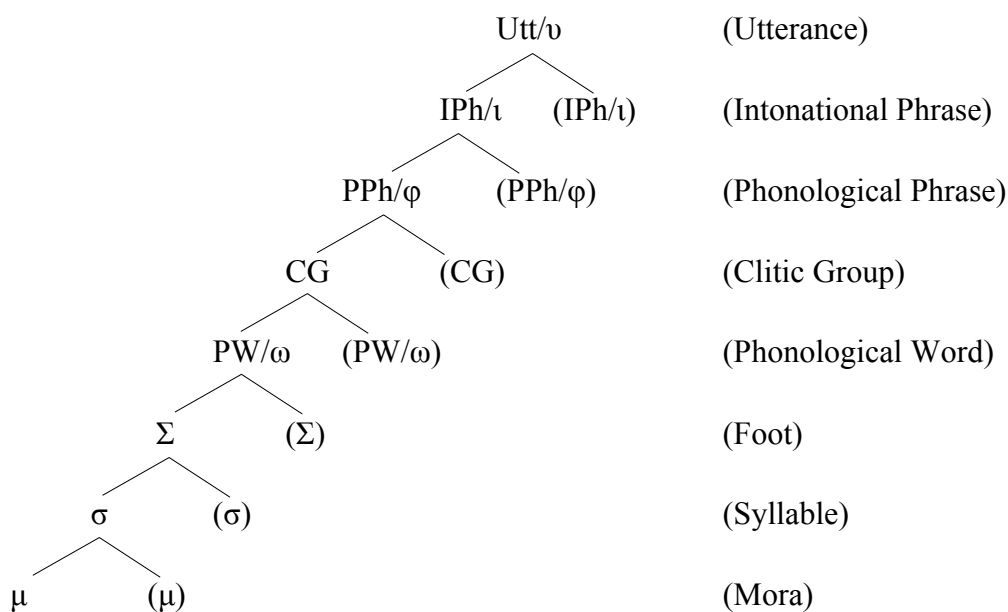
⁸ Notice that in Selkirk's (1978/1981) initial prosodic hierarchy, there is only one level of phonological phrase. This is held in Nespor & Vogel's (1986) version as well. But subsequent work has indicated that a larger variety of phrase types may be motivated, Selkirk (1986), as well as Selkirk & Tateishi (1988), distinguish a Major Phrase and a Minor Phrase. Beckman & Pierrehumbert (1986) and Pierrehumbert & Beckman (1988) distinguish two as well, referring to them as the accentual phrase and the intermediate phrase, respectively.

Figure 1. Prosodic hierarchy (Selkirk 1978/1981)



Hayes (1984/1989) and Nespor & Vogel (1986) added and inserted the prosodic constituent clitic group (CG) between the phonological word and the phonological phrase.⁹ Zec (1988) proposed another domain, the mora (μ), which is located as the lowest constituent in the prosodic hierarchy. Hence, an expanded eight-layer universal prosodic hierarchy can be shown as follows.

Figure 2. Prosodic hierarchy (expanded)

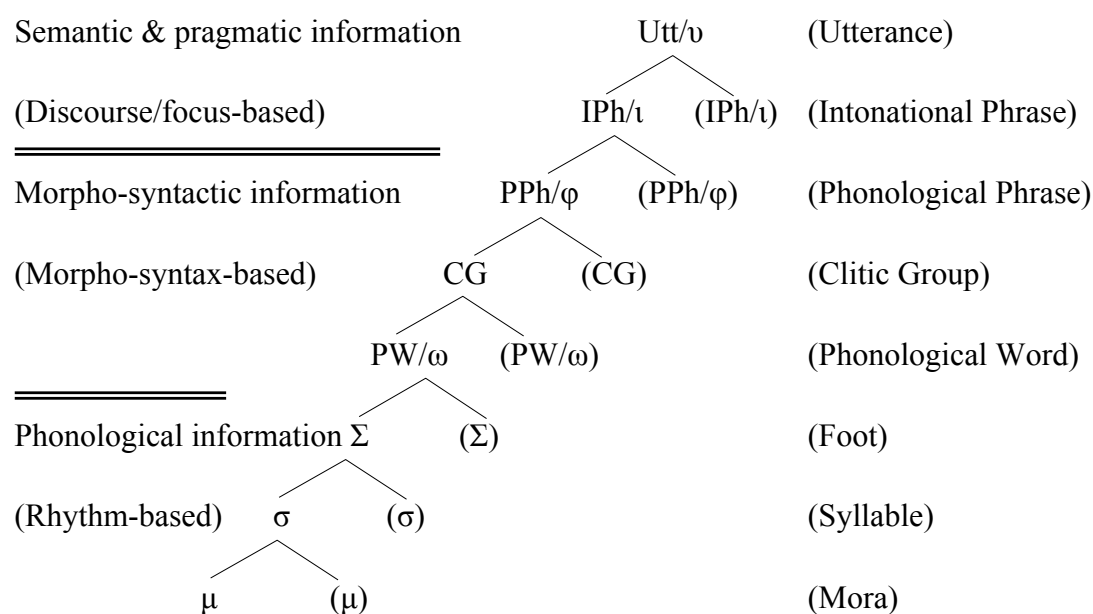


⁹ The existence of the clitic group is a matter of controversy in the literature of Prosodic Phonology. There have been a number of arguments against the clitic group as a prosodic domain, which is discussed in Section 2.1.4.2.

Additional constituents have been proposed by proponents of prosodic phonology, such as the Focal Phrase, located between the Phonological Phrase and the Intonational Phrase (cf. Kanerva 1990), and the Small Word, which comprises part of a Word (cf. Rice 1993), but they have not received universal consideration.

It has been mentioned at the end of Section 2.1.3.1 that prosodic constituents are defined by making use of different types of phonological and non-phonological information. It is of crucial importance that whether a given constituent makes use of a specific type of information in the definition of its domain is not a free choice (Nespor & Vogel 1986, 2007). According to the types of information to which different prosodic constituents in the prosodic hierarchy are sensitive, Zhang (1992, 2017) proposed a trisected model for prosodic hierarchy, as given in Figure 3.

Figure 3. Prosodic hierarchy (Zhang 1992, 2017)



The prosodic hierarchy is assumed to be universal by proponents of the prosodic phonology theory. Nevertheless, the inventory of prosodic constituents and the

definition of prosodic domains in a particular language is an empirical issue (Vigário 2003; Prof. Hongming Zhang, personal communication, September, 2015). Hence it is natural that some controversy is found in the literature and it has been observed that some prosodic domains seem to be absent in some languages. As Selkirk (1980a) and Nespor & Vogel (1986) suggest, however, the lack of rules referring to a given prosodic domain in a given language does not necessarily indicate that this domain does not exist in this language. It is possible that rules referring to a given domain have not been discovered, and more importantly, a prosodic domain, to which no phonological rules make crucial reference, may still play a role in the overall phonological system of a given language.

2.1.3.3 Strict Layer Hypothesis (SLH)

The only well-formedness condition on prosodic constituency is laid down in the Strict Layer Hypothesis, formulated in Selkirk (1984: 26ff). The Strict Layer Hypothesis stipulates that in the prosodic hierarchy, a prosodic constituent of a given level n immediately dominates only constituents of the lower level $n-1$, and is exhaustively contained in a constituent of the immediately higher level $n+1$. This is reformulated in Nespor & Vogel (1986: 7) as in (1):

- (1) a. A given nonterminal unit of the prosodic hierarchy, X^p , is composed of one or more units of the immediately lower category, X^{p-1} .
- b. A unit of a given level of the hierarchy is exhaustively contained in the superordinate unit of which it is a part.

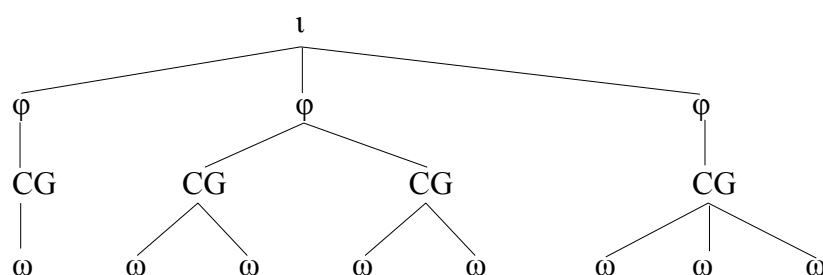
Notice that the principles stated in (1) reveal one of the most important tenets in prosodic phonology, that is, prosodic structure does not allow for recursion of prosodic constituents, which is different from syntactic structure. Nonetheless, evidence has been reported in a number of studies (e.g., Ladd 1986, Odden 1987, Hyman et al 1987, Inkelas 1989, Zhang 1992, 2017, Truckenbrodt 1995, 1999, among others) that prosodic structure can be recursive and thus has undermined the Strict Layer Hypothesis. Hence, it has been suggested that it is necessary to allow violations of some aspects of the Strict Layer Hypothesis, to be discussed in Section 2.1.4.1.

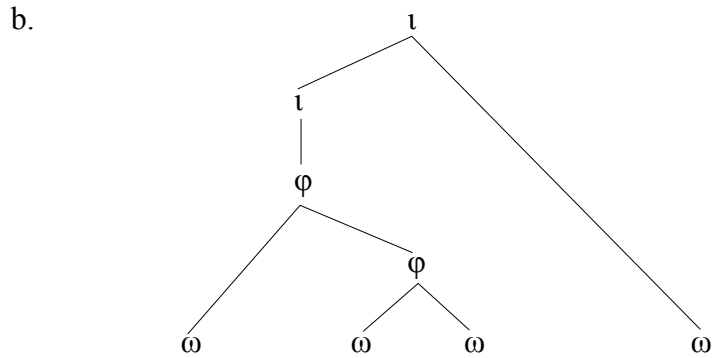
2.1.4 Outstanding issues in the prosodic phonology theory

2.1.4.1 The weakened Strict Layer Hypothesis

As discussed above, the Strict Layer Hypothesis (cf. Selkirk 1984, Nespor & Vogel 1986), as the only well-formedness condition in the original model of prosodic phonology, specifies that a prosodic constituent of a given layer only dominates constituents of the immediately lower level, and is exhaustively contained in a constituent of the immediately higher level. Thus a structure like (2a) would be a good example of a well-formed prosodic tree, whereas a structure like (2b) would not since it violates the Strict Layer Hypothesis.

(2) a.





We can find that in the structure in (2b), a constituent of a particular level n dominates another constituent of the same level (ι dominates ι and ϕ dominates ϕ), and a constituent of a particular level n dominates a constituent of the level $n-2$ or even lower (ι dominates ω). Therefore, the structure in (2b) violates two aspects assumed in the Strict Layer Hypothesis. The first violation is called recursivity and the second one is called level-skipping (Itô & Mester 1992/2003).

Evidence and criticisms have challenged the Strict Layer Hypothesis (e.g., Ladd 1986, 1996, Odden 1987, Hyman et al 1987, Inkelas 1989, Itô & Mester 1992/2003, Zhang 1992, 2017, Truckenbrodt 1995, 1999, among others). In responding to these evidence and criticisms, Selkirk (1996) has factored out the Strict Layer Hypothesis into four more primitive constraints within the framework of the Optimality Theory, as presented as follows.

(3) Constraints on prosodic domination

(where C^n = some prosodic category)

a. Layeredness: No C^i dominates a C^j , $j > i$,

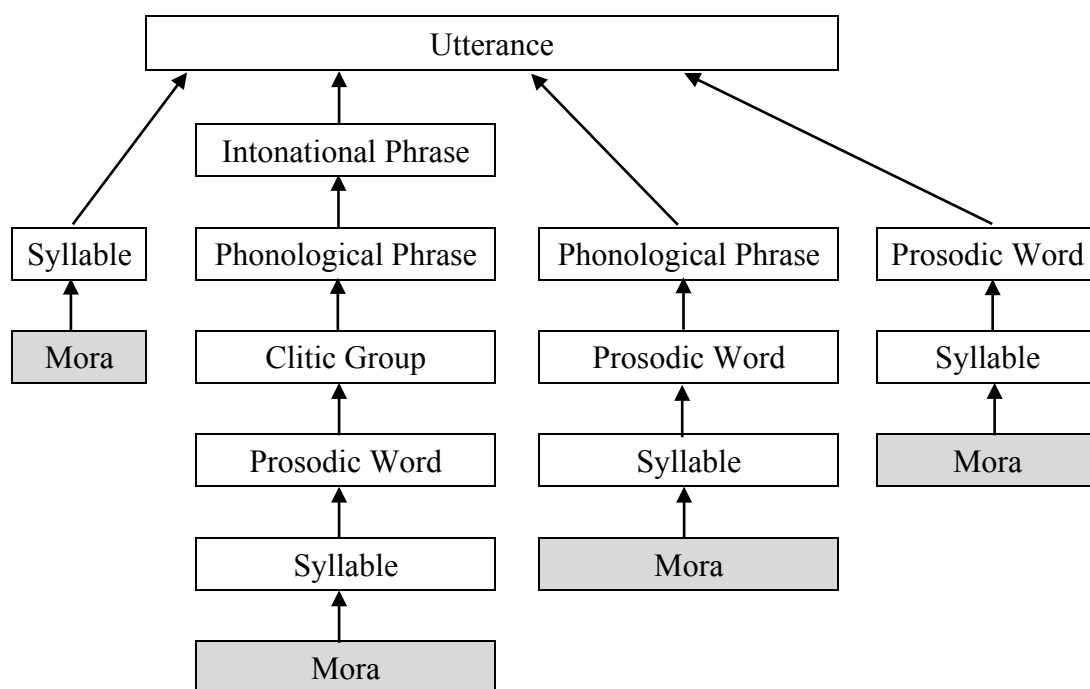
e.g., “No syllable dominates a foot.”

b. Headedness: Any C^i must dominate a C^{i-1} (except if C^i = syllable),

- e.g., “A phonological word must dominate a foot.”
- c. Exhaustivity: No C^i immediately dominates a constituent C^j , $j < i - 1$,
 e.g., “No phonological word immediately dominates a syllable.”
- d. Nonrecursivity: No C^i dominates C^j , $j = i$,
 e.g., “No foot dominates a foot.”

Selkirk holds that the constraints of Layeredness and Headedness are inviolable and should not be dominated in the constraint ranking universally. By contrast, the constraints of Exhaustivity and Nonrecursivity are suggested not to be observed by all languages.

Many examples of the violation of Exhaustivity has been found across languages (cf. Inkelas 1989, Kanerva 1989, Itô & Mester 1992/2003, Prince & Smolensky 1993, Mester 1994, Hayes 1995, Vogel 2009, Zhang 2014, 2017, among others). Mandarin Chinese can serve as a typical example among these languages. Based on evidence found in Mandarin Chinese, Zhang (2014, 2017) proposes a prosodic hierarchy as in Figure 4, which entails four possible types of organization of prosodic constituents in Mandarin Chinese. We can find that level-skipping, namely the violation of Exhaustivity is clearly allowed in this language.

Figure 4. Prosodic hierarchy in Mandarin Chinese¹⁰

Examples of the violation of Nonrecursivity have also been found in different languages (cf. Ladd 1986, Odden 1987, Hyman et al 1987, Inkelas 1989, Zhang 1992, 2017, Truckenbrodt 1995, 1999, among others). According to Zhang (1992, 2017), recursivity is allowed in some Chinese dialects. For example, a clitic group may dominate another clitic group in old Chongming, and a prosodic word in Pingyao may dominate another prosodic word.

In addition to Nonrecursivity and Exhaustivity, it has been noticed that the Layeredness constraint is not inviolable either. As Zhang (1992, 2017) points out, counterevidence against the inviolability of Layeredness can be found in the Pingyao

¹⁰ It is noteworthy that mora is placed in shaded boxes in Figure 4. As a unit that determines whether a syllable is “light” or “heavy”, mora plays a role in the phonology of some quantity-sensitive languages such as Japanese and Sanskrit. Mandarin Chinese, however, is not a quantity-sensitive language (cf. Chan 1985, Zhang 2014, 2017, among others). Hence, mora is not considered as an active prosodic constituent in Mandarin Chinese. In addition, notice that the prosodic constituent foot is not presented in Zhang’s (2014, 2017) hierarchy in Mandarin Chinese. According to Zhang (2014, 2017), the foot does not exist in Mandarin Chinese due to the lack of binary metrical contrast between syllables in this language. The issue of the foot in the Fuzhou dialect will be treated in Chapter III.

dialect of Chinese. Based on the tone sandhi data from the Pingyao dialect, Zhang argues that, in this dialect, a prosodic word may dominate a prosodic constituent at the higher level, e.g., the phonological phrase.

Zhang (1992, 2017) suggests that prosodic recursivity actually reflects syntactic recursivity and thus only occurs between prosodic constituents in the morpho-syntax-based hierarchy in Figure 3. Based on such an understanding, Zhang proposes a supplementary principle to the Strict Layer Hypothesis, as in (4).

(4) Stipulation of prosodic recursivity

Prosodic recursivity is prohibited between the units of different hierarchies (language-universal), but optionally in the units of the same hierarchy (language-specific).

The stipulation in (4) actually not only handles the violation of Nonrecursivity, but also deals with the violation of Layeredness and Exhaustivity as well. Thus, the stipulation indicates that in the trisected model for prosodic hierarchy in Figure 3, there is no violation of the Strict Layer Hypothesis among prosodic units within different hierarchies. For example, a phonological phrase cannot dominate an intonational phrase because they belong to the morpho-syntax-based hierarchy and the focus-based hierarchy respectively. In contrast, among prosodic units in the same hierarchy, the violation of the Strict Layer Hypothesis may happen on a language-specific basis, which is well supported by the evidence from some Chinese dialects, such as Chongming and Pingyao, as pointed out by Zhang (1992, 2017).

Thus, although the Strict Layer Hypothesis was originally thought to be one of the most important characteristics of the prosodic structure compared with syntactic structure, it has been shown that the constraints entailed in this hypothesis are not absolutely inviolable, according to evidence across languages and developments in the theory. As a result, the Strict Layer Hypothesis has been made much less strict in current theory of prosodic phonology.

2.1.4.2 The status of the clitic group

The existence of the clitic group as a prosodic constituent is proposed based on the observation that there are phonological rules and phonetic processes that make crucial reference only to the group consisting of a lexical word and the clitic that attaches to it (cf. Cohn 1989, Hayes 1984/1989, Nespor & Vogel 1986, among others). The notion of the clitic group was first proposed by Hayes (1984/1989), and then adopted in Nespor & Vogel (1986) and subsequent work (e.g., Vogel 1990, 1991, Hannahs 1995a, Nespor 1999, Schwindt 2000, among others). The clitic group is seen to be located in a position above the prosodic word and below the phonological phrase, as we can see in the prosodic hierarchy presented in Figure 2 and Figure 3.

The clitic group is defined essentially as follows in Nespor & Vogel (1986: 154):

(5) Clitic group (CG) formation

The domain of the CG consists of a ω containing an independent (i.e. nonclitic) word plus any adjacent phonological words containing

- a. a directional clitic, or

- b. a plain clitic/nondirectional clitic such that there is no possible host with which it shares more category memberships.¹¹

The definition of the clitic group domain is illustrated by examples of stress assignment in Latin in Nespor & Vogel (1986: 146ff). According to Nespor & Vogel, the clitic group is a domain for stress assignment in Latin. Specifically, when an enclitic is attached to a word, the primary stress is shifted from its original position within the word to the syllable that immediately precedes the clitic, as exemplified in (6), in which *-que* ‘and’, interrogative *-ne*, and *-cum* ‘with’ are all enclitics.

- | | | | | |
|--------|------------------|------------------|-----------------|----------------------|
| (6) a. | <i>virum</i> | ‘the man (acc.)’ | <i>virúmque</i> | ‘and the man (acc.)’ |
| b. | <i>vidēs</i> | ‘you see’ | <i>vidésne?</i> | ‘do you see?’ |
| c. | <i>cum vóbis</i> | ‘with you (pl.)’ | <i>vobíscum</i> | ‘with you (pl.)’ |

Other examples reported in Nespor & Vogel (1986) include *v*-Deletion and *s*, *z*-Palatalization in English, Stress Readjustment, Nasal Deletion, Nasal Assimilation, and Stop Voicing in Greek, Vowel Harmony in Turkish, as well as *t*-Deletion in Catalan.

However, there are a number of arguments against the existence of the clitic group as a prosodic domain. Objections were raised based on the following arguments:

- (a) clitics may attach to constituents higher than the prosodic word, e.g., the phonological phrase and the intonational phrase; (b) there is a lack of evidence for the

¹¹ In Nespor & Vogel’s (1986) terminology, a directional clitic refers to a clitic, which is phonologically dependent on an element to the left or right according to its own inherent property. A plain/nondirectional clitic, in contrast, refers to a clitic which finds its host either to the right or to the left.

clitic group as a domain in particular languages; (c) enclitics and proclitics often show asymmetries in languages; and (d) clitics have to be given the prosodic word status according to the definition presented in (5), to satisfy the Strict Layer Hypothesis.

For example, Inkelas (1990: 260ff) points out that clitics have an irregular distribution across syntactic categories, and consequently the formation of the clitic group cannot be governed by a simple syntax-to-phonological mapping algorithm. According to Inkelas, the clitic group in languages such as Serbo-Croatian and English is dominated by the phrase, while the clitic group in languages like Hausa and Kivunjo Chaga seems to dominate the phrase. Therefore, adding the clitic group to the prosodic hierarchy as a constituent between the prosodic word and the phonological phrase fails to accommodate the distinction between word and phrasal clitics.

Booij (1996) holds the same position as Inkelas (1990). He claims that there are two objections to assuming the clitic group. By examining the relevant data of Latin Stress Rule and facts of main stress assignment in other languages, Booij claims that it is possible to give an account of the relevant data without the constituent clitic group. The second objection raised by Booij is that the definition in (5) by Nespor & Vogel (1986) implies that clitics always form a prosodic word on their own, which is a problematic assumption since many clitics do not meet the requirements for canonical prosodic words. Through the discussion of the phonological behavior of Dutch clitics, Booij argues that the phonological behavior of clitics in Dutch can be accounted for by the hypothesis of prosodic integration, which claims that clitics are incorporated into an adjacent prosodic word. Based on these discussions, he concludes that the assumption of the clitic group is not necessary. The same position

is adopted by Inkelas & Zec (1995), Zec (1988, 1993), Selkirk (1996), and Peperkamp (1997), among others.

Moreover, it has been reported in the literature that there are asymmetries between proclitics and enclitics in languages such as Dutch (cf. Booij 1996), Italian (cf. Peperkamp 1997) and German (cf. Kleinhenz 1996), in terms of their coherence to the host they attach to. These scholars have pointed out that proclitics usually present a phonological behavior independent of the host, while enclitics usually show a stronger degree of connection with the host. Thus, if the clitic group is treated as an independent prosodic constituent, the distinction between proclitics and enclitics cannot be accounted for.

Despite the objections mentioned above, some researchers continued to employ the clitic group in an insightful manner to account for prosodic phenomena in different languages (e.g., Hayes 1989 for English, Hannahs 1995a for French, Kabak & Vogel 2001 for Turkish, among others). Vogel (2009) discusses the main objections to the clitic group, and provides arguments for retaining the clitic group in the prosodic hierarchy. She insists that the absence of evidence for the clitic group in a particular language does not necessarily mean that the clitic group is not present in that language. By examining the problems with the original clitic group, she holds that the problem is not due to the clitic group itself but rather results from the Strict Layer Hypothesis. Based on the review of relevant solutions, Vogel claims that a slight weakening of the Strict Layer Hypothesis is required. She proposes that the Strict Layer Hypothesis should be revised so that a prosodic constituent may dominate

a constituent more than one level lower in the hierarchy (i.e., the violation of Exhaustivity is allowed), and thus the clitic group is maintained as a prosodic constituent, with a new label the “Composite Group”.

In this dissertation, it will be shown that there are two types of clitics and consequently two subtypes of clitic groups in the Fuzhou dialect. As can be seen in Chapter V and Chapter VII, the first type of clitic group (Type A clitic group henceforth) is composed of the host plus the enclitic, while the second type (Type B clitic group henceforth) is composed of the proclitic plus the host. Although enclitics and proclitics, as well as Type A clitic group and Type B clitic group, show asymmetries in terms of their phonological behavior, the clitic group in Fuzhou as a whole has very peculiar behavior as compared to other prosodic domains, which provides motivation and evidence for the establishment of the clitic group domain in this dialect. Moreover, Fuzhou clitics may attach to constituents higher than the prosodic word, which thus constitutes a great challenge to the Strict Layer Hypothesis. Nonetheless, this can be handled by resorting to a weakening of the Strict Layer Hypothesis and assuming that not only the violation of Exhaustivity and Nonrecursivity, but also the violation of Layeredness is allowed in the Fuzhou dialect,¹² instead of excluding the clitic group from the prosodic hierarchy, as will be discussed in Chapter V and Chapter VII.

¹² Prof. Hongming Zhang (personal communication, February, 2017) insightfully points out that the violation of the Strict Layer Hypothesis I observed in the cases of the clitic group in the Fuzhou dialect can be nicely handled by assuming that these constraints may all be violable in this dialect, similar to some other Chinese dialects like Pingyao. I thank Prof. Zhang for pointing out this to me.

2.1.4.3 The Relation-Based Approach vs. the Edge/End-Based Approach

Two main approaches have been developed within the prosodic phonology framework, namely the Relation-Based Approach (RBA) (cf. Nespor & Vogel 1986, Hayes 1989) and the Edge/End-Based Approach (EBA) (cf. Selkirk 1986, Chen 1985, 1987). These two approaches can be distinguished according to their implementation of different types and amount of syntactic information in the formation of prosodic domains, especially the domain of the phonological phrase. We will see that during the development of these two approaches, the Strict Layer Hypothesis, again, is challenged.

2.1.4.3.1 The Relation-Based Approach

The Relation-Based Approach makes reference to X-bar notions of phrase structure, such as head-complement, modifier-head, and specifier-head relations, as well as syntactic branching. According to Nespor & Vogel (1986), in terms of the formation of the phonological phrase, reference should be made to the recursive and the non-recursive side of a head. The recursive side is the direction of branching in a language while the non-recursive side is the side where specifiers are located. Nespor & Vogel's definition of the phonological phrase is given in (7) (Nespor & Vogel 1986: 168).¹³

¹³ Here I only focus on the comparison between the definition of the phonological phrase proposed by RBA and that proposed by EBA. Discussions of the algorithms for the creation of other prosodic domains are presented in relevant chapters.

(7) Phonological phrase (φ) formation

The domain of φ consists of a clitic group which contains a lexical head (X) and all clitic groups on its non-recursive side up to the clitic group that contains another head outside of the maximal projection of X.¹⁴

An optional rule for restructuring φ that has the effect of eliminating non-branching φ s is proposed in Nespor & Vogel (1986: 173), given as follows.

(8) φ restructuring (optional)

A non-branching φ , which is the first complement of X on its recursive side, is joined into the φ that contains X.

The mapping algorithm in (7) and (8) is illustrated in Nespor & Vogel (1986) by the rule of Raddoppiamento Sintattico (RS henceforth) in Italian, which lengthens the initial consonant of a word when preceded by a word ending in a stressed vowel and followed by a sonorant (specifically a vowel or other non-nasal sonorants). RS is analyzed as applying across two phonological words within a single phonological phrase. Examples from Nespor & Vogel (1986) of the contexts in which RS applies (marked with '=') and of the contexts in which RS does not apply (marked with '//') are given in (9). These sentences are structured in phonological phrases in (10).

(9) a. Avrá = trovato il prescecane.

'He must have found the shark.'

¹⁴ In Nespor & Vogel (1986), only V, N, and A are considered lexical heads.

b. Devi comprare delle mappe di città // molto vecchie.

‘You must buy some very old city maps.’

(10)a. [Avrá = trovato]_φ [il prescecane]_φ

b. [Devi comprare]_φ [delle mappe]_φ [di città]_φ // [molto vecchie]_φ

The ϕ restructuring rule in Italian is optional and thus the first non-branching complement of a head on its recursive side is optionally joined into the ϕ that contains the head. This is illustrated by the optional application of RS (marked with ‘_’) in (11) and the restructuring phonological phrase in (12).

(11) [I caribú]_φ_[nani]_φ [sono estinti]_φ

‘Dwarf caribous are extinct.’

(12) [I caribú_nani]_φ [sono estinti]_φ

In addition to RS in Italian, Nespor & Vogel (1986) also examine Iambic Reversal and the Monosyllable Rule in English, Liaison in French, Vowel Shortening in Chi Mwi:ni, Tone Assignment and the Star Shift Rule in Japanese, as well as Word Initial Voicing Assimilation and the Reduction Rule in Quechua. They argue that all these rules are sensitive to the formation of the phonological phrase and the ϕ restructuring is optional in some languages (e.g., English and Italian), forbidden in some (e.g., French), and obligatory in others (e.g., Chi Mwi:ni).

Following the Relation-Based Approach, more explorations have been done and more examples of phonological rules that are analyzed to apply within the phonological phrase domain have been found (cf. Cho 1990, Condoravdi 1990,

Kidima 1990, Hayes & Lahiri 1991, Frota 2000, among others). It should be noted that, nonetheless, the definition of the phonological phrase domain in (7) needs to be reformulated due to the new developments in syntactic theory since the second half of the 1980s.

2.1.4.3.2 The Edge/End-Based Approach

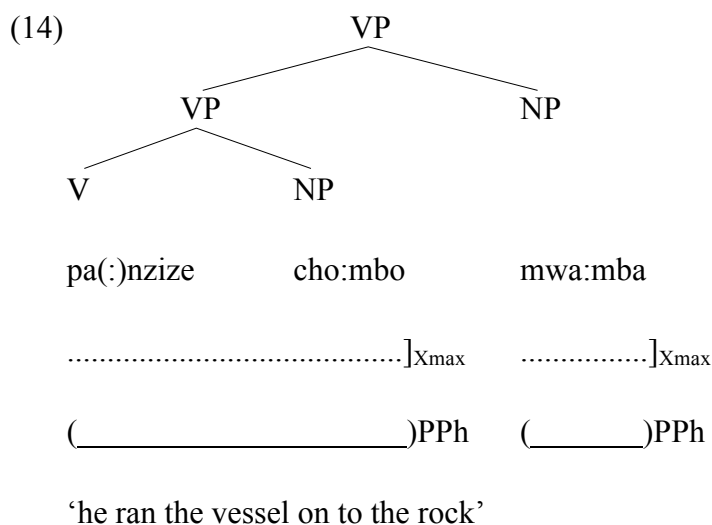
Different from the Relation-Based Approach, the Edge/End-Based Approach attempts to reduce the syntactic sensitivity of the mapping algorithm to a single property of syntactic phrase structure, namely left or right ends of heads or maximal projections. This approach is a generalization of Chen's (1985, 1987) proposal for the tone sandhi domain in the Xiamen dialect of Chinese. Selkirk (1986) follows Chen's (1985) approach and suggests the following parameters for the mapping of syntactic structure onto prosodic structure:

(13) End parameter settings:

- | | | | | |
|-------|----|-----------------------|----|--------------------|
| (I) | a. | $]_{\text{Word}}$ | b. | $\text{Word}[$ |
| (II) | a. | $]_{X_{\text{max}}}$ | b. | $X_{\text{max}}[$ |
| (III) | a. | $]_{X_{\text{head}}}$ | b. | $X_{\text{head}}[$ |

Three prosodic constituents are thus recognized: the phonological/prosodic word corresponding to $]_{\text{Word}}$ or $\text{Word}[$, the major phonological phrase corresponding to $]_{X_{\text{max}}}$ or $X_{\text{max}}[$, and an intermediate item called minor phonological phrase/small phonological phrase corresponding to $]_{X_{\text{head}}}$ or $X_{\text{head}}[$. Thus there are four possible types of the creation of the phonological phrase domain according to (13). Selkirk

(1986) provides French liaison as an example of $]_{X_{head}}$, tone sandhi in Xiamen and stress assignment in Chi Mwi:ni as examples of $]_{X_{max}}$, and tone sandhi in Ewe (cf. Clements 1978) as an example of $_{X_{max}}$. No examples are provided for $_{X_{head}}$. In Chi Mwi:ni, for example, stress assignment applies within the domain of the phonological phrase, which is delimited by the right edge of maximal projection $]_{X_{max}}$, as exemplified in (14) (Selkirk 1986: 390).



As can be seen from (14), in Chi Mwi:ni, the verb *pa(:)nzize* and its complement *cho:mbo* form a phonological phrase domain, and the adjunct NP *mwa:mba* forms an independent phonological phrase domain on its own. The end-setting $]_{X_{max}}$ identifies two right ends of maximal projections and thus marks the right edges of two phonological phrases.

Other work on phonological phrasing following the Edge/End-Based Approach includes Selkirk & Tateishi (1988) for Japanese, Selkirk & Shen (1990) for Shanghai Chinese, Cho (1990) and Kenstowicz & Sohn (1997) for Korean, among others.

It is noteworthy that although branchingness plays a role in the Relation-Based Approach, it plays no direct role in the definition of a phonological phrase in the original algorithm of the Edge/End-Based Approach, which is sensitive only to edges. This creates difficulties for languages like Italian, English and Kinyambo (cf. Bickmore 1990) in which branchingness is relevant to phonological phrasing. Cowper & Rice (1987) and Bickmore (1990) have thus suggested adding the parameter [+/- branchingness] to the Edge/End-Based Approach.

2.1.4.3.3 The Edge/End-Based Approach within Optimality Theory

With the advent of Optimality Theory, Selkirk (1996, 2000) and Truckenbrodt (1995, 1999, 2002), among others, have translated the Edge/End-Based Approach into a set of violable constraints. Thus the formation of the phonological phrase domain is treated as the result of the evaluation of several candidate phonological phrases, which are formed on the basis of the syntactic structure and then evaluated by a ranked set of violable constraints.

In the spirit of the generalized alignment theory of McCarthy & Prince (1993: 2), Selkirk (1996) defines a class of constraints on edge alignment of syntactic phrases with phonological phrases as in (15).

- (15)a. Align (Lex^{max} , R; PPh, R)
 b. Align (Lex^{max} , L; PPh, L)

Constraints in (15) state that the right or left edge of any Lex^{max} in morpho-syntactic structure coincides with the corresponding edge of the phonological phrase in

prosodic structure. These two constraints were later referred to as $A_{\text{LIGN-XP}}$, L and $A_{\text{LIGN-XP}}$, R or $A_{\text{LIGN-XP}}$ (when both are jointly discussed) in Truckenbrodt (1995, 1999).

In addition to the class of alignment constraints, four general constraints entailed by the Strict Layer Hypothesis are also presented in Selkirk (1996), as we have seen in (3), reproduced in (16).

(16) Constraints on prosodic domination

(where C^n = some prosodic category)

- a. Layeredness: No C^i dominates a C^j , $j > i$,
e.g., “No syllable dominates a foot.”
- b. Headedness: Any C^i must dominate a C^{i-1} (except if C^i = syllable),
e.g., “A phonological word must dominate a foot.”
- c. Exhaustivity: No C^i immediately dominates a constituent C^j , $j < i - 1$,
e.g., “No phonological word immediately dominates a syllable.”
- d. Nonrecursivity: No C^i dominates C^j , $j = i$,
e.g., “No foot dominates a foot.”

The main achievement of Truckenbrodt (1995, 1999) is his introduction of $W_{\text{RAP-XP}}$ as another constraint family of the syntax-phonology interface. The definition of $W_{\text{RAP-XP}}$ is first proposed in Truckenbrodt (1995: 81-2), as in (17) and (18).

- (17) $W_{\text{RAP-XP}}$: Each lexically headed XP must be contained inside a phonological phrase.

(18) $W_{RAP-XP} =$

For every XP, XP a projection of a lexical category, there is a phonological phrase φ , such that all terminal elements that are dominated by XP are also dominated by φ .

Notice that W_{RAP-XP} and $A_{LIGN-XP}$ interact when one XP contains another or more than one XPs: W_{RAP-XP} demands that each XP is contained in the same phonological phrase, whereas $A_{LIGN-XP}$ requires that each XP be marked by a phonological phrase boundary. This would result in a XP wrapped as a phonological phrase but containing two or more than two XPs inside this bigger XP whose edges are aligned with the edges of phonological phrases as well. To allow or ban such recursive phonological phrases, the general violable constraint Nonrecursivity (N_{ONREC} henceforth) is needed. Consequently, the ranking of these constraints plays a role in dealing with the differences in the formation of the phonological phrase domain across languages. For instance, a recursive phonological phrase has to be introduced in Kimatuumbi, which violates the constraint N_{ONREC} and thus constitutes another good example of the violation of Nonrecursivity. Thus N_{ONREC} is ranked lower than W_{RAP-XP} and $A_{LIGN-XP}$, R in the grammar of Kimatuumbi: $A_{LIGN-XP}, R, W_{RAP-XP} \gg N_{ONREC}$. By contrast, in Chicheŵa, the constraints W_{RAP-XP} and N_{ONREC} should be ranked higher than $A_{LIGN-XP}$ in order to prevent a phonological phrase from containing inner phonological phrases: $W_{RAP-XP}, N_{ONREC} \gg A_{LIGN-XP}, R$. The readers are referred to Truckenbrodt (1995, 1999) for detailed discussions.

Moreover, in Chicheŵa a focused constituent is followed by a phonological boundary. Hence, Truckenbrodt (1995, 1999) introduces another constraint $A_{\text{ALIGN-FOC}}$ to deal with this fact, as in (19):

$$(19) A_{\text{ALIGN-FOC}} = A_{\text{ALIGN}}(\text{Foc}, \text{R}; \text{P}, \text{R})$$

Each focused constituent is right-aligned with a phonological phrase boundary.

Truckenbrodt (1999) argues that in Chicheŵa $A_{\text{ALIGN-FOC}}$ has to override $W_{\text{RAP-XP}}$ since it enforces violations of $W_{\text{RAP-XP}}$. In addition, he claims that the constraint $A_{\text{ALIGN}}(\text{Foc}, \text{R}; \text{P}, \text{R})$ is active in Bengali (cf. Hayes & Lahiri 1991) as well. In Japanese and in dialects of Korean (cf. Jun 1993, Kenstowicz & Sohn 1997), according to Truckenbrodt, a phonological boundary should be inserted to the left of a focused constituent according to the “mirror image” of $A_{\text{ALIGN}}(\text{Foc}, \text{R}; \text{P}, \text{R})$, namely, $A_{\text{ALIGN}}(\text{Foc}, \text{L}; \text{P}, \text{L})$.

Based on the discussion in Section 2.1.4.3.3, constraints developed on the basis of the Edge/End-Based Approach within the framework of Optimality Theory can be summarized as follows, which closes the discussion of the Edge/End-Based Approach in the Optimality Theory.¹⁵

¹⁵ In addition to constraints listed in (20), Ghini (1993) and Selkirk (2000) develop a family of purely prosodic constraints on phonological phrasing, based on the observations that the phrasing patterns may not be predicted simply by general constraints such as N_{ONREC} as well as interface constraints such as $A_{\text{ALIGN-XP}}$ and $W_{\text{RAP-XP}}$. These purely phonological constraints on phrasing include $U_{\text{NIFORMITY}}$ (a string is ideally parsed into same length unit), $A_{\text{VERAGE W EIGHT}}$ (phrases consist of two phonological words at an average rate of speech), S_{YMMETRY} (a string is divided into phonological phrases displaying a symmetrical distribution of length), $I_{\text{NCREASING U NITS}}$ (phonological phrases on the recursive side contain more prosodic words/clitic groups than those in the nonrecursive side) (cf. Ghini 1993), $B_{\text{INARY M AXIMUM}}$ (a major phrase may consist of at most two minor/accentual phrases), $B_{\text{INARY M INIMUM}}$ (a major phrase must consist of at least two minor/accentual phrases), B_{INARY} (a major phrase consists of just two minor/accentual phrases) (cf. Selkirk 2000).

(20)(I) Constraints on prosodic domination (Selkirk 1996)

- a. Layeredness (inviolable) b. Headedness (inviolable)
- c. Exhaustivity (violable) d. Nonrecursivity (violable)

(II) Interface constraints

- a. $A_{\text{ALIGN-XP}}$, L/R (Selkirk 1996, Truckenbrodt 1995, 1999)
- b. $W_{\text{RAP-XP}}$ (Truckenbrodt 1995, 1999)

(III) Constraints on the effects of focus on phrasing (Truckenbrodt 1995, 1999)

2.1.4.3.4 Summary

In Section 2.1.4.3, I have reviewed both the EBA and the RBA developed in the prosodic phonology theory. It should be pointed out that a lot of phonological phenomena across languages could actually be accounted for under both approaches. A comparison between these two approaches is presented in Bickmore (1990) and Cho (1990). The conclusions in these two articles, however, are opposite on the issue whether the EBA is more effective than the RBA or vice versa. In this dissertation, I will examine both approaches to see which is superior in the formation of the phonological phrase domain in the Fuzhou dialect, to be discussed in Chapter VI.

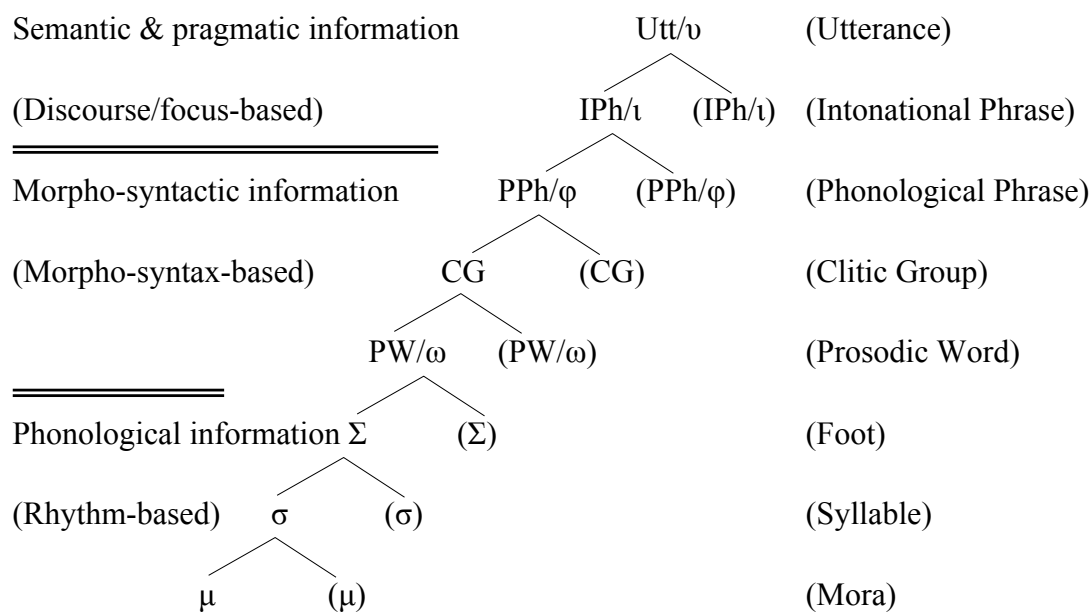
2.1.5 Summary

Section 2.1 presents a general review on the theory of prosodic phonology. To recapitulate, the prosodic phonology theory advocates for an indirect relationship between morpho-syntax and phonology, and argues that there is an intermediate level called prosodic structure in which prosodic constituents are arranged hierarchically

and serve as the domain of application for phonological rules and phonetic processes. We have seen the developments of the theory as well as its basic claims including the prosodic structure, prosodic hierarchy, and the Strict Layer Hypothesis in this section. Outstanding issues in this framework are also discussed, such as the weakening of the Strict Layer Hypothesis, the status of the clitic group, the comparison between the Relation-Based Approach and the Edge/End-Based Approach, as well as the adaptation of prosodic phonology (in particular, the EBA and the Strict Layer Hypothesis) to the constraint-based environment.

The account of the phonological system of the Fuzhou dialect developed in this dissertation is couched within the framework of prosodic phonology. On the one hand, following the basic claims in the prosodic phonology theory, I will tentatively assume the prosodic hierarchy presented in Figure 5 in the Fuzhou prosodic phonology, which is actually the same as the universal prosodic hierarchy in Figure 2 and Figure 3.

Figure 5. Prosodic hierarchy in the Fuzhou dialect (tentative)



In this dissertation, I will not particularly discuss the prosodic constituent mora. As mentioned in Note 10, Mandarin Chinese is not a quantity-sensitive language (cf. Chan 1985, Zhang 2014, 2017, among others). The Fuzhou dialect, like Mandarin Chinese, is not quantity-sensitive either (cf. Chan 1985). Therefore, mora plays no direct role in the application of any phonological rules or phonetic processes in Fuzhou, and thus will not be investigated in detail in the following chapters. Although there are some previous studies claiming that the mora is the tone bearing unit in the Fuzhou dialect (e.g., Wright 1983, Chan 1998), it will be demonstrated in Chapter III that these analyses are problematic. I am not going to probe the prosodic constituent utterance in the Fuzhou dialect in this dissertation, either, since no relevant phonological phenomena have been reported in the literature or observed by my informants and myself. The readers are referred to Nesper & Vogel (1986, 2007) and Zhang (2014, 2017) for the definition of the domain of utterance as well as its role in different languages including Mandarin Chinese.

On the other hand, I will adopt the weakened Strict Layer Hypothesis in this dissertation, and assume that the violation of constraints of Exhaustivity, Nonrecursivity, and Layeredness may all be allowed in the Fuzhou dialect (as suggested by Prof. Hongming Zhang, personal communication, February, 2017), which will be well supported by the evidence from the Fuzhou dialect. Further discussions on each prosodic constituent as well as the prosodic structure in the prosodic phonology of the Fuzhou dialect will be presented in the following chapters.

2.2 Descriptive background

Before we move on to the following chapters, it is necessary to present a brief description of the Fuzhou phonological system including its tonal and segmental inventories as well as various phonological phenomena. This section thus consists of two parts. The first part presents the tonal and segmental inventories of the Fuzhou dialect, while the second part is an overview of a number of phonological phenomena in this dialect.

2.2.1 Fuzhou tonal and segmental inventories

2.2.1.1 Tones

There are seven citation tones in the Fuzhou dialect. Arranged according to the traditional tonal categorization of *ping* 平 ‘level’, *shang* 上 ‘rising’, *qu* 去 ‘falling’, and *ru* 入 ‘entering’, these seven citation tones can be presented in Table 1. The subsequent tonal division of *yin* 阴 and *yang* 阳 based on the historical voiced-voiceless distinction of the initial consonants is also presented. Tonal values of these seven citation tones assumed in this dissertation are presented in the shaded boxes.

Table 1. Fuzhou citation tones (cf. Li et al 1994, Yuan 2001, among others)¹⁶

	ping	shang	qu	ru
yin	44	31	213	23
yang	51		242	5

¹⁶ Following Chinese tradition, here tones are represented as points along a five-point scale, a notation based on that of Chao (1930). Digits indicate the pitch value, 5 being the highest and 1 the lowest.

As can be seen from Table 1, *yinping* is a high level tone. Its tonal value is reported as 44 in some published materials (cf. Li et al 1994, Chen & Li 1999, Li 2002, Lin 2002, among others), while as 55 in some other materials (cf. Chen & Norman 1965a, Chen 1998, Feng 1998, among others). Data from my informants suggest that *yinping* tone in the Fuzhou dialect sounds lower than its counterpart in Mandarin Chinese (with the tonal value marked as 55). This is why I assume that the tonal value of *yinping* tone in Fuzhou is 44 instead of 55.

Unlike its counterpart in Mandarin Chinese, which is a mid-rising tone, *yangping* in Fuzhou is a high falling tone. It is presented as 51 or 52 in some works (cf. Chen & Norman 1965a, Chen & Li 1999, Li 2002, among others), but is recorded as 53 in others (cf. Li et al 1994, Chen 1998, Feng 1998, Lin 2002, among others). According to data from my informants, this tone is quite similar to the fourth tone in Mandarin Chinese (usually marked as 51). Hence, I mark the Fuzhou *yangping* tone as 51.

The tonal value of *shang* tone in Fuzhou is also a matter of controversy in the literature. It is usually recorded as a mid-falling tone with the tonal value 31 (cf. Li et al 1994, Chen & Li 1999, Lin 2002, among others) or a mid-level tone with the tonal value 33 (cf. Chen 1998, Feng 1998, Li 2002, among others).¹⁷ It is also presented as 22 in some works (cf. Chen & Norman 1965a, among others). Data elicited from my informants suggest that this is a mid-falling tone 31 since the ending of this tone is as low as the ending of *yangping* in pitch.

Yinqu is a dipping tone in the Fuzhou dialect. The tonal value of *yinqu* fluctuates. In some cases, it is 213 with a tonal contour similar to the third tone in Mandarin

¹⁷ Li (1998) argues that the discrepancy between 33 and 31 may be due to generational differences among the authors.

Chinese. Yet in other cases, the ending is apparently lower than 3, and thus the tonal value seems to be 212. In this dissertation, I mark *yinqu* as 213, following the transcription in most published sources (cf. Chen & Li 1991, Li et al 1994, Chen 1998, among others).

Another contour tone in Fuzhou is *yangqu*, a rising-falling tone. According to the transcription in most published materials (cf. Chen & Li 1991, Li et al 1994, Chen 1998, Feng 1998, Li 2002, among others) as well as data from my informants, the tonal value of *yangqu* is recorded as 242 in this study.

There are two *ru* tones in the Fuzhou dialect, namely *yinru* and *yangru*. Both *yinru* and *yangru* are accompanied by a glottal stop consonant coda *-ʔ* in modern Fuzhou, making the sound short and abrupt. *Yinru* has a slight rise, and thus is usually recorded as 23 (cf. Chen & Li 1991, Li et al 1994, Li 2002, among others) or 24 (cf. Chen 1998, Feng 1998, among others) in the literature. In order to distinguish *yinru* from the half *yangqu* (usually marked as 24), which occurs only in a sandhi context, I mark *yinru* as 23 in this study. It should be noted that although a syllable with *yinru* tone is usually presented with a glottal stop coda *-ʔ* in the literature, words that have a *yinru* tone have two different historical sources. In history, these words end with two kinds of stop codas, namely, **-ʔ* and **-k*, which are completely neutralized in isolation forms in modern Fuzhou dialect. In a sandhi context, however, these two historical sources result in two types of sandhi forms of the *yinru* tone and have different effects on the initial consonant of the following syllable. For the sake of brevity, in this dissertation, syllables with the *yinru* tone are all marked with the glottal stop *-ʔ*. Only when necessary, the ending *-k* will be marked. Compared with

yinru, *yangru* tone is even shorter in duration. Since it has a high pitch, it is marked as 5 in this dissertation, as recorded in most of the literature (cf. Li et al 1994, Chen 1998, Feng 1998, among others).

A comparison of transcriptions for Fuzhou citation tones in the published data sources consulted in this dissertation is presented as follows, arranged in a chronological order. Most of these works are published after 1985. A good summary of different transcriptions for Fuzhou tones in the literature before 1985 can be found in Chan (1985: 111).

Table 2. A comparison of transcriptions for Fuzhou citation tones

Author \ Tones	yinping	yangping	shang	yinqu	yangqu	yinru	yangru
Chen & Norman 1965a	55	52	22	12	342	24	55
Chan 1985	44	51	32	213	131	13	5
Chen & Li 1991	44	52	31	213	242	23	5
Li et al 1994	44	53	31	213	242	23	5
Chen 1998	55	53	33	213	242	24	5
Feng 1998	55	53	33	212	242	24	5
Li & Liang 2001	44	53	31	213	242	23	5
Yuan 2001	44	52	31	213	242	23	4
Li 2002	44	51	33	31	242	23	5
Lin 2002	44	53	31	213	242	23	5

Examples of these seven citation tones in the Fuzhou dialect are given in (21).

- (21) *yinping* 单 tan^{44} ‘single; alone’ 菇 ku^{44} ‘mushroom’
yangping 谈 tan^{51} ‘to discuss’ 糊 ku^{51} ‘to paste’
shang 胆 tan^{31} ‘gall; guts’ 鼓 ku^{31} ‘drum’

<i>yinqu</i>	旦	taŋ ²¹³	‘dawn’	故	kou ²¹³	‘still’
<i>yangqu</i>	淡	taŋ ²⁴²	‘light’	旧	kou ²⁴²	‘old’
<i>yinru</i>	答	taʔ ²³	‘to answer’	骨	kouʔ ²³	‘bone’
<i>yangru</i>	达	taʔ ⁵	‘to reach’	掘	kuʔ ⁵	‘to dig’

In addition to these seven citation tones, there are two sandhi tones in the Fuzhou dialect, whose tonal values are marked as 21 and 24 respectively. Since the tonal values of these two sandhi tones look like a half of the *yinqu* and *yangqu* tones respectively, they are called half *yinqu* and half *yangqu*. These two tones only occur in the sandhi context (to be discussed in more detail in Section 2.2.2).

2.2.1.2 Finals

The Fuzhou dialect has 47 finals, as presented in Table 3.

Table 3. Fuzhou finals (cf. Chan 1985, Chen 1998, Li 2002, among others)¹⁸

a	ɛ	o	œ	au	ai		
ia	iɛ			iau ¹⁹	uai	i / ei	
ua		uo		eu	ui	u / ou	
		yo		iu		y / øy	øy / oy
aŋ							
iaŋ	iɛŋ					iŋ / eiŋ	eiŋ / aiŋ
uaŋ		uoŋ				uŋ / ouŋ	ouŋ / auŋ
		yoŋ				yŋ / øyŋ	øyŋ / oyŋ
aʔ	ɛʔ	oʔ	œʔ				
iaʔ	iɛʔ					iʔ / eiʔ	eiʔ / aiʔ
uaʔ		uoʔ				uʔ / ouʔ	ouʔ / auʔ
		yoʔ				yʔ / øyʔ	øyʔ / oyʔ

¹⁸ Variants of one alternating final are treated as one final. Variants of one alternating final are separated by a slash ‘/’.

¹⁹ The final *iau* is not reported in some published sources (e.g., Li et al 1994, Lin 2002) since only a couple of syllables contain this final, e.g., 喵 [miau⁵¹] ‘meow’.

It should be pointed out that some scholars claim that there is a syllabic nasal in the Fuzhou dialect, namely η (and its variants η and η), which should be treated as another final (Feng 1998, Yuan 1960, 2001). This syllabic nasal, however, is not considered as a final in this dissertation for two reasons. First, in the Fuzhou dialect, there are very few words that contain this final. Even in Feng's (1998) dictionary, there is only one word consisting of this final, namely, the negative particle 不 'not'. Second, in fact, this negative particle cannot be used alone and its pronunciation is conditioned by the initial of the following syllable. The syllabic nasals, η , η , and η are all its sandhi forms, while the citation form of this negative particle is assumed to be [ij²⁴²] (cf. Chen 1998, Li & Liang 2001, among others). Thus, it is not treated as a different final in this dissertation.

It is also noteworthy that there are two types of finals in the Fuzhou dialect, non-alternating finals (listed on the left of the thick line in Table 3) and alternating finals (listed on the right of the thick line). Non-alternating finals refer to finals whose citation forms are the same for all tones, as exemplified in (22a), while alternating finals refer to those whose two variants alternate depending on the tone, as exemplified in (22b).

(22)a.	单	taŋ ⁴⁴	'single; alone'	b.	菇	ku ⁴⁴	'mushroom'
	谈	taŋ ⁵¹	'to discuss'		糊	ku ⁵¹	'to paste'
	胆	taŋ ³¹	'gall; guts'		鼓	ku ³¹	'drum'
	旦	taŋ ²¹³	'dawn'		故	kou ²¹³	'still'
	淡	taŋ ²⁴²	'light'		旧	kou ²⁴²	'old'
	答	ta? ²³	'to answer'		骨	kou? ²³	'bone'

达 taʔ⁵ ‘to reach’掘 kuʔ⁵ ‘to dig’

As can be seen from (22b), in isolation forms, the variant [u] of the final *u/ou* can only occur with tones 44, 51, 31, and 5 while the other variant [ou] can only occur with tones 213, 242, and 23. Variants of Fuzhou alternating finals are thus divided into two groups according to the tones they are accompanied by in the citation environment. The first group is called *jinyun* 紧韵 (lit. ‘tense finals’) or *benyun* 本韵 (lit. ‘original finals’) in the literature, which occurs with tones 44, 51, 31, and 5, while the second group is called *songyun* 松韵 (lit. ‘lax finals’) or *bianyun* 变韵 (lit. ‘changed finals’), which occurs with tones 213, 242, and 23 (cf. Chan 1985, Li et al 1994, Chen 1998, Feng 1998, Li & Liang 2001, among others). For the sake of brevity, in this dissertation, these two groups will be referred to as Group A variants and Group B variants respectively. Thus Fuzhou alternating finals can be presented as follows.

Table 4. Fuzhou alternating finals (cf. Chan 1985, Chen 1998, Li 2002, among others)²⁰

	Group A	Group B	Group A	Group B
Alternating Finals	i	ei		
	iŋ	eiŋ	eiŋ	aiŋ
	iʔ	eiʔ	eiʔ	aiʔ
	u	ou		
	uŋ	ouŋ	ouŋ	auŋ
	uʔ	ouʔ	ouʔ	auʔ
	y	øy	øy	oy
	yŋ	øyŋ	øyŋ	oyŋ
	yʔ	øyʔ	øyʔ	oyʔ
Tones	44, 51, 31, 5	213, 242, 23	44, 51, 31, 5	213, 242, 23

²⁰ More alternating finals are reported in some published materials (e.g., Li et al 1994, Feng 1998, Lin 2002). These alternating finals, such as *a/a*, *o/o*, and *ie/ie*, are not included in this study since the phonetic distinction between the variants are minimal in speech.

2.2.1.3 Initials

It is generally accepted that the Fuzhou dialect has 15 initials, including the so-called “zero initial” (cf. Li et al 1994, Feng 1998, Li & Liang 2001, among others), as presented in Table 5.

Table 5. Fuzhou initials (cf. Li et al 1994, Feng 1998, Li & Liang 2001, among others)²¹

		Labial	Alveolar	Alveolo-palatal	Velar	Glottal
Stop	unaspirated	p	t		k	ʔ/0
	aspirated	p ^h	t ^h		k ^h	
Affricate	unaspirated		ts			
	aspirated		ts ^h			
Nasal		m	n		ŋ	
Fricative			s		x	
Lateral approximant			l			

It is noteworthy that the initials *l* and *n* are considered as only one initial in some works (e.g., Chen 1998, Li 2002). It has been reported that some Fuzhou native speakers are not able to distinguish *l* from *n* (cf. Chen 1998, Yuan 2001, Li 2002, among others). In the initial inventory assumed in this study, I still treat *l* and *n* as two different initials since they have different sandhi forms in a sandhi context (to be discussed in Section 2.2.2) and my informants can distinguish them in citation forms.

It should be pointed out that the zero initial is generally marked as *0* or \emptyset in the literature of the Fuzhou dialect (e.g., Li et al 1994, Chen 1998, among others). It has also been noticed that a syllable with the zero initial is actually pronounced with a slight glottal stop initial ʔ (cf. Feng 1998, Li 2002, among others). Also, the zero initial is usually realized as the glottal stop ʔ in actual speech, especially when it is

²¹ Initials listed on the left in the cell are voiceless, while those on the right are voiced.

preceded by a syllable ending with a glottal stop. Therefore, in this dissertation, the zero initial will be indicated as ʔ in most examples, especially in those in the sandhi context.

Examples of Fuzhou initials are listed as follows.

(23)[p]:	边	peij ⁴⁴	‘edge’	饭	puoŋ ²⁴²	‘rice’
[p ^h]:	皮	p ^h ui ⁵¹	‘skin’	波	p ^h o ⁴⁴	‘wave’
[t]:	单	taŋ ⁴⁴	‘single; alone’	答	taʔ ²³	‘to answer’
[t ^h]:	贪	t ^h aŋ ⁴⁴	‘greedy’	听	t ^h iaŋ ²¹³	‘to listen’
[k]:	家	ka ⁴⁴	‘family’	鸡	kie ⁴⁴	‘chicken’
[k ^h]:	看	k ^h aŋ ²¹³	‘to look’	气	k ^h ei ²¹³	‘air’
[ts]:	真	tsiŋ ⁴⁴	‘true’	慈	tsy ⁵¹	‘kindly’
[ts ^h]:	出	ts ^h ouʔ ²³	‘to go out’	七	ts ^h eiʔ ²³	‘seven’
[s]:	船	suŋ ⁵¹	‘ship’	成	siaŋ ⁵¹	‘to succeed’
[m]:	问	muoŋ ²¹³	‘to ask’	蜜	miʔ ⁵	‘honey’
[n]:	日	niʔ ⁵	‘day’	难	naŋ ²⁴²	‘difficult’
[ŋ]:	眼	ŋaŋ ³¹	‘eye’	语	ŋy ³¹	‘language’
[l]:	柳	liu ³¹	‘willow’	蓝	laŋ ⁵¹	‘blue’
[x]:	湖	xu ⁵¹	‘lake’	喜	xi ³¹	‘happy’
[ʔ/0]:	黄	ʔuoŋ ⁵¹	‘yellow’	雨	ʔy ³¹	‘rain’

In addition to these 15 initials, there are two sandhi initials in the Fuzhou dialect, namely, β and \mathcal{J} . These two initials only occur in the sandhi context (to be discussed in more detail in Section 2.2.2).

2.2.2 Phonological phenomena in the Fuzhou dialect

In the following subsections, we will see a survey of the most outstanding phonological phenomena in the Fuzhou dialect that are relevant to the topics under discussion in this dissertation. A brief description of each phenomenon will be presented with a number of examples. Since the primary concern in this study is to identify the domain of application for phonological phenomena in the Fuzhou dialect, as well as to evaluate the role of each prosodic domain in the application of various phonological phenomena, no special attention is given to the best formalism of each phenomenon.

2.2.2.1 Phonological tone sandhi (TS)

It has long been noticed that tones in the Fuzhou dialect, in general, maintain their citation tonal values only when they occur on monosyllabic syllables or on the final syllable in a given domain (cf. Chen & Norman 1965a, Chan 1980, Li et al 1994, among others). When a tone is followed by another tone in a domain that contains more than one syllable, the non-final tone usually undergoes tone sandhi rules. There are two types of tone sandhi rules in the Fuzhou dialect: the first type applies in most domains as long as the phonological environment is provided, that is, there are two or more syllables within the domain, while the second type only applies to some disyllabic words formed by the morphological process of reduplication. The first type of tone sandhi rule is referred to as the phonological tone sandhi rule (TS henceforth) in this dissertation, while the second type is referred to as the morphological tone sandhi rule (MTS henceforth) (to be discussed in Section 2.2.2.2).

As noted by almost all the published materials on the Fuzhou dialect, the phonological tone sandhi rule (TS) is a context-sensitive rule, according to which a citation tone will change into a sandhi tone depending on its original tonal value as well as that of the following tone (cf. Chen & Norman 1965a, Chan 1980, Li et al 1994, among others). Phonological tone sandhi patterns for a disyllabic domain are given in Table 6. Sandhi tones are presented in shaded boxes.

Table 6. Disyllabic phonological tone sandhi (cf. Li et al 1994, Feng 1998, Lin 2002, among others)

Sandhi form of the 1 st tone \ 2 nd tone	44	51 5	31	213 242 23
1 st tone	44 213 242 23 (-ʔ)	44	51	31
31 23 (-k)	21	24	44	
51 5	44	31	21	

From Table 6, we can find that two sandhi tones, namely, 21 and 24, which do not occur in isolation, appear in the sandhi context. It is also noteworthy that the *yinru* tone 23 has two types of sandhi patterns. As mentioned in Section 2.2.1.1, words bearing the *yinru* tone have two different historical sources, ending with *-ʔ and *-k, respectively. In a sandhi context, these two different endings give rise to different tone sandhi patterns of the *yinru* tone. In tone sandhi environment, the *yinru* tone with the historical ending *-ʔ behaves like the *yinping*, *yinqu*, and *yangqu* tones, as exemplified in (24a), while the *yinru* tone with the historical ending *-k behaves like the *shang* tone, as exemplified in (24b). Citation tones are presented on the left of the

symbol “→” while sandhi tones are presented on the right and marked in bold. Other phonological processes are not presented here.

(24)a. Tone sandhi of *yinru* (-ʔ)

桌腿	toʔ ²³ k ^h a ⁴⁴ → toʔ ⁴⁴ k ^h a ⁴⁴	‘table leg’
桌头	toʔ ²³ t ^h au ⁵¹ → toʔ ⁴⁴ t ^h au ⁵¹	‘top of the table’
壁里	piaʔ ²³ lie ³¹ → piaʔ ⁵¹ lie ³¹	‘the against-the-wall side of bed’
脚色	kyoʔ ²³ saiʔ ²³ → kyoʔ ⁵¹ saiʔ ²³	‘ability’

b. Tone sandhi of *yinru* (-k)

福州	xuʔ ²³ tsiu ⁴⁴ → xuʔ ²¹ tsiu ⁴⁴	‘Fuzhou’
骨头	kouʔ ²³ t ^h au ⁵¹ → kouʔ ²¹ t ^h au ⁵¹	‘bone’
出口	ts ^h ouʔ ²³ k ^h eu ³¹ → ts ^h ouʔ ²⁴ k ^h eu ³¹	‘to export’
拾刷	k ^h aʔ ²³ souʔ ²³ → k ^h aʔ ⁴⁴ souʔ ²³	‘to tidy up; to fix; to punish’

In a domain formed by three syllables, as reported in most literature (e.g., Chan 1985, Li et al 1994, Hung 1987, among others), the pivotal point for TS is the citation tone of the penultimate syllable. If the citation tone of the penultimate syllable is *yangping* 51 or *yangru* 5, this tone will undergo TS according to the disyllabic TS patterns in Table 6. And then the antepenultimate tone will undergo TS depending on the sandhi tone (rather than the citation tone) of the penultimate syllable and its own citation tone. By contrast, if the citation tone of the penultimate syllable is not *yangping* 51 or *yangru* 5, this tone will undergo TS and then the tone of the antepenultimate syllable will become the half *yinqu* tone 21 by default. Phonological

tone sandhi patterns for a trisyllabic domain are given in Table 7. Sandhi patterns are presented in shaded boxes.

Table 7. Trisyllabic phonological tone sandhi (cf. Chan 1985, Li et al 1994, Hung 1987, among others)²²

T1+T2+T3	Tone sandhi of T1+T2+T3
Type 1: T2 = 51/5	T1+(T2+T3)→T1+T2'+T3→(T1+T2')+T3→T1'+T2'+T3
Type 2: T2 = 44/213/242/23/31	T1+(T2+T3)→T1+T2'+T3→21+T2'+T3

These two types of trisyllabic TS patterns can be illustrated in (25). Sandhi tones are marked in bold.

(25) Type 1:

媒依妈 mui⁵¹ nøyŋ⁵¹ ma³¹ → mui^{**31**} nøyŋ^{**31**} ma³¹ ‘female matchmaker’

番石榴 xuaŋ⁴⁴ suoʔ⁵ liu⁵¹ → xuaŋ^{**53**} suoʔ^{**31**} liu⁵¹ ‘pomegranate’

Type 2:

图书馆 tu⁵¹ tsy⁴⁴ kuaŋ³¹ → tu^{**21**} tsy^{**51**} kuaŋ³¹ ‘library’

开斗裤 k^hui⁴⁴ tau³¹ k^hou²¹³ → k^hui^{**21**} tau^{**44**} k^hou²¹³ ‘open-seat pants’

In a sandhi domain consisting of more than three syllables, the tones of syllables preceding the antepenultimate are uniformly changed into 21, and the rest of the syllables follow the trisyllabic TS patterns in Table 7 (cf. Chen & Norman 1965a, Chan 1985, Chan 1998, among others).

²² T' indicates the sandhi form of T. Tones in the parentheses follow the disyllabic TS. If T2' is 21/24, the tone sandhi of (T1+T2') follows the disyllabic TS patterns of (T1+213/242).

It has been noticed that the TS rule not only applies to lexical items like those listed in (24) and (25), but also applies to a string of sounds at the phrasal level (cf. Chen & Norman 1965a, Chan 1985, Shih 1986, Zhang 1992, among others), as exemplified in (26). Sandhi tones are marked in bold.

- (26)a. 食 饭 $si\epsilon\gamma^5 puo\eta^{242} \rightarrow si\epsilon\gamma^{21} puo\eta^{242}$
 to eat rice ‘to eat food’
- b. 野 俊 $\gamma ia^{31} tsou\eta^{213} \rightarrow \gamma ia^{44} tsou\eta^{213}$
 very beautiful ‘very beautiful’
- c. 煎 鱼尾 $tsi\epsilon\eta^{44} \eta y^{51} mui^{31} \rightarrow tsi\epsilon\eta^{51} \eta y^{31} mui^{31}$
 to fry fish tail ‘to fry fish tails’
- d. 好 队员 $xo^{31} tui^{242} \gamma uo\eta^{51} \rightarrow xo^{21} tui^{44} \gamma uo\eta^{51}$
 good team member ‘good team member’

In the examples in (27), however, the TS rule is somehow blocked. Sandhi tones are marked in bold. The symbol “#” denotes the blocking of the TS rule.

- (27)a. 跳 野 悬
 $t^h iu^{213} \gamma ia^{31} kei\eta^{51} \rightarrow t^h iu^{213} \# \gamma ia^{21} kei\eta^{51} \quad *t^h iu^{21} \gamma ia^{21} kei\eta^{213}$
 to jump very high ‘(somebody) jumps very high’
- b. 研究 虫
 $\eta i\epsilon\eta^{31} kiu^{213} t^h \o y\eta^{51} \rightarrow \eta i\epsilon\eta^{44} kiu^{213} \# t^h \o y\eta^{51} \quad *\eta i\epsilon\eta^{21} kiu^{51} t^h \o y\eta^{51}$
 to study insect ‘to study insects’

On the basis of the discussion in Section 2.2.2.1, we can find that although the TS is a prevalent phonological rule in the Fuzhou dialect, it does not apply within all domains formed by two or more syllables. But we can see that TS may apply within more than one prosodic domain. The domain for the application of TS is thus an important topic in this dissertation, which will be discussed in more detail in the following chapters.

2.2.2.2 Morphological tone sandhi (MTS)

As mentioned in Section 2.2.2.1, besides the TS rule, there is another tone sandhi rule in the Fuzhou dialect, namely, the morphological tone sandhi rule (MTS). Unlike the TS rule, which occurs in most domains containing two or more syllables as long as the phonological environment is provided, the MTS rule can only apply to some disyllabic words formed by the morphological process of reduplication. In other words, MTS applies to some words that are composed of two identical syllables. In the domain formed by such words, TS is blocked.

As discussed in Section 2.2.2.1, when TS occurs, the sandhi tone of a non-final syllable is determined by its own citation tone as well as the following tone. By contrast, when MTS applies, the sandhi tone of the non-final syllable (the first syllable in this case) is conditioned only by its citation tone. If the citation tone of the first syllable is *yangping*, *shang*, or *yangru*, its tonal value becomes 31 when MTS applies; if the citation tone of the first syllable is *yinqu*, *yangqu*, or *yinru*, its tonal value becomes 21. The sandhi form of *yinping* within the domain of MTS is a matter of controversy in the literature. It has been argued by some linguists that *yinping*

behaves the same as *yangping*, *shang*, and *yangru*, and has the sandhi tone 31 within the domain of MTS (cf. Liang 1982, Lin 2002, among others). Other linguists, however, argue that *yinping* remains unchanged within the domain of MTS (cf. Chen & Norman 1965a, Chen 1998, among others). The morphological tone sandhi rule (MTS) can thus be presented as in Table 8. Examples of MTS are presented in (28). Sandhi tones are marked in bold>.

Table 8. Morphological tone sandhi (MTS)

T (monosyllabic word)	T+T (disyllabic reduplicated words)
44	44+44 (cf. Chen & Norman 1965a, Chen 1998)
51/31/5	31+44/51/31/5 (cf. Liang 1982, Lin 2002)
213/242/23	21+213/242/23

(28)a. 碗碗 ‘bowl’

$\text{ʔuan}^{31} \text{ʔuan}^{31} \rightarrow \text{ʔuan}^{31} \text{ʔuan}^{31}$ (MTS) $*\text{ʔuan}^{24} \text{ʔuan}^{31}$ (TS)

b. 舀舀 ‘ladle’

$\text{ʔiu}^{31} \text{ʔiu}^{31} \rightarrow \text{ʔiu}^{31} \text{ʔiu}^{31}$ (MTS) $*\text{ʔiu}^{24} \text{ʔiu}^{31}$ (TS)

c. 袋袋 ‘bag’

$\text{toy}^{242} \text{toy}^{242} \rightarrow \text{toy}^{21} \text{toy}^{242}$ (MTS) $*\text{toy}^{51} \text{toy}^{242}$ (TS)

d. 拍拍 ‘bat’

$\text{p}^{\text{h}}\text{a}^{\text{ʔ}23} \text{p}^{\text{h}}\text{a}^{\text{ʔ}23} \rightarrow \text{p}^{\text{h}}\text{a}^{\text{ʔ}21} \text{p}^{\text{h}}\text{a}^{\text{ʔ}23}$ (MTS) $*\text{p}^{\text{h}}\text{a}^{\text{ʔ}51} \text{p}^{\text{h}}\text{a}^{\text{ʔ}23}$ (TS)

2.2.2.3 Final alternation (FA)

As mentioned in Section 2.2.1.2, there is a very special phonological phenomenon in the Fuzhou dialect, namely, the tonally-conditioned alternation between two variants of an alternating final. To recapitulate, in isolation forms, Group A variants and Group B variants are in complementary distribution: Group A variants occurs with tones 44, 51, 31, and 5, while Group B variants occurs with tones 213, 242, and 23 (see Table 4 for alternating finals in Fuzhou). Final alternation (FA henceforth) can be illustrated by examples in (29), in which Group A variants *uŋ*, *uʔ*, *i*, and *iʔ* occurs with tones 44, 51, 31, and 5, while Group B variants *ouŋ*, *ouʔ*, *ei*, and *eiʔ* occurs with tones 213, 242, and 23.

(29)a.	风	xuŋ ⁴⁴	‘wind’	b.	机	ki ⁴⁴	‘machine’
	云	xuŋ ⁵¹	‘cloud’		旗	ki ⁵¹	‘flag’
	粉	xuŋ ³¹	‘powder’		己	ki ³¹	‘shrewish’
	训	xouŋ ²¹³	‘to teach, to train’		记	kei ²¹³	‘to remember’
	混	xouŋ ²⁴²	‘to get by’		忌	kei ²⁴²	‘death anniversary’
	拂	xouʔ ²³	‘to flick’		急	keiʔ ²³	‘rapid; impatient’
	佛	xuʔ ⁵	‘Buddha’		扱	kiʔ ⁵	‘to stab, to prick’

2.2.2.4 Final change (FC)

As can be seen from Table 6 and Table 8, *yinqu*, *yangqu*, and *yinru* tones never occur in a sandhi context: they always undergo the tone sandhi processes (either TS or MTS). Thus, along with the change in tones, in the tone sandhi position, syllables with Group B variants must undergo another phonological process, namely, the final

change (FC henceforth). In a sandhi environment, where non-final syllables can only have *yinping*, *yangping*, *shang*, *yangru*, half *yinqu*, or half *yangqu* tones, all the Group B variants are “replaced” by their Group A counterparts; by contrast, Group A variants retain their citation forms even though the tones may undergo TS or MTS (cf. Chen & Norman 1965a, Chan 1985, Chen 1998, among others). Final change (FC) can be illustrated by examples in (30). In each pair of the following examples, the first example exhibits the final change (FC), while the second does not. Sandhi forms of finals are marked in bold. Sandhi tones are presented as well.

- (30)a. u/ou 旧书 kou²⁴² tsy⁴⁴ → **ku⁴⁴** tsy⁴⁴ ‘old book’
 乌暗 ʔu⁴⁴ aŋ²¹³ → ʔu⁵¹ aŋ²¹³ ‘dark’
- b. uŋ/ouŋ 动作 touŋ²⁴² tsouŋ²³ → **tuŋ⁵¹** tsouŋ²³ ‘action’
 同居 tuŋ⁵¹ ky⁴⁴ → tuŋ⁴⁴ ky⁴⁴ ‘neighbors; to co-inhabit’
- c. uʔ/ouʔ 熨斗 ʔouʔ²³ tau³¹ → **ʔuʔ²⁴** tau³¹ ‘iron (for clothes)’
 物理 ʔuʔ⁵ li³¹ → ʔuʔ³¹ li³¹ ‘physics’
- d. øy/oy 爱食 ʔoy²¹³ siεʔ⁵ → **ʔøy⁴⁴** siεʔ⁵ ‘to like to eat’
 螺丝 løy⁵¹ si⁴⁴ → løy⁴⁴ si⁴⁴ ‘screw’
- e. øyŋ/oyŋ 粽箬 tsoyŋ²¹³ nuoʔ⁵ → **tsøyŋ⁴⁴** nuoʔ⁵ ‘rice dumpling wrappings’
 棕树 tsøyŋ⁴⁴ ts^hiu²¹³ → tsøyŋ⁵¹ ts^hiu²¹³ ‘palm’
- f. øyʔ/oyʔ 触眼 toyʔ²³ ŋaŋ³¹ → **tøyʔ²⁴** ŋaŋ³¹ ‘cross eyes’
 毒蠓 tøyʔ⁵ møyŋ³¹ → tøyʔ³¹ møyŋ³¹ ‘midge’

As can be seen from examples in (30), FC can not only apply to lexical items like 动作 ‘action’ and 熨斗 ‘iron (for clothes)’, but also to phrases like 旧书 ‘old book’

and 爱食 ‘to like to eat’. Therefore, like TS, FC may also apply within more than one prosodic domain. Moreover, since FC is a tonally-conditioned phonological process, in cases where tone sandhi rules are blocked, FC also fails to apply, as exemplified in (31). The blocking of FC and tone sandhi rules is denoted by “#”.

- (31)a. 服侍 爸妈
 $xu\text{?}^5 s\text{o}y^{242} pa^{242} n\text{e}^{31} \rightarrow xu\text{?}^{21} s\text{o}y^{242} \# pa^{51} n\text{e}^{31} *xu\text{?}^{21} sy^{21} pa^{51} n\text{e}^{31}$
 to take care parents ‘to attend to one’s parents’
- b. 耳真塞
 $\eta ei^{242} tsij^{44} sei\text{?}^{23} \rightarrow \eta ei^{242} \# tsij^{51} sei\text{?}^{23} * \eta i^{21} tsij^{51} sei\text{?}^{23}$
 ear truly blocked ‘hard of hearing; unwilling to listen’

2.2.2.5 Initial consonant lenition (CL)

In the Fuzhou dialect, the initial of a non-first syllable within a given domain containing two or more syllables is usually changed according to the final of the preceding syllable (cf. Chen & Norman 1965a, Chan 1985, Li et al 1994, Chen 1998, among others). Initial consonant lenition (CL henceforth) can be presented as follows. Sandhi forms of initials are given in shaded boxes.

Table 9. Initial consonant lenition (CL) (cf. Li et al 1994, Chen 1998, among others)

Sandhi form of the following initial	Following initial				
	p p ^h	t t ^h s l	k k ^h x ?/0	ts ts ^h	m n ŋ
Preceding final					
open syllable/vowel coda/-?	β	l	?/0	ʒ	no change
-ŋ	m	n	ŋ	ʒ	no change
-k	no change				

As we can see from Table 9, CL gives rise to two sandhi initials, namely, β and \mathfrak{z} , which do not occur in the underlying Fuzhou initial inventory shown in Table 5. These two sandhi initials occur only in a sandhi environment where CL applies.

Also, it is noteworthy that the two historical endings of syllables with the *yinru* tone have different effects on the initial consonant of the following syllable. If the historical ending of a syllable with the *yinru* tone is $*-k$, it prevents the following initials from undergoing CL. By contrast, if the historical ending of a syllable with the *yinru* tone is $*-ʔ$, it triggers CL on most following initials.

Furthermore, if a non-first syllable is initiated by [m, n, ŋ], its initial never undergoes CL. Initial consonant lenition (CL) can be illustrated by examples in (32). Sandhi forms of initials are marked in bold. Tone sandhi and final changes (if any) are presented as well.

(32)a. CL

车票	$ts^{h_1}ia^{44} p^{h_1}iu^{213} \rightarrow ts^{h_1}ia^{51} \beta iu^{213}$	‘(bus or train) ticket’
旧底	$kou^{242} t\epsilon^{31} \rightarrow ku^{51} l\epsilon^{31}$	‘before, the old times’
排骨	$p\epsilon^{51} kou^{23} \rightarrow p\epsilon^{21} \mathfrak{z}ou^{23}$	‘spare ribs’
客车	$k^h a^{23} (-ʔ) ts^{h_1}ia^{44} \rightarrow k^h a^{44} \mathfrak{z}ia^{44}$	‘passenger car, bus’
暝晡	$maŋ^{51} puo^{44} \rightarrow maŋ^{44} muo^{44}$	‘evening’
颜色	$\eta aŋ^{51} sai^{23} \rightarrow \eta aŋ^{21} nai^{23}$	‘color’
电话	$tien^{242} \mathfrak{z}ua^{242} \rightarrow tien^{51} \eta ua^{242}$	‘telephone’
青菜	$ts^h aŋ^{44} ts^h ai^{213} \rightarrow ts^h aŋ^{51} \mathfrak{z}ai^{213}$	‘vegetables’

b. No CL

头脑	$t^h au^{51} no^{31} \rightarrow t^h au^{31} no^{31}$	‘brain’
----	---	---------

姜母	kyoŋ ⁴⁴ mo ³¹ → kyoŋ ⁵¹ mo ³¹	‘ginger’
壳石	k ^h oyʔ ²³ (-k) suoʔ ⁵ → k ^h øyʔ ²¹ suoʔ ⁵	‘shellfish’

It has been noticed by some linguists (e.g., Li et al 1994, Li & Liang 2001, Li 2002, among others) that in a given string of two or more syllables, the presence and absence of CL can be used to denote different meanings and/or syntactic relationships between members, as exemplified in (33). In (33), the first example involves CL and the sandhi form of the initial is marked in bold, while the second example does not exhibit CL.

- (33)a. 做细 tso²¹³ sa²¹³ → tso⁵¹ **la**²¹³ ‘(in) childhood’
 b. 做细 tso²¹³ sa²¹³ → tso⁵¹ sa²¹³ ‘to be a concubine’

It will be demonstrated that the contrast between the presence and absence of CL is due to different behaviors of CL within different prosodic domains. Further discussion will be presented in the relevant chapters.

2.2.3 Summary

In the second part of this chapter, I have presented a general picture of the Fuzhou tonal and segmental inventories, and have surveyed a number of phonological phenomena in the Fuzhou dialect. On the basis of the discussion above, we can find that different phonological phenomena in Fuzhou may apply to different-sized groups of sounds. For example, final alternation (FA) occurs only within but not across syllables, while final change (FC) can apply to both lexical items and phrases

composed of two or more syllables. Furthermore, we have seen that phonological phenomena such as phonological tone sandhi (TS), final change (FC), and initial consonant lenition (CL) may be blocked in some cases.

In the following chapters, I will further examine the application of each phonological phenomenon in the Fuzhou dialect. I will demonstrate that (a) a given phonological phenomenon in Fuzhou may apply within a particular domain but be blocked within another domain; and (b) one Fuzhou phonological phenomenon may apply within more than one prosodic domain and exhibit different degrees of application, as suggested by Prof. Hongming Zhang (personal communication, September, 2015). Each following chapter will begin with an introduction to a particular prosodic domain, followed by a detailed investigation of the application of various phonological phenomena with respect to the domain in question in the Fuzhou dialect.

Chapter III. The Syllable and the Foot in the Fuzhou Dialect

Neither the syllable nor the foot is a new concept in phonological theory, and there has been a very large body of research related to these two units. In this chapter, I will restrict my attention to only those aspects of the syllable and the foot that are most relevant to the topic of this dissertation. In other words, this chapter is an investigation of the roles of the syllable and the foot in the prosodic phonology of the Fuzhou dialect. Section 3.1 concentrates on the syllable as the prosodic domain of application for phonological rules. It will be demonstrated that the final alternation (FA) rule in the Fuzhou dialect operates within the syllable but not in other contexts, which shows that the syllable is an indispensable prosodic domain in the prosodic phonology of this dialect, as it is in many other languages. Section 3.2 focuses on the next constituent in the prosodic hierarchy, namely the foot. This section first presents a brief discussion of the concept of the foot and its role in serving as the domain of certain phonological phenomena across languages. Then previous studies regarding the foot in the Fuzhou dialect are discussed. Based on the review of previous studies and the analysis of relevant data, I will argue that the foot should not be treated as a prosodic domain in this dialect. The conclusion is provided in Section 3.3.

3.1 The syllable as a prosodic domain

3.1.1 The syllable as a prosodic domain across languages

It has long been reported in the literature that the syllable serves as the domain of application for phonological rules across languages (cf. Kahn 1976, Kiparsky 1979,

Booij 1981, van der Hulst 1984, Nespor & Vogel 1986, Jensen 1993, among others). In this section I will briefly discuss several such phonological rules that are investigated in the literature.

Let us first consider two phonological rules in English, Glottalization and Alveopalatalization. In North American English, Glottalization is a rule that glottalizes a voiceless stop when this stop is preceded by a [-consonantal] segment. For this rule to apply, the stop must be: (a) in absolute final position, as in (1a-c); (b) followed by a consonant other than *r* within the same word, as in (1d-f); or (c) followed by a word that begins with a consonant or a glide, as in (1g-i) (cf. Kahn 1976, Nespor & Vogel 1986, Jensen 1993, among others). The symbols within the brackets represent the phonetic representations of words in (1), in which Glottalization is illustrated with the voiceless alveolar stop *t* and the segments in question are marked in bold.

- | | | |
|--------|------------------|--|
| (1) a. | wait | [we it ^ʔ]σ |
| b. | great | [gre it ^ʔ]σ |
| c. | giant | [dʒai]σ [ə nt ^ʔ]σ |
| d. | butler | [b ət ^ʔ]σ [lɚ]σ |
| e. | witness | [wi t ^ʔ]σ [nɪs]σ |
| f. | atlas | [æt ^ʔ]σ [læs]σ |
| g. | wait patiently | [we it ^ʔ]σ [p ^h ei]σ ... |
| h. | wait reluctantly | [we it ^ʔ]σ [rə]σ ... |
| i. | wait wearily | [we it ^ʔ]σ [wɪə]σ ... |

From examples in (1), we can find that what the three types of environments mentioned above have in common is that the voiceless stop occurs in syllable-final position. Glottalization can thus be formulated as a syllable-domain rule, as presented in (2).

(2) *Glottalization*

$$\left(\begin{array}{l} \text{-cont} \\ \text{-voice} \end{array} \right) \rightarrow [+constr] / [\dots [+son] ___]\sigma$$

Alveopalatalization in English is another syllable-domain rule. This rule affects the alveolar stops *t* and *d*, and changes their place of articulation from alveolar to alveopalatal when they occur before *r* (cf. Kahn 1976, Nespor & Vogel 1986, Jensen 1993, among others). Consider the following examples of *t*, in which the Alveopalatalization rule applies in (3) but not in (4). The *t* in question is marked in bold.

- (3) a. treat: [treat]σ → [c^h]reat
 b. citrus: [ci]σ [trus]σ → ci[c]rus
- (4) a. night rate: [night]σ [rate]σ → *nigh[c] rate
 b. rat race: [rat]σ [race]σ → *ra[c] race

As examples in (3) and (4) show, Alveopalatalization applies in relation to the left end of the syllable. Specifically, the rule applies when the alveolar stop is followed by an *r* within the same syllable, while it is blocked when the alveolar stop is followed by an *r* in an adjacent syllable. Hence, the rule can be stated as in (5).

(5) *Alveopalatalization*

$$\begin{pmatrix} -\text{cont} \\ +\text{cor} \end{pmatrix} \rightarrow [-\text{ant}] / [\dots _ \text{r} \dots]\sigma$$

The third rule examined in this section is Velarization in Spanish. In certain dialects of Spanish, the nasal *n* is velarized to *ŋ* in the rhyme of a syllable (cf. Harris 1983, Nespór & Vogel 1986, among others). Several examples are cited in (6), on the basis of which this rule is formulated as a syllable-domain rule by Nespór & Vogel (1986), as in (7).

- (6) a. [can]σ [tan]σ → ca[ŋ]ta[ŋ] ‘(they) sing’
 b. [in]σ [sti]σ [tu]σ [to]σ → i[ŋ]stituto ‘institute’
 c. [con]σ [stan]σ [te]σ → co[ŋ]sta[ŋ]te ‘constant’

(7) *Velarization*

$$n \rightarrow \eta / _ C_0]\sigma$$

Another process that operates within the syllable is the one that inserts a schwa between a liquid and a following non-coronal obstruent in certain varieties of Dutch (cf. Booij 1981, Trommelen 1983, van der Hulst 1984, Nespór & Vogel 1986, among others). This rule occurs when the liquid and the non-coronal obstruent are in the same syllable, as exemplified in (8). Nespór & Vogel (1986) formulate the rule as in (9), in which “L” represents a liquid.

- (8) a. [park]σ → par[ə]k ‘park’
 b. [help]σ [ster]σ → hel[ə]pster ‘helper (fem.)’

c. [melk]σ [ach]σ [tig]σ → mel[ə]kachtig ‘milklike’

(9) *Schwa Insertion*

∅ → ə / [... L ____ [-cor] C₀]σ

The last rule worthy of being mentioned is Emphasis in Arabic. This rule stipulates that all segments within a syllable receive emphasis if there is an emphatic consonant in this syllable (cf. van der Hulst & Smith 1982, Nespor & Vogel 1986). This can be illustrated by the following examples, where emphasis is indicated by a dot under the emphatic segments.

- (10) a. [ṛab]σ → [ṛaḇ] ‘lord’
 b. [raa]σ [g̣il]σ → [raaḡil] ‘man’
 c. [buk]σ [ra]σ → [bukra] ‘tomorrow’
 d. [raa]σ [ʕ̣id]σ → [raaʕ̣id] ‘military rank’

As demonstrated by examples in (10), Emphasis in Arabic is a rule that takes the syllable as its domain of application, similar to all the other rules discussed above. It is noteworthy that this rule is an autosegmental spreading rule applying within the syllable domain, which indicates that both segmental and suprasegmental phonological rules can operate within the syllable domain.

So far, we have seen a number of phonological rules across languages. Given the fact that these rules all apply within the syllable, there is no doubt that the syllable can function as a domain of application for phonological phenomena in the languages we have seen in this section. In Section 3.1.2, I will examine the syllable in the Fuzhou

dialect to see whether it is valid to include this prosodic constituent within the prosodic phonology of this dialect.

3.1.2 The syllable as a prosodic domain in the Fuzhou dialect

As mentioned in Chapter II, there are two types of finals in the Fuzhou dialect, namely non-alternating finals that can co-occur with all tones and alternating finals that show alternations depending on the tone. Alternating finals can be further divided into two groups, Group A and Group B, according to the tones they co-occur with. Specifically, Group A variants occur with tones 44, 51, 31, and 5, while Group B variants occur with tones 213, 242, and 23. In a sandhi environment, Group B variants must be changed into corresponding Group A variants, since tones 213, 242, and 23 always undergo tone sandhi processes and thus never appear in a sandhi context (cf. Chan 1985, Li et al 1994, Chen 1998, Feng 1998, Li & Liang 2001, among others).

Concerning the final alternation phenomenon in the Fuzhou dialect, there has been a number of studies since it was first observed and described in Baldwin (1871). Since the focus of this dissertation is to investigate the roles of the prosodic constituents in the prosodic phonology of the Fuzhou dialect, this section will not provide an overview of the various analyses regarding the phonological derivations between Group A and Group B variants, nor does it attempt to analyze the mechanisms of final alternation.²³ Instead, I will concentrate on the discussion of the domain of this phonological phenomenon.

²³ As for the analyses in previous studies on these issues, please see representative works such as Chao (1934), Wang (1968), Maddieson (1976), Yip (1980), Wright (1983), and Chan (1985), among others.

As Chan (1985) points out, the phenomenon of final alternations in the Fuzhou dialect is a two-fold problem, since such alternations arise in both citation tone syllables and the sandhi context. Comparing these two cases, we can find that alternations in citation forms and those in the sandhi environment actually refer to different prosodic domains. To distinguish these two types of phonological phenomena in the Fuzhou dialect, the first type is referred to as final alternation (FA) and the second is referred to as final change (FC) in this dissertation, as we have seen in Chapter II.

Let us now turn to the investigation of the domain of FA. As discussed in Chapter II, both Group A and Group B variants of alternating finals can occur in isolation forms. These two groups of variants are in complementary distribution in the Fuzhou dialect and their occurrence is conditioned by tones. When the tone of a given syllable is 44, 51, 31, or 5, the final of the syllable could be one of the Group A variants. When the tone of a given syllable is 213, 242, or 23, by contrast, the final could only be a Group B variant. This can be seen in Table 4 presented in Chapter II, which is repeated as Table 10 below.

Table 10. Fuzhou alternating finals (cf. Chan 1985, Chen 1998, Li 2002, among others)

	Group A	Group B	Group A	Group B
Alternating Finals	i	ei		
	iŋ	eiŋ	eiŋ	aiŋ
	iʔ	eiʔ	eiʔ	aiʔ
	u	ou		
	uŋ	ouŋ	ouŋ	auŋ
	uʔ	ouʔ	ouʔ	auʔ
	y	øy	øy	oy
	yŋ	øyŋ	øyŋ	oyŋ
	yʔ	øyʔ	øyʔ	oyʔ
Tones	44, 51, 31, 5	213, 242, 23	44, 51, 31, 5	213, 242, 23

We have seen some examples of FA in Chapter II, reproduced as in (11a-b).

Additional examples are provided in (11c-d).

- | | | | |
|--------|---|----|--|
| (11)a. | uŋ (uʔ) vs. ouŋ (ouʔ) | b. | i (iʔ) vs. ei (eiʔ) |
| | 风 xuŋ ⁴⁴ ‘wind’ | | 机 ki ⁴⁴ ‘machine’ |
| | 云 xuŋ ⁵¹ ‘cloud’ | | 旗 ki ⁵¹ ‘flag’ |
| | 粉 xuŋ ³¹ ‘powder’ | | 己 ki ³¹ ‘shrewish’ |
| | 训 xouŋ ²¹³ ‘to teach, to train’ | | 记 kei ²¹³ ‘to remember’ |
| | 混 xouŋ ²⁴² ‘to get by’ | | 忌 kei ²⁴² ‘death anniversary’ |
| | 拂 xouʔ ²³ ‘to flick’ | | 急 keiʔ ²³ ‘rapid; impatient’ |
| | 佛 xuʔ ⁵ ‘Buddha’ | | 扱 kiʔ ⁵ ‘to stab, to prick’ |
| c. | eiŋ (eiʔ) vs. aiŋ (aiʔ) | d. | øyŋ (øyʔ) vs. oyŋ (oyʔ) |
| | 针 tseiŋ ⁴⁴ ‘needle’ | | 朦 møyŋ ⁴⁴ ‘fluffy’ |
| | 层 tseiŋ ⁵¹ ‘floor’ | | 芒 møyŋ ⁵¹ ‘awn’ |
| | 剪 tseiŋ ³¹ ‘to cut’ | | 蠓 møyŋ ³¹ ‘midge’ |
| | 荐 tsaiŋ ²¹³ ‘straw mat’ | | 梦 moyŋ ²¹³ ‘dream’ |
| | 赠 tsaiŋ ²⁴² ‘to give as a present’ | | 网 moyŋ ²⁴² ‘fishing net’ |
| | 汁 tsaiʔ ²³ ‘juice’ | | 抹 moyʔ ²³ ‘to swipe’ |
| | 截 tseiʔ ⁵ ‘to cut off’ | | 目 moyʔ ⁵ ‘eye’ |

From examples in (11), we can find that the FA rule actually can be viewed as a type of phonological constraint on the combination of alternating final variants and tones within a syllable. Specifically, within the syllable domain, although both Group A and

Group B variants of alternating finals can occupy the final position, their distribution is conditioned by FA.

Beyond the syllable boundary, there are three possibilities of the occurrence of alternating finals. First of all, in non-terminal positions within certain strings that are composed of more than one syllable, Group B variants are never allowed in the surface form. This can be seen in (12), where underlying forms are presented on the left of the symbol “→” while surface forms are presented on the right. Finals in question are marked in bold.

- (12)a. 动作 $\text{təuŋ}^{242} \text{tsou}^{23} \rightarrow \text{təuŋ}^{51} \text{tsou}^{23} \quad * \text{təuŋ}^{51} \text{tsou}^{23}$ ‘action’
- b. 裤头 $\text{k}^{\text{h}}\text{ou}^{213} \text{t}^{\text{h}}\text{au}^{51} \rightarrow \text{k}^{\text{h}}\text{u}^{44} \text{t}^{\text{h}}\text{au}^{51} \quad * \text{k}^{\text{h}}\text{ou}^{44} \text{t}^{\text{h}}\text{au}^{51}$ ‘trouser waist’
- c. 护士长 $\text{xou}^{242} \text{səy}^{242} \text{tuəŋ}^{31} \rightarrow \text{xu}^{21} \text{sy}^{51} \text{tuəŋ}^{31} \quad * \text{xou}^{21} \text{səy}^{51} \text{tuəŋ}^{31}$
‘head nurse’
- d. 旧书 $\text{kou}^{242} \text{tsy}^{44} \rightarrow \text{ku}^{44} \text{tsy}^{44} \quad * \text{kou}^{44} \text{tsy}^{44}$ ‘old book’
- e. 七块 $\text{ts}^{\text{h}}\text{ei}^{23} \text{toy}^{213} \rightarrow \text{ts}^{\text{h}}\text{i}^{44} \text{toy}^{213} \quad * \text{ts}^{\text{h}}\text{ei}^{44} \text{toy}^{213}$ ‘seven pieces’
- f. 办护照 $\text{paiŋ}^{242} \text{xou}^{242} \text{tsiu}^{213} \rightarrow \text{peiŋ}^{21} \text{xu}^{51} \text{tsiu}^{213} \quad * \text{paiŋ}^{21} \text{xou}^{51} \text{tsiu}^{213}$
‘to apply for a passport’

We can find that in underlying forms of these examples, Group B finals occur together with tones 213, 242, or 23, within syllables in non-terminal positions, which is required by FA. By contrast, in surface forms, the phonological tone sandhi (TS) rule applies and changes the tones of syllables in the non-terminal positions, and then Group B variants are all switched into corresponding Group A variants by the FC rule. As we can see from the examples in (12), the TS rule can be triggered when a string

contains more than one syllable. Thus it is natural to assume that the TS rule must apply within a domain larger than the syllable. By the same token, the FC rule, which applies along with the TS rule and changes Group B variants to Group A variants, must refer to a domain larger than the syllable as well. Therefore, beyond the syllable boundary, the first possibility of the occurrence of alternating finals is that only Group A variants occur in the surface form, which is caused by the application of TS and FC rules and has nothing to do with the FA rule.

The second possibility of the occurrence of alternating finals beyond the syllable boundary can be illustrated by the examples in (13). It can be found that in surface forms of these examples, both Group A and Group B variants can occur in non-terminal positions within strings that are larger than the syllable. Finals in question are marked in bold.

- (13)a. 糊其 $ku^{51} ki^0 \rightarrow ku^{51} ki^0$ ‘glutinous (things)’ (Group A)
- b. 旧其 $kou^{242} ki^0 \rightarrow kou^{242} ki^0$ ‘old (things)’ (Group B)
- c. 灯侈 $teiŋ^{44} se^{242} \rightarrow teiŋ^{44} se^{242}$ ‘lights are many’ (Group A)
- d. 店侈 $taiŋ^{213} se^{242} \rightarrow taiŋ^{213} se^{242}$ ‘stores are many’ (Group B)

It is noticeable that neither TS nor FC applies to non-terminal syllables in the larger domain formed by these strings. Thus we can assume that the distribution of Group A and Group B variants within non-terminal syllables in these cases are only affected by the FA rule. To be specific, the FA rule applies within the syllable domain and thus results in the co-occurrence of Group B variants with tones 213, 242, and 23, as well as the co-occurrence of Group A variants with tones 44, 51, 31, and 5. Then since no

any other phonological rules apply to non-terminal syllables containing Group B variants within the larger domain in (13), Group B variants are allowed in the surface form.

The third possibility can be seen in (14), where finals in question are marked in bold. We can find that both Group A and Group B variants can occur in the terminal position within a string larger than the syllable in surface forms.

- (14)a. 实习 $siʔ^5 siʔ^5 \rightarrow siʔ^{31} \mathbf{siʔ^5}$ ‘intern’ (Group A)
- b. 样式 $yoŋ^{242} seiʔ^{23} \rightarrow yoŋ^{51} \mathbf{seiʔ^{23}}$ ‘style’ (Group B)
- c. 开灯 $k^{h}ui^{44} taiŋ^{44} \rightarrow k^{h}ui^{44} \mathbf{taiŋ^{44}}$ ‘to turn on the light’ (Group A)
- d. 开店 $k^{h}ui^{44} teiŋ^{213} \rightarrow k^{h}ui^{51} \mathbf{teiŋ^{213}}$ ‘to open the store’ (Group B)

In (14), neither TS nor FC is triggered on the terminal syllables within the larger domain. Thus we can conclude that the combination of alternating final variants and tones within the terminal syllables is conditioned only by the FA rule.

In view of the above discussion, we can find that the distribution of alternating final variants within a citation syllable is conditioned by the FA rule. When a syllable is contained in a larger domain, its alternating final may or may not be changed. However, no matter whether the alternating final is changed in a larger domain, the FA rule still applies first within the syllable. The FA rule in the Fuzhou dialect, which specifies how alternating finals can occur with respect to the tones within individual syllables, thus should be considered as a phonological constraint bound to the syllable domain. Therefore, the syllable should be treated as a prosodic constituent in the

prosodic phonology of this dialect, since it constitutes the domain of application of the FA rule.

3.1.3 Summary of the syllable as a prosodic domain

In Section 3.1, I have inspected the syllable domain in the Fuzhou dialect. Since there are a number of phonological rules that make crucial reference to the syllable domain cross-linguistically, the syllable is undoubtedly a universal prosodic constituent in the theory of prosodic phonology. By examining the FA rule in the Fuzhou dialect, we have found that this rule is actually a phonological constraint on the combination of alternating final variants and tones within a syllable. Even if a syllable is contained in a larger domain, the FA rule still applies first within the syllable no matter whether other phonological rules would apply within the larger domain, as we have seen in examples in (12-14). Based on such an observation, I have proposed in this section that the FA rule in the Fuzhou dialect is a phonological constraint that operates within the syllable domain, which demonstrates that the syllable is an indispensable prosodic constituent in this dialect.

3.2 The foot as a prosodic domain

As we have seen in Chapter II, in the universal prosodic hierarchy (cf. Selkirk 1978/1981, Nespor & Vogel 1986, among others), syllables are grouped into feet. This section aims at addressing the issue whether the foot functions as the domain of application for phonological phenomena in the Fuzhou dialect and whether the foot should thus be established as a prosodic constituent in this dialect. In Section 3.2.2

and Section 3.2.3, I will examine some previous studies on the foot in the Fuzhou dialect, and argue that the foot is not an indispensable prosodic constituent in the prosodic phonology of this dialect based on the discussion of previous studies and relevant Fuzhou data. Before we move on to the discussion of the foot domain in the Fuzhou dialect, nevertheless, it is necessary for us to go over a brief introduction to the foot as a prosodic domain in different languages, as presented in Section 3.2.1.

3.2.1 The foot as a prosodic domain across languages

While the definition of the foot is intimately related to stress, stress is not the only phonological phenomenon that is related to the foot. A number of different types of phonological rules have been reported to operate within the domain of the foot in the world's languages (cf. Kiparsky 1979, Selkirk 1980, van der Hulst & Smith 1982, Nespor & Vogel 1986, Jensen 1993, among others). I will not touch on all the rules mentioned in the literature—only some of them will be briefly discussed.

The first example of foot-bounded rules is Aspiration of stops in English. It has been argued that a voiceless stop is aspirated if and only if it is foot initial, but not in other positions within the foot. (cf. Nespor & Vogel 1986, Jensen 1993, among others). This can be exemplified in (15) and (16), with our attention limited to the voiceless stop *t*. The Aspiration rule can thus be formulated as in (17), in which the stop in question is placed at the left end of the foot.

- (15)a. [time]_Σ → [t^h]ime
 b. [tuna]_Σ → [t^h]una
 c. [tou]_Σ[can]_Σ → [t^h]oucan

- d. [de]_Σ [tain]_Σ → de[t^h]ain
 e. [tree]_Σ [toad]_Σ → [t^h]ree [t^h]oad
 (16)a. [sting]_Σ → *s[t^h]ing
 b. [after]_Σ → *af[t^h]er
 c. [ab]_Σ [stain]_Σ → *abs[t^h]ain
 d. [au]_Σ [stere]_Σ → *aus[t^h]ere
 e. [night]_Σ [owl]_Σ → *nigh[t^h] owl

(17) *Aspiration*

$$\left(\begin{array}{l} \text{-cont} \\ \text{-voice} \end{array} \right) \rightarrow [+spread\ glottis] / [___ \dots]_{\Sigma}$$

Another rule in English that refers to the foot as its domain is *n*-Velarization. This rule obligatorily velarizes an *n* to a following velar stop, as can be seen in words like *ink* and *increment*, but it is optional in cases like *increase* (V) and *incrèase* (N) (cf. Kiparsky 1979, Nespor & Vogel 1986, Jensen 1993, among others). From (18), we can find that this rule is only obligatory when the *n* and the velar stop are adjacent in the same foot, as in (18a) and (18b), while it is optional when the *n* and the following velar stop are in separate feet, as in (18c).

- (18)a. [ink]_Σ → i[ŋ]k
 b. [increment]_Σ → i[ŋ]crement
 c. [in]_Σ [crease]_Σ → i[n]crease / i[ŋ]crease

Another rule that can be stated within a foot domain is the Nasalization rule in Applecross Gaelic. This rule applies within the foot domain from a stressed nasal vowel forward until the end of the domain is reached and backward to and including the consonantal onset of the stressed syllable (cf. Ternes 1973, van der Hulst & Smith 1982, Nespor & Vogel 1986, among others). Within the domain, it is blocked if and only if it reaches a stop or one of the vowels /e/, /o/, or /ə/, as can be seen in (19). This rule fails to extend beyond the domain boundary, namely the end of the foot, as can be seen in (20).

- (19) a. /j̃ɛ̃nɛ. var/ → [j̃ɛ̃ñɛ̃. ṽãr̃]Σ ‘grandmother’ (throughout the Σ)
 b. /str̃ãi. γ/ → [str̃ãĩ. γ̃]Σ ‘string’ (blocked by a stop)
 c. /k^hɔ̃ispaxk/ → [k^hɔ̃ĩspaxk]Σ ‘wasp’ (blocked by a stop)
 d. /m̃ã. riçən/ → [m̃ã. r̃ĩçən]Σ ‘mothers’ (blocked by /ə/)
- (20) /k^hɔ̃ + ṽiã. t/ → [k^hɔ̃]Σ [ṽiã. t]Σ ‘how much’
 *[k^hɔ̃]Σ [ṽiã. t]Σ

The foot not only serves as the domain of application for phonological rules, but also provides the context for phonotactic restrictions in some languages. As discussed in Nespor & Vogel (1986), in Žul’hõasi, a Namibian language, there is a strong phonotactic restriction within the foot, which is constituted by disyllabic sequences in this language (cf. Smith 1986). This phonotactic restriction requires that if a consonant occurs in intervocalic position within the foot, this consonant may only be one of the following four: *b*, *m*, *r*, *n*. This restriction is exemplified in (21), where consonants in question are marked in bold.

- (21) a. pà**b**ù ‘pumpkin’ b. tà**m**à ‘kindly’
 c. lōarà ‘complete’ d. n#ò**a**nà ‘tell’

When a consonant occurs intervocalically at a juncture of two feet, or in other words, when it is not foot internal, it is not necessarily one of the four consonants mentioned above. In this case, other consonants in the consonant inventory of this language can be found between vowels, as shown in (22). Consonants in question are marked in bold.

- (22) a. [gù**m**à]_Σ [g**ū**mà]_Σ ‘whisper’ b. [xà**n**à]_Σ [x**a**nà]_Σ ‘drill’
 c. [kx’**ū**]_Σ [k**x**’ùni]_Σ ‘move’ d. [ʔ’**ā**a]_Σ [ʔ’**à**mà]_Σ ‘gather’

On the basis of the various phonological phenomena we have seen in this subsection, we can find that the foot can serve as the domain of application for certain phonological phenomena (including phonological rules and phonotactic constraints) cross-linguistically. Hence, we can conclude that the foot should be established as an indispensable prosodic constituent in the universal prosodic hierarchy. In the following subsections, I will examine this unit in the prosodic phonology of the Fuzhou dialect. I will show that although the foot is a universal prosodic unit across languages, no independent evidence and valid arguments can be supplied to demonstrate its existence and its role as a prosodic domain in the Fuzhou dialect.

3.2.2 Previous studies on the foot in the Fuzhou dialect

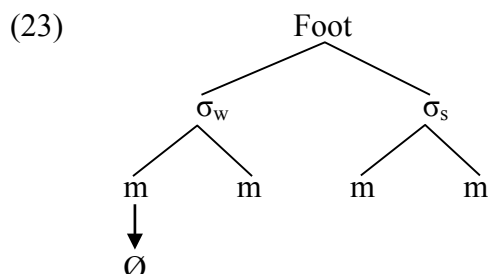
Some linguists contend that it is the foot in the Fuzhou dialect that forms the domain of application for phonological rules such as TS and FC (cf. Wright 1983, Chan 1985, Shih 1986, Hung 1987, and Chan 1998, among others). In the following subsections, I will review and discuss several previous studies on the foot in the Fuzhou dialect.

3.2.2.1 Wright (1983)

Spectrographic studies in Wright (1983) show that there is a significant difference in syllable duration between syllables in the sandhi position of a given sandhi span and syllables in the final/non-sandhi position in the same environment. The former, namely those bearing sandhi tones, are regularly reduced greatly in duration as compared to their isolation duration while the latter are only somewhat reduced in length. This observation leads Wright to relate stress to duration and consider the Fuzhou disyllabic sandhi span to be a w-s (weak-strong) iambic foot. Specifically, she refers to the sandhi position of the span as the weak position, and the final/non-sandhi position as the strong position. In the trisyllabic sandhi span, Wright constructs binary w-s feet with the possibility of a single extrametrical element at the boundary of the domain, i.e., w-w-s super-feet. She limits the length of the foot in the Fuzhou dialect to a maximum of three syllables.

Wright (1983) also assumes that the tone bearing unit in the Fuzhou dialect is mora and that syllables are associated with two moras in strong or isolation position (according to Wright, the only exception is syllables bearing the *yangru* tone, which is

associated with one mora since they ended with a glottal stop). She further proposes that in a w-s foot, the first mora in the weak-position syllable is deleted, which gives rise to the structure for disyllabic spans in (23) (m=mora, w=weak, s=strong):



Once the mora is deleted, the tone and the syllable in the weak position will be affected. Wright (1983) thus bases her analyses of the tone sandhi rule and the final change rule in the Fuzhou dialect on the w-s/right-strong stress foot formation as well as the moraic timing device.

Wright's theory has two theoretical drawbacks. First of all, she confuses the relationship between the application of sandhi rules (e.g., tone sandhi and final change) and the foot formation. It is true that in a given sandhi span, the syllable in the sandhi position is shorter in duration than its own isolation duration as well as the duration of the syllable in the final/non-sandhi position. A key question is what causes the shortening of syllable duration in the sandhi span? Now that the duration of a given syllable is greatly reduced only when it is in the sandhi position of a sandhi context, it is very natural to assume that the duration shortening is triggered only by virtue of the application of sandhi rules. Therefore, it would be more reasonable to argue that it is the application of sandhi rules that leads to the contrast in duration, and thus the contrast in strength (weak vs. strong) between syllables in Wright's theory, but not

vice versa. Wright's definition of the w-s/right-strong stress foot is actually based on the application of sandhi rules, and then she argues that sandhi rules can be analyzed in terms of the foot, which is typically an example of circular reasoning.

Beginning with Liberman & Prince (1977), it has been realized that stress is not a phonological feature that is given some content by the phonetic implementation rules (Gussenhoven & Jacobs 1998). Instead, it has been well accepted that stress should be considered as an abstract relational property between syllables, which is presented by metrical prominence relations between constituents in hierarchical structures (cf. Liberman 1975, Liberman & Prince 1977, Hayes 1980, Kenstowicz 1994, Kager 1996, 2007, Gussenhoven & Jacobs 1998, Gordon 2011, Zhang 2014, 2017, among others). Due to the fact that there is no unique/unambiguous phonetic correlate corresponding to stress, it has been argued that the evidence of primary importance that can determine the stress properties of a given syllable is native speakers' perceptions and judgments (cf. Kenstowicz 1994, Kager 1996, 2007, Gordon 2011, among others). Although the duration contrast between syllables within a given word in the sandhi environment in the Fuzhou dialect can be perceived by native speakers, the contrast is arguably the byproduct of the tone sandhi rule and/or the final change rule. By contrast, no such contrast or metrical prominence relations between syllables can be perceived in contexts without the application of phonological rules. In other words, there is no independent evidence for the existence of stress in this dialect.

The second theoretical drawback of Wright's theory lies in her assignment of moras to syllables. In her analysis, syllables in the final position of a sandhi span or in their isolation forms are composed of two moras, while those in the non-final position

have only one mora. However, the term “mora” is used to count the syllable weight instead of syllable duration—heavy syllables consist of two moras, while light syllables have one mora. The distinction between heavy syllables and light syllables resides in the internal syllable structure. Long vowels and vocalic diphthongs are always bimoraic, while short vowels are underlyingly monomoraic; coda consonants are mora-bearing on a language-specific basis (cf. Hayes 1989, Davis 2011, among others). Following Wright’s analysis, heavy syllables are supposed not to occur in the non-final position in the sandhi context. However, data from the Fuzhou dialect show that heavy syllables can occur in the non-final position, whether they contain alternating finals or not. From the examples in (24) and (25), where finals in question are marked in bold, we can find that syllables in the non-final position are still heavy in weight and thus should have two moras, although they may be reduced in duration. For the sake of brevity, only TS and FC are presented.

(24) Heavy non-final syllables with non-alternating finals

- a. 桌腿 $toʔ^{23} k^h a^{44} \rightarrow toʔ^{44} k^h a^{44}$ ‘table leg’
 b. 看见 $k^h aŋ^{213} kieŋ^{213} \rightarrow k^h aŋ^{51} kieŋ^{213}$ ‘to see’
 c. 派头弟 $p^h uai^{213} t^h au^{51} tie^{242} \rightarrow p^h uai^{51} t^h au^{21} tie^{242}$ ‘stylish young man’

(25) Heavy non-final syllables with alternating finals

- a. 动作 $touŋ^{242} tsouʔ^{23} \rightarrow tuŋ^{51} tsouʔ^{23}$ ‘action’
 b. 粽箬 $tsoyŋ^{213} nuoʔ^5 \rightarrow tsoyŋ^{44} nuoʔ^5$ ‘rice dumpling wrappings’
 c. 虱母 $saiʔ^{23} mo^{31} \rightarrow seiʔ^{24} mo^{31}$ ‘(big) louse’

Wright also wrongly excludes syllables bearing the *yangru* tone from having two moras. If we assume the glottal stop coda to be mora-bearing in the Fuzhou dialect, syllables with the *yangru* tone must all have two moras. Even if the glottal stop coda is non-moraic in this dialect, there are still a number of examples of heavy syllables with the *yangru* tone, e.g., 密 [meiʔ⁵] ‘dense’, 学 [xouʔ⁵] ‘to learn’, 目 [møyʔ⁵] ‘eye’. Therefore, Wright’s moraic analysis is based on a false understanding of the term ‘mora’, and is thus untenable.

Moreover, Wright’s theory has an empirical problem. In Wright’s theory, the upper limit of foot length is three syllables. Hence, even if we give Wright the benefit of the doubt and assume that the foot is the domain of application of TS and FC, there are still a lot of data that Wright’s analysis fails to cover, as exemplified by quadrisyllabic and pentasyllabic words in (26). Tones and finals in question are marked in bold.

- (26)a. 拨浪鼓锤 pa³¹ laŋ³¹ ku³¹ t^hui²⁴² → pa²¹ laŋ²¹ ku⁴⁴ t^hui²⁴² ‘tadpole’
- b. 天光白日 t^hiɛŋ⁴⁴ kuoŋ⁴⁴ paʔ⁵ niʔ⁵ → t^hiɛŋ²¹ kuoŋ²¹ paʔ³¹ niʔ⁵ ‘daytime’
- c. 死依骹尾 si³¹ nøyŋ⁵¹ k^ha⁴⁴ mui³¹ → si²¹ nøyŋ²¹ k^ha⁵¹ mui³¹
‘out-of-the-way place’
- d. 五落透后 ŋou²⁴² loʔ⁵ tau²¹³ ʔau²⁴² → ŋu²¹ loʔ²¹ tau⁵¹ ʔau²⁴²
‘larger one-story house with five courtyards’
- e. 圆鼎四角床 ʔiɛŋ⁵¹ tiaŋ³¹ sei²¹³ koyʔ²³ souŋ⁵¹ → ʔiɛŋ²¹ tiaŋ²¹ si²¹ koyʔ²¹ souŋ⁵¹
‘not fit together, not get along’

Clearly, there is only one sandhi domain in each example in (26) since all the tones/syllables in the non-final position undergo TS and/or FC and only the last remains unchanged. Wright's foot composed of up to three syllables thus fails to serve as the domain of rule application in these cases.

3.2.2.2 Chan (1985)

Chan (1985) argues that phonological changes in the Fuzhou dialect including the changes in tones, initials, and finals are all at least partially stress-related. Chan's instrumental studies show that the sandhi forms of syllables are greatly reduced in duration as compared to the citation forms in the final position of a tone sandhi domain. Hence, similar to Wright (1983), Chan also treats syllable duration as an important criterion for determining stress in the Fuzhou dialect and considers disyllabic words involving sandhi forms on the first syllable to be words with iambic stress.

Chan first distinguishes three types of stress in the Fuzhou dialect, namely, main stress falling on the final syllable bearing the citation tone in the sandhi context, secondary stress falling on the non-final syllables bearing the sandhi tone, as well as weak stress falling on unstressed, toneless suffixes. Chan argues that there is in fact only a two-way phonological contrast with respect to the presence or absence of main stress on the syllable and treats stress in Fuzhou as involving a binary contrast, between [+stress] for the main stress and [-stress] for the non-main stress (the secondary and weak stresses). She further claims that stress has an effect on tone,

such that syllables in pre-stress position undergo tone sandhi, while those in post-stress position generally undergoes tone loss.

According to Chan, the stress in the Fuzhou dialect can be analyzed as being (a) tone-sensitive, so that feet are only built on full-toned syllables, and not on syllables with neutral tone; (b) right-dominant, i.e., weak-strong; and (c) unbounded, so that structures such w-s, w-w-s, w-w-w-s, and so forth are possible. Chan proposes two rules for foot formation in Fuzhou, as shown in (27) and (28), respectively. In Chan's analysis, the foot is the domain of the application of tone sandhi and other rules in the Fuzhou dialect. Two examples are adapted from Chan (1985), as in (29), with the word-formation process omitted.

(27) Main Stress Rule (MSR)

Assign an unbounded, right-dominant foot starting at the rightmost full-toned syllable of the word.

(28) Stray Syllable Adjunction (SSA)

Adjoin a stray syllable as a recessive node of an adjacent foot.

(29)a. 尺 寸 'measure, size'

ts'uoʔ²³ ts'ouŋ²¹³ UR

ts'uoʔ²³ ts'ouŋ²¹³
 $\begin{array}{c} w \quad s \\ \diagdown \quad / \\ \text{F} \end{array}$ MSR

ts'uoʔ⁵¹ ʒouŋ²¹³
 $\begin{array}{c} w \quad s \\ \diagdown \quad / \\ \text{F} \end{array}$ TS and other rules

ts'uoʔ⁵¹ ʒouŋ²¹³ SR

b.	我	其	‘my’
	ηuai^{31}	ki^0	UR
	ηuai^{31}	ki^0	
	s	w	SSA (MSR does not apply)
	F		
	ηuai^{31}	ʔi^0	
	s	w	TS and other rules
	F		
	ηuai^{31}	ʔi^0	SR

There are some problems with Chan’s analysis. First of all, in Chan’s analysis, there is a binary contrast between syllables in the Fuzhou dialect, namely [+stress] vs. [-stress]. However, ever since Liberman and Prince (1977), stress has been viewed as a prominence relation between syllables and thus is no longer represented by means of a feature [\pm stress] that is analogous to other distinctive features such as [\pm nasal] and [\pm coronal] (cf. Kenstowicz 1994, Gussenhoven & Jacobs 1998, among others).

Second, similar to Wright (1983), Chan’s analysis also falls into the trap of circular reasoning. Based on the results from her instrumental studies as well as evidence from Wright’s spectrographic measurements, Chan believes that syllable duration should be treated as one of the most important criteria for determining stress and claims that there is a correlation between stress and tone. Specifically, Chan argues that main stress falls on the syllable bearing the citation tone, secondary stress falls on syllables bearing the sandhi tone, and weak stress falls on syllables bearing the neutral tone. According to such an observation, it is subtypes of the tone (i.e., citation tone, sandhi tone, or neutral tone) that decide subtypes of the stress (i.e., main

stress, secondary stress, or weak stress) on the syllables, but not vice versa. Moreover, it is clear that the contrast between main stress and secondary stress should be attributed to the application of tone sandhi, since the distinction between the sandhi tone and the citation tone must not exist without the application of tone sandhi. However, Chan claims that stress has an effect on tone, making syllables in sandhi position undergo tone sandhi, while those in post-main-stress position undergo tone loss. This obviously inverts cause and effect and thus is not convincing.

Chan's examples in (29) can serve as a good illustration of her circular reasoning. In (29a), we can see that the application of MSR precedes the application of TS. Hence, at the step of MSR, tone sandhi has not yet occurred. According to Chan's theory, in the Fuzhou dialect, the foot is constructed on the basis of the weak-strong contrast (iambic stress) resulting from the distinction in syllable duration in the sandhi context. Since tone sandhi is triggered after MSR in (29a), there is no such weak-strong contrast at the step of MSR. Therefore, Chan has to answer the following questions: how can we construct a foot with the foot formation rule MSR when there is no weak-strong contrast? How can we know that the syllable of 尺 [ts'uo²³] should be labeled as weak while the syllable of 寸 [ts'ou²¹³] should be labeled as strong? Without any independent evidence for the existence of stress in the Fuzhou dialect besides the distinction in syllable duration in the sandhi environment, Chan's theory fails to handle these questions.

The derivation of (29b) also has serious problems. First, there is in fact no tone sandhi in this example. Therefore, the "TS" here must refer to the application of tone loss in Chan's theory. As Chan claims, weak stress falls on syllables bearing the

neutral tone. Thus, at the step of SSA, a weak stress is assigned to 其 [ki⁰] simply because it has a neutral tone. Then, the foot constructed on the strong-weak contrast in (29b) serves as the domain of the application of tone loss on the toneless syllable 其 [ki⁰]. Once again, this is a typical example of circular reasoning. In addition, Chan's analysis of so-called "toneless suffixes" cannot account for the fact that there are some elements which bear full tones in the Fuzhou dialect have the same phonological behavior with these toneless suffixes. Compare (30a, b) from Chan (1985) with (30c-e).

- (30)a. 我其 ηuai³¹ ki⁰ → ηuai³¹ ʔi⁰ 'my'
- b. 大学嘍 tuai²⁴² xou^{ʔ5} le⁰ → tuai⁴⁴ ʔou^{ʔ5} le⁰ 'at the university'
- c. 去过 k^ho²¹³ kuo²¹³ → k^ho²¹³ ʔuo²¹³ *k^ho⁵¹ ʔuo²¹³ 'to have been to'
- d. 坐嘍 soy²⁴² la²⁴² → soy²⁴² la²⁴² *soy⁵¹ la²⁴² 'to sit awhile'
- e. 收遛 siu⁴⁴ kau²¹³ → siu⁴⁴ ʔau²¹³ *siu⁵¹ ʔau²¹³ 'to receive'

We can find that 过 [kuo²¹³], 嘍 [la²⁴²], and 遛 [kau²¹³] all bear a full tone and thus must have a main stress in Chan's theory. According to MSR, w-s feet should be constructed in examples in (30c-e) and then TS should be triggered. However, from (30c-e), it is clear that TS is blocked, similar to (30a, b). Chan's theory thus fails to deal with the similar phonological behavior exhibited by examples in (30a, b) and (30c-e), since it is impossible to assign a weak stress to elements bearing a full tone like 过 [kuo²¹³], 嘍 [la²⁴²], and 遛 [kau²¹³] according to her analysis. It will be demonstrated in Chapter V that elements such as 过 [kuo²¹³], 嘍 [la²⁴²], 遛

[kau²¹³], 其 [ki⁰], and 嘸 [le⁰] should all be treated as enclitics in the Fuzhou dialect, which is why they exhibit similar phonological behavior.

3.2.2.3 Shih (1986)

Shih (1986) is another analysis that heavily relies on the construction of the foot domain in the Fuzhou dialect. Based on Chan (1980) and Wright (1983), Shih posits the revised Head Dominance Condition (HDC) and the Foot Formation Rule (FFR) in the Fuzhou dialect, as in (31) and (32).

(31) Revised Head Dominance Condition (HDC) (Shih 1986):

Mark the right edge of every X^0 , except where XP is an adjunct.

(32) Foot Formation Rule (FFR)²⁴ (Shih 1986):

Foot Construction

- a. Immediate Constituency (IC): Link immediate constituents into disyllabic feet.
- b. Duple Meter (DM): Scanning from left to right, string together unpaired syllables into binary feet, unless they branch to the opposite direction.

Super-foot Construction

Join any leftover monosyllable to a neighboring binary foot according to the direction of syntactic branching.

Shih argues that the sandhi domain in Fuzhou is thus constructed in two steps—HDC marks the boundary of the phonological phrase²⁵, and then FFR operates within each

²⁴ Foot Formation Rule (FFR) was first proposed in Chen (1984) to relate the syntactic structure of a line to the metrical template of classical Chinese poetry.

phonological phrase to construct prosodic feet and super-feet. According to Shih, all phonological rules of Fuzhou, including TS, FC, and CL, refer to the super-foot (or the foot) as the domain of application.

Shih's analysis is problematic in terms of her definition of the foot/super-foot as the prosodic domain of rule application in the Fuzhou dialect. It can be seen that Shih's foot and super-foot are built with reference to syntactic information such as immediate constituents and the direction of syntactic branching. However, as mentioned in Chapter II, in the theory of prosodic phonology, it is of crucial importance that whether a given prosodic constituent makes use of a specific type of phonological and/or non-phonological information in the definition of its domain is not a free choice (cf. Nespor & Vogel 1986, 2007, Zhang 1992, 2017, among others). Specifically, the definition of the domain of the foot is only sensitive to phonological information (i.e., stress), but not sensitive to syntactic information. On the one hand, in order to account for the application of Fuzhou phonological rules at the phrasal level, Shih has to build the foot domain by making use of syntactic information, which makes her analysis on the wrong track. On the other hand, Shih does not discuss anything regarding the stress pattern in the Fuzhou dialect, which further makes her definition of the foot groundless.

3.2.2.4 Hung (1987)

Hung (1987) also argues for the existence of the foot in the Fuzhou dialect. His Foot Formation Rule is presented as follows:

²⁵ In Shih's formulation, it is called tone group (TG).

(33) Fuzhou Foot Formation Rules (Hung 1987)

- a. Link the syllables in polysyllabic lexical items into freely structured feet;
- b. Scanning from left to right, link heads to their arguments to form disyllabic or right-branching feet;
- c. Scanning from left to right, link modifiers to their heads to form disyllabic or right-branching feet.

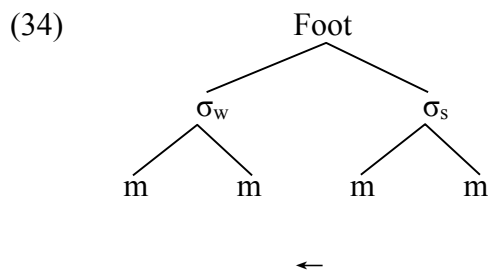
We can find that Hung's definition of the foot has the same problem as we have seen in Shih's (1986) analysis. By making use of notions such as head, argument, and modifier, the construction of the foot domain in Hung's analysis wrongly refers to syntactic information. Similar to Shih (1986), another problem with Hung's analysis is that no independent evidence is provided showing that the foot domain can be constructed on the basis of phonological information in the Fuzhou dialect.

3.2.2.5 Chan (1998)

Similar to all the previous studies discussed above, Chan (1998) also suggests that the Fuzhou tone sandhi domain corresponds with the foot. She argues that the construction of the foot in the Fuzhou dialect should refer to different information at the lexical level and the phrasal level. At the lexical level, Chan argues that the foot should be constructed on the basis of the quality and position of a syllable. Specifically, Chan suggests that there exists a stress tier at which a right-dominant (w-s) metrical foot is built, and that the distinction between weak syllables and strong syllables relies on the stability of a tone bearing unit in holding its citation tone. She

further claims that a prosodically strong/prominent syllable provides a more stable place to anchor the citation tone, while a prosodically weak syllable does not have the strength to hold the citation tone and thus the tone can be deleted or changed.

By assuming that mora is the tone bearing unit and that a syllable is bimoraic, Chan proposes the following foot structure for disyllabic compounds in the Fuzhou dialect, in which the strength in holding the citation tone decreases from the rightmost mora to the leftmost mora and thus the TS rule is triggered within the foot domain:



Chan's analysis of trisyllabic compounds and quadrisyllabic compounds are based on the analysis of disyllabic compounds. Similar to Wright (1983), she also suggests that the foot is at most trisyllabic. Hence, in a quadrisyllabic compound that forms one tone sandhi domain, only the last three syllables form a foot, while the initial syllable of the compound is not included in the foot and thus receives a low default tone.

At the phrasal level, Chan argues that the foot is constructed based on the length and position of a word. In her analysis, a phonological phrase must be constructed first by making use of syntactic information, and then feet which are defined with respect to the length of the syntactic word and/or the position of the syntactic word are built within the phonological phrase. To construct the foot at the phrasal level, Chan proposes a Prominence Assignment Rule, which is presented as follows.

(35) Prominence Assignment Rule (Chan 1998)

Assign prominence (indicated by the letter *s*) to a syntactic word which is located at the final position of a phonological phrase or which is a polysyllabic compound.

There are several theoretical concerns about Chan's theory. First, Chan's definition of the foot at both the lexical level and the phrasal level is on the wrong track. On the one hand, the foot is not defined on the basis of the stability of a tone bearing unit in holding its citation tone. As a prosodic constituent that organizes the syllables into higher-order units built around stressed syllables (Hammond 2011), the foot is defined on the basis of stress whose phonetic correlates may be pitch levels, duration, and/or loudness in different languages (cf. Kenstowicz 1994, Kager 1996, 2007, Gordon 2011, Zhang 2017, among others). Even if we give Chan the benefit of the doubt and assume that the foot could be defined based on the contrast in the stability of holding the citation tone, Chan's theory is still not defensible. Chan argues that a *w-s* foot should be constructed in which the distinction between the weak syllable and the strong syllable relies on the stability of holding the citation tone, which means one must have already known which syllable can hold the citation tone and which cannot before a *w-s* foot is constructed. Based on such a premise, Chan claims that the weak syllable in the foot undergoes TS while the strong syllable does not because the weak syllable is not strong enough to hold the citation tone, which is clearly another example of circular reasoning.

On the other hand, the foot is not defined by referring to the length of the syntactic word or the position of the syntactic word in a phonological phrase either. The foot is defined on the basis of stress and the stress refers to the prominence relation between syllables—it simply has nothing to do with the length or the position of the syntactic word. The Prominence Assignment Rule proposed by Chan is quite bizarre since the rule actually says that a foot can be composed of syntactic words and one of the syntactic words is labelled strong simply due to its length or position.

The second concern regarding Chan's theory lies in her analysis of mora in the Fuzhou dialect. As mentioned in Section 3.2.2.1, mora is used to measure the syllable weight such that heavy syllables consist of two moras while light syllables have one mora. The assumption that all syllables in the Fuzhou dialect have two moras is just groundless.

Third, it should be noticed in that in Chan (1998), she follows Bickmore (1990) and assumes that there are five prosodic constituents in the prosodic hierarchy, as shown in (36).

(36) The Prosodic Hierarchy

- a. Utterance
- b. Intonational Phrase
- c. Phonological Phrase
- d. Clitic Group
- e. Word

There are three problems with Chan's employment of this prosodic hierarchy with respect to her analysis of the foot. To begin with, according to Chan, the foot is built within the domain of the phonological phrase. Thus, one would expect the foot to be a constituent located lower than the phonological phrase. However, the foot is not listed as a constituent in Chan's hierarchy. Now that the foot is not treated as a prosodic constituent in the hierarchy, it is unexplainable why it is treated as the domain of application of tone sandhi rules. In addition, in (36), there is another prosodic constituent, namely, the clitic group, between the phonological phrase and the word. Chan does not discuss this constituent and simply ignores it in her analysis. Moreover, the "word" in the theory of prosodic phonology usually refers to the phonological word/prosodic word. Nevertheless, in Chan's theory, the word refers to the syntactic word. Without addressing the relationship between the morpho-syntactic word and the phonological/prosodic word in the Fuzhou dialect, Chan's analysis indeed lacks persuasion.

The last but not the least, Chan's analysis of quadrisyllabic compounds is debatable. Since Chan sets the upper limit of foot length to three syllables, she has to assume that a quadrisyllabic compound that forms a single domain must be divided into two parts: the last three syllables form a foot domain while the initial syllable is excluded from the foot domain. Chan thus has to answer some follow-up questions: does the initial syllable form a prosodic domain together with the other syllables in the quadrisyllabic compound? If yes, which domain do these syllables form? If not, why and how to treat this single syllable in terms of its prosodic status? Chan's analysis provides no answer to these questions. In Section 3.2.3 and Chapter IV, it

will be shown that there is in fact a prosodic domain that can contain all the syllables in a quadrisyllabic compound and even a pentasyllabic compound, which constitutes a good reason to abandon the foot domain proposed by Chan.

3.2.2.6 A reflection on previous studies

So far, I have reviewed some of the most important previous studies that treat the foot as a prosodic domain in the Fuzhou dialect. Based on the discussion in the preceding subsections in Section 3.2.2, we can find that there are some common problems in these previous studies.

First of all, no independent evidence is provided for the existence of the stress and the foot in the Fuzhou dialect. The construction of the foot is based on the contrast in metrical prominence between syllables, namely the stress, and the most important evidence that can confirm the existence of the stress in a given language is native speakers' perceptions and judgments. In previous studies that argue for the existence of the stress in the Fuzhou dialect, however, we have not seen any independent evidence from native speakers' perceptions and judgments. We have seen that different types of contrast between syllables have been proposed as fundamental in determining the positions of stressed vs. unstressed syllables (or strong vs. weak syllables) in this dialect, such as the contrast in syllable duration (Wright 1983 and Chan 1985) and the contrast in the stability of a tone bearing unit in holding its citation tone (Chan 1998). Nevertheless, as I have argued in the preceding subsections, such contrasts can only be perceived in a sandhi context and never appear in a non-sandhi context. Therefore, such contrasts had better be considered as the

byproduct of the application of sandhi rules, and hence cannot serve as independent evidence for the existence of the stress. Similar to Mandarin Chinese, in which Zhang (2014, 2017) argues for the lack of binary metrical contrast between syllables and thus the lack of the foot, the construction of the foot domain in the Fuzhou dialect also automatically becomes groundless without the evidence for the stress.

In addition, some previous studies are trapped in circular reasoning. We have seen such a problem in Wright (1983), Chan (1985), and Chan (1998). They all contend that a weak-strong foot should be built on the basis of the contrast between stressed vs. unstressed syllables (or strong vs. weak syllables), and then phonological rules such as TS and FC are triggered within this right dominant foot domain. Since no independent evidence for the stress is found in the Fuzhou dialect, they have to take other phonological phenomena as the evidence. As reviewed in the preceding subsections, both Wright (1983) and Chan (1985) attribute the stress vs. non-stress contrast to the contrast in syllable duration, and Chan (1998) claims that the distinction between strong and weak syllables lies in the stability of holding the citation tone. We have seen that the contrast in syllable duration is actually caused by the application of TS and/or FC, and that the definition of the stability of holding the citation tone itself implies that one should be able to identify which syllable within a word is strong in holding its citation tone—only in the context where TS has been triggered. Therefore, in the analyses of Wright (1983), Chan (1985), and Chan (1998), the application of the TS rule and/or the FC rule is both the starting point and the goal of their reasoning, which makes their analyses superficially plausible, but actually wrong.

Moreover, the definitions of the foot proposed in some previous studies are problematic. The definition of the foot should be based on the contrast in metrical prominence between syllables, and hence the domain of the foot should be built by referring only to phonological information (i.e., stress), but not to non-phonological information. As we have seen in the preceding subsections, different types of syntactic information have been employed in the definition of the foot domain—Shih's (1986) definition of the foot refers to the notions of immediate constituents and syntactic branching; Hung's (1987) definition relies on the notions of head, argument, and modifier; and Chan's (1998) definition of the foot at the phrasal level is sensitive to the length of the syntactic word or the position of the syntactic word in a phonological phrase. Therefore, these definitions of the foot are all theoretically erroneous.

The other problem regarding the definition of the foot domain is all the previous studies consider the foot to be the domain of application of sandhi rules at both the lexical level and the phrasal level. Since the domain of the prosodic word may be either of the same size or smaller than the terminal node of the syntactic tree, namely the morpho-syntactic word/lexical item (Nespor & Vogel 1986, 2007), the prosodic domain of rule application at the phrasal level must be larger than the prosodic word. According to the discussion in Chapter II, prosodic constituents above the foot in the prosodic hierarchy are defined by making use of non-phonological information. Since the foot in the prosodic phonology theory is only constructed on the basis of phonological information, it is inappropriate to treat the foot as the domain of application of sandhi rules at the phrasal level.

Finally, the foot analyses advanced by previous studies all face empirical problems. Since it is inappropriate to see the foot as the domain of rule application at the phrasal level, the foot domain is not able to account for phrasal-level data. That aside, the foot defined in previous studies is arguably not the best choice for the rule application domain at the lexical level either. To be specific, the application of sandhi rules in some lexical items in the Fuzhou dialect are not accounted for with the notion of the foot, as briefly discussed in Section 3.2.2.1, whereas all sandhi rules that are claimed to be foot-domain rules in previous studies can be reformulated as prosodic word-domain rules. These two further arguments against the foot analyses will be discussed in detail in Section 3.2.3.

3.2.3 Further arguments against the foot as the prosodic domain in Fuzhou

As mentioned in Chapter II, one significant motivation of the establishment of a particular prosodic domain is the existence of phonological phenomena that make reference to that domain. Regarding the application of phonological rules, I will only probe data at the lexical level in the Fuzhou dialect in this section, since theoretically the application of phonological rules at the phrasal level does not refer to the domain of the foot, as argued in Section 3.2.2.6. In this section, I will further argue that the foot does not play a role as the domain of rule application in the Fuzhou dialect. On the one hand, data at the lexical level that have been used in favor of the foot domain in previous studies can also be viewed as motivation for another prosodic constituent, namely the prosodic word. On the other hand, the application of phonological rules in

some data can only be accounted for with the notion of the prosodic word, but not with the notion of the foot.

Let us first revisit some relevant data provided in previous studies as the supporting evidence for the foot as the domain of rule application in the Fuzhou dialect. Examples in (37) are adapted from Wright (1983), Chan (1985), and Chan (1998). For the sake of brevity, only TS and FC are presented and marked in bold.

- (37)a. 对比 $\text{toy}^{213} \text{pi}^{31} \rightarrow \text{t\textbf{oy}}^{51} \text{pi}^{31}$ ‘to contrast’
- b. 政治家 $\text{tseiŋ}^{213} \text{tei}^{23} \text{ka}^{44} \rightarrow \text{tsiŋ}^{21} \text{t\textbf{i}}^{44} \text{ka}^{44}$ ‘statesman’
- c. 顽固 $\eta\text{uan}\eta^{51} \text{kou}^{213} \rightarrow \eta\text{uan}\eta^{21} \text{kou}^{213}$ ‘obstinate’
- d. 共产主义 $\text{k\textbf{ø}}\eta^{242} \text{saŋ}^{31} \text{tsuo}^{31} \eta\text{i}\epsilon^{242} \rightarrow \text{k\textbf{y}}\eta^{21} \text{saŋ}^{21} \text{tsuo}^{44} \eta\text{i}\epsilon^{242}$
‘Communism’
- e. 讨厌 $\text{t}^{\text{h}}\text{o}^{31} \eta\text{i}\epsilon\eta^{213} \rightarrow \text{t}^{\text{h}}\text{o}^{44} \eta\text{i}\epsilon\eta^{213}$ ‘to hate’
- f. 狐狸猫 $\text{xu}^{51} \text{li}^{51} \text{ma}^{51} \rightarrow \text{xu}^{44} \text{li}^{44} \text{ma}^{51}$ ‘weasel’

Previous studies reviewed in Section 3.2.2 would argue that the foot is the domain of application of TS and FC in the above examples. According to the foot analyses proposed in previous studies, the best way to describe the TS rule and the FC rule in these examples is to say that each example in (37) constitutes a foot and a syllable undergoes TS and FC when it precedes another syllable within the same foot. This statement can be roughly formulated as in (38), in which T stands for tones, and Group A and Group B refer to Group A and Group B finals respectively.

- (38)a. TS: $T_n \rightarrow T_n' / [\text{ ______ } T_{n+1}]_{\Sigma}$ ($n \geq 1$)
- b. FC: $\text{Group B} \rightarrow \text{Group A} / [[C_0 \text{ ______ }]_{\sigma_n} [\dots]_{\sigma_{n+1}}]_{\Sigma}$ ($n \geq 1$)

(38) accounts for the application of TS and FC in the examples in (37). The problem with this, nevertheless, is that the application of the same rules can also be treated as the motivation of the establishment of the prosodic word domain in the prosodic phonology of the Fuzhou dialect. We can find that examples in (37) are all morpho-syntactic words and they all occupy the terminal node of the syntactic tree, regardless of the number of syllables they contain or the lexical category/part of speech they belong to. It will be demonstrated in the next chapter that the prosodic word in the Fuzhou dialect is coextensive with the terminal node of the syntactic tree, or in other words, the domain of the prosodic word is equal to the morpho-syntactic word. Therefore, the application of TS and FC in (37) can also be viewed as triggered in the domain of the prosodic word, as formulated in (39).

$$(39)a. \quad TS: T_n \rightarrow T_n' / [____ T_{n+1}]_\omega \quad (n \geq 1)$$

$$b. \quad FC: \text{Group B} \rightarrow \text{Group A} / [[C_0 ____]_{\sigma_n} \dots]_{\sigma_{n+1}}]_\omega \quad (n \geq 1)$$

From examples in (37) and formulations in (39), we don't see any reason to exclude the possibility of treating the prosodic word as the prosodic domain for the application of TS and FC at the lexical level in the Fuzhou dialect. One can even go one step further and claim that the application of any phonological rule at the lexical level that has the form of changing a certain segment/tone A to segment/tone B within the domain of the foot proposed in previous studies can be formulated in another way by referring to the prosodic word with no loss of generalization.

preceding the antepenultimate are not included in the foot domain, this repair operation is problematic, as discussed in Section 3.2.2.5.

It seems that the foot domain advanced by Chan (1985), Shih (1986), and Hung (1987) can serve as the domain of rule application in these examples, since their theories do not require the upper limit of foot length to be three syllables. However, quadrisyllabic feet and pentasyllabic feet are too big from a universal viewpoint. According to the typology of Hayes (1995), trisyllabic feet are possible in languages that have “weak local parsing”, while quadrisyllabic feet are universally disallowed (also cf. Liberman 1975, Prince 1983, Selkirk 1984, among others). Take English, a typical stress language, as an example. It has been argued that the quadrisyllabic foot forms a problem in English, due to the fact that potential quadrisyllabic feet are often interpreted as two disyllabic feet (Hogg & McCully 1987).

Some scholars claim that quadrisyllabic feet are often tolerated in various Chinese dialects since it is normal for the scope of tone sandhi to exceed three syllables (e.g., Yip 1980, Duanmu 1993, Chen 2000, among others). However, it is noteworthy that the fact that the scope of tone sandhi can exceed three syllables does not mean that the domain of the application of tone sandhi is the foot, at least not in the Fuzhou dialect. Consider the Fuzhou examples in (41).

(41)a. 炊番薯饭 $ts^{h}ui^{44} huan^{44} ny^{51} puoŋ^{242} \rightarrow ts^{h}ui^{21} huan^{51} ny^{21} puoŋ^{242}$

‘to steam rice with sweet potato’

b. 食鼎边糊 $siɛʔ^5 tian^{31} pieŋ^{44} ku^{51} \rightarrow siɛʔ^{21} tian^{21} pieŋ^{44} ku^{51}$

‘to eat rice flour cake soup (a Fuzhou local delicacy)’

c. 信共产主义 $se\eta^{213} k\o y\eta^{242} sa\eta^{31} tsuo^{31} \eta je^{242} \rightarrow si\eta^{21} ky\eta^{21} sa\eta^{21} tsuo^{44} \eta je^{242}$

‘to believe in Communism’

d. 买拨浪鼓锤 $m\epsilon^{31} pa^{31} la\eta^{31} ku^{31} t^h ui^{242} \rightarrow m\epsilon^{21} pa^{21} la\eta^{21} ku^{44} t^h ui^{242}$

‘to buy tadpoles’

TS applies in the above examples and there is only one tone sandhi scope in each example. Nonetheless, these quadrisyllabic and pentasyllabic examples are all verb-object phrases. I have argued in Section 3.2.2.6 that the prosodic domain of rule application at the phrasal level must be larger than the prosodic word. Hence, the domain of the TS rule in (41) cannot be the foot, although there is only one tone sandhi scope in each example, which will be demonstrated to be the domain of the phonological phrase in Chapter VI. The application of TS in both (40) and (41) only indicates that TS can not only apply to quadrisyllabic/pentasyllabic units at the lexical level, but also apply to quadrisyllabic/pentasyllabic units at the phrasal level. This is convincing evidence that TS in the Fuzhou dialect can apply within different prosodic domains, while it does not show that quadrisyllabic/pentasyllabic feet are allowed or that the foot can play a role as the domain of rule application in this dialect.

Thus, we can find that foot analyses that posit a trisyllabic upper limit of foot length fail to cover the data of quadrisyllabic and pentasyllabic words, while analyses allowing quadrisyllabic and pentasyllabic feet are quite suspicious from the perspective of language universals. Therefore, the quadrisyllabic and pentasyllabic examples in the Fuzhou dialect indeed pose an empirical problem to all the foot analyses we have seen in previous studies. By contrast, these examples are not likely

to be a problem if we consider the prosodic word to be the domain of rule application. In the next chapter, we will see evidence that the prosodic word in the Fuzhou dialect is exactly of the same size with the domain formed by morpho-syntactic words. Languages generally do not impose restrictions on the maximal size of the morpho-syntactic words and thus prosodic words, which is why the prosodic word is more capable of functioning as the domain of rule application in quadrisyllabic and pentasyllabic examples in the Fuzhou dialect as compared to the foot. In other words, rules operating in quadrisyllabic and pentasyllabic words can be formulated as prosodic word-domain rules, but not as foot-domain rules.

So far, I have discussed two further arguments that go against the foot analyses in the Fuzhou dialect. On the one hand, I have shown that phonological rules such as TS and FC that previous studies treat as foot bounded can be treated as prosodic word bounded with no loss of generalization. On the other hand, the application of these phonological rules in quadrisyllabic and pentasyllabic examples can only be captured by stating them as rules operating within the prosodic word domain, instead of the foot domain. To sum up in a word, there are certain prosodic word-domain rules that cannot be reformulated in terms of the foot domain, while all foot-domain rules can be reformulated as prosodic word-domain rules. According to Occam's Razor, it is reasonable to simply use the prosodic word domain to replace the foot domain proposed in previous studies, rather than maintain both as prosodic domains in the prosodic phonology of the Fuzhou dialect.

3.2.4 Summary of the foot as a prosodic domain

In Section 3.2, I have examined another constituent in the universal prosodic hierarchy, namely, the foot. We have seen that while the foot functions as the domain of phonological phenomena in a number of languages, whether it plays a role in the Fuzhou dialect is a debatable question. On the basis of the review of previous studies and the analysis of relevant data, I have identified the following arguments against the establishment of the foot domain in this dialect: (a) there is no independent evidence for the existence of the stress and the foot; (b) phonological rules at the lexical level that are claimed to operate within the foot domain according to previous studies can be reformulated as prosodic word domain rules, without reference to the foot; and (c) rule application in some lexical-level data can only be handled by referring to the prosodic word but not the foot.

Based on all these arguments, I propose to resolve the problem of whether rules such as TS and FC in the Fuzhou dialect should be expressed as foot domain rules or as prosodic word domain rules by assuming that the foot domain should be excluded from the prosodic hierarchy of this dialect. Thus, between two domains that overlap each other in terms of the function as serving as the rule application domain, I choose the one that can deal with more data while abandon the one that lacks independent evidence and has less explanatory power. By so doing, a more constrained, and thus more highly valued prosodic phonological system is achieved in the Fuzhou dialect.

3.3 Conclusion

In this chapter, I have examined the two prosodic constituents of the universal prosodic hierarchy, namely the syllable and the foot, as well as their existence and roles in the Fuzhou dialect. Focusing our attention on the prosodic domains formed by the syllable and the foot, we have seen that there are a number of phonological rules that make crucial reference to these two domains across languages.

In terms of the existence and the roles of these two prosodic constituents in the Fuzhou dialect, I have shown that the syllable is an indispensable domain in this dialect while the foot should be excluded. On the one hand, I have argued that the syllable serves as a domain of rule application in the Fuzhou dialect, since the FA rule does operate within the syllable. On the other hand, the foot should not be treated as a prosodic domain in this dialect, because of the lack of independent evidence, as well as its inadequacy of explanatory power as compared to the prosodic word domain.

As briefly discussed in Chapter II and Section 3.2, rules such as TS can apply at both the lexical level and the phrasal level in the Fuzhou dialect. At the lexical level, I have suggested that rules applying at the juncture of more than one syllables actually operate within the domain immediately higher than the foot in the universal prosodic hierarchy, namely the prosodic word. A detailed discussion on this domain will be presented in the chapter we now turn to. At the phrasal level, more syntactic information must be involved in defining the domain of rule application than what is required in the definition of the prosodic word domain, which will be discussed in later chapters.

Chapter IV. The Prosodic Word in the Fuzhou Dialect

This chapter investigates the prosodic word in the Fuzhou Dialect. The goal of this chapter is to summarize the research on the prosodic word in the languages of the world, to present major types of morpho-syntactic words in the Fuzhou dialect, to examine the phonological phenomena within the domain formed by morpho-syntactic words, and to show the role the prosodic word domain plays in the application of various phonological generalizations in Fuzhou.

This chapter is organized as follows. Section 4.1 consists of some introductory remarks on the definition of the prosodic word and its domain. Section 4.2 concerns itself with the common diagnostics for the prosodic word across languages. Section 4.3 offers a survey of major types of morpho-syntactic word formation in the Fuzhou dialect. Section 4.4 presents examples from the Fuzhou dialect and examines the application of various phonological phenomena with reference to the major types of morpho-syntactic words. Section 4.5 deals with the definition of the prosodic word domain in the Fuzhou dialect. A short conclusion is provided in Section 4.6.

4.1 Introduction

4.1.1 Definition of the prosodic word

As we can see from the prosodic hierarchy, there is a prosodic constituent that is larger than the syllable and the foot but smaller than the clitic group and the phonological phrase. This constituent is often referred to as the “prosodic word”, or

alternatively as the “phonological word”, in the literature of prosodic phonology, since it is roughly the size of a morpho-syntactic word.

The concept “prosodic word” plays a crucial role in the discussion of this chapter. Following Nespor & Vogel (1986, 2007) and others (e.g., Booij & Rubach 1984, Booij & Lieber 1993, Hannahs 1995a, b), I define the prosodic word as “the lowest constituent of the prosodic hierarchy, which is constructed on the basis of mapping rules that make substantial use of non-phonological notions”. To be more specific, it is a prosodic constituent that represents the interaction between the phonological and the morphological components of the grammar.

A number of studies have demonstrated that the prosodic word is an indispensable prosodic constituent in the prosodic hierarchy since it is the domain for the application of various phonological generalizations (evidence and diagnostics are discussed in more detail in Section 4.2).

4.1.2 The prosodic word domain

Since the prosodic word is roughly the size of a morph-syntactic word, logically speaking, there are three possibilities for the domain of the prosodic word. The domain of the prosodic word, as argued by many linguists (among others, Booij 1983, 1996), is larger, smaller, or equal to the morpho-syntactic word, that is, the terminal node of the syntactic tree.

Taking into consideration different types of languages they observed, however, Nespor & Vogel (1986, 2007: chap. 4) claim that there are only two possibilities—the domain of the prosodic word may be either of the same size or smaller than the

terminal node of the syntactic tree. Nespor & Vogel thus propose the definition for the prosodic word domain in (1).

(1) Prosodic Word (ω) domain (adapted from Nespor & Vogel 1986, 2007)

A. The domain of ω is the terminal node of the syntactic tree.

or

B. I. The domain of ω consists of

a. a stem;

b. any element identified by specific phonological and/or morphological criteria;

c. any element marked with the diacritic [+W].

II. Any unattached elements within the terminal node of the syntactic tree form part of the adjacent ω closest to the stem; if no such ω exists, they form a ω on their own.

In (1), Type A refers to the prosodic word that includes a stem plus all adjacent affixes, or both members of a compound, in languages such as Greek and Latin (cf. Nespor & Vogel 1986: 110-116, Nespor & Ralli 1996). By contrast, Type B refers to the prosodic word that is smaller than the terminal node of the syntactic tree. This includes several subtypes. Type BIa refers to cases in languages such as Turkish and Sanskrit, in which each member of a compound forms a prosodic word domain (cf. Nespor & Vogel 1986: 117-122, Nespor & Ralli 1996). Type BIb is exemplified by cases in languages such as Hungarian and Italian, in which prefixes form a prosodic word on their own while the stem plus suffixes form one prosodic word (cf. Booij

1984, Nespor & Vogel 1986: 122-134).²⁶ Type BIb is also exemplified by cases in languages such as Yidj, in which affixes satisfying minimal word requirements (disyllabicity in the case of Yidj) form their own prosodic words (cf. Dixon 1977a, Nespor & Vogel 1986: 134-136). Type BIc refers to the prosodic word that is composed of affixes idiosyncratically marked with a diacritic feature [+W] (e.g., Dutch; cf. Nespor & Vogel 1986: 136-140, van der Hulst 1984: 66ff).

Type BII says elements that do not include stems will always attach to a prosodic word within the terminal node of the syntactic tree or form a prosodic word by themselves, responding to the requirement of the Strict Layer Hypothesis.

Other linguists have questioned some aspects of Nespor & Vogel's definition of the prosodic word domain. First of all, the second part of Type BII in Nespor & Vogel's definition allows elements like clitics to form their own prosodic words. This kind of over-assignment of the ω status to elements like clitics has raised objections (cf. among others, Itô & Mester 1992, Selkirk 1996). For these linguists, elements like clitics should not be analyzed as prosodic words, and thus it is inappropriate to include this information in the definition of the prosodic word domain. Second, under the analysis that clitics do not form their own prosodic words, Booij (1996), among others, argues that the sequence of a lexical host plus a clitic forms an independent prosodic word. The domain of this type of prosodic words is larger than the terminal node of the syntactic tree, since a clitic constitutes a syntactic terminal node on its own (issues related to clitics are treated in Chapter V).

²⁶ According to Nespor & Vogel (1986: 124-134), in Italian, only prefixes that end in a vowel form independent prosodic words, while those ending in a consonant are joined into a prosodic word with the following stem.

4.1.3 Summary

From the above discussion, we can find that, although there must be a word-sized prosodic domain named the prosodic word, the domain formation of the prosodic word across languages is still an open question—languages may vary in the way certain morpho-syntactic information is integrated into the formation of the prosodic word domain.

4.2 Evidence and common diagnostics for the prosodic word

This section is devoted to the main diagnostics for the prosodic word as they are evidenced across languages. The common diagnostics include, but are not limited to, phonological rules (including both segmental rules and prosodic/suprasegmental rules), phonotactic constraints, and minimal word requirements.

4.2.1 The prosodic word as the domain for segmental rules

The prosodic word is a domain of the application for segmental rules. Linguists have long recognized that there are segmental phonological rules of diverse languages making crucial reference to the prosodic word domain.

For example, in Hungarian, all vowels other than [i], [í], and [é] participate in the process of Vowel Harmony. The harmonizing feature is [back]. According to Booij (1984) and Nespor & Vogel (1986, 2007), the domain of application of this segmental rule is the prosodic word, and thus this rule applies only when its trigger and target belong to the same prosodic word. This rule can be presented as in (2).

- (2) Hungarian Vowel Harmony: $V \rightarrow [a\text{back}] / (\dots[a\text{back}] C_0 _ \dots)_\omega$

Booij (1984) and Nespov & Vogel (1986, 2007) show that the sequence of the stem plus suffix(es) forms an independent prosodic word where Vowel Harmony applies, as exemplified in (3a), in which *nek/nak* is the dative singular suffix. In contrast, the two members of a compound form two different prosodic words, and prefixes also form prosodic words on their own, as exemplified in (3b) and (3c), respectively.

- (3) a. stem+suffix: (ölelés-*nek*)_ω ‘embrace + (dat. sg.)’
 stem+suffix: (hajó-*nak*)_ω ‘ship + (dat. sg.)’
- b. stem+stem: (könyv)_ω (tár)_ω ‘library’
- c. prefix+stem: (oda)_ω (menni)_ω ‘to go there’

In addition to Vowel Harmony in Hungarian, segmental rules that refer to the prosodic word domain include phonological processes such as Vowel Harmony in Turkish (cf. Nespov & Vogel 1986, 2007), Penultimate Lengthening in Yidiñ (cf. Dixon 1977a, b), Final Voicing in Sanskrit (cf. Selkirk 1980a), Nasal Assimilation and Stop Voicing in Greek (cf. Nespov & Vogel 1986), as well as Intervocalic s-Voicing, Vowel Raising, and Vowel Lengthening in Italian (cf. Nespov & Vogel 1986). Other languages investigated in the literature include Polish (cf. Booij & Rubach 1987), Korean (cf. Kang 1992), English (cf. Raffelsiefen 1993), and French (cf. Hannahs 1995a, b).

4.2.2 The prosodic word as the domain for prosodic/suprasegmental rules

A number of the examples discussed in the literature that argues for the prosodic word involve prosodic or suprasegmental rules that refer to the prosodic word. It has

been demonstrated that stress assignment is one of the most reliable diagnostics for the prosodic word domain (cf. Dixon 1977a, b, Nespór & Vogel 1986, 2007, Russell 1999, Raffelsiefen 1999, Vigário 2003, among others).

For example, Nespór & Vogel (1986, 2007) argue that the Main Stress Rule in Turkish assigns stress to the last syllable within but not across the prosodic word domain. They observe that both monomorphemic words and derived words can form independent prosodic words, as in (4a). By contrast, each of the members of a compound forms its own prosodic word, and thus has its own primary stress on the last syllable, as in (4b).

- (4) a. (odá)_ω ‘room’
 (odadá)_ω ‘in the room’
 (odadakí)_ω ‘that which is in the room’
- b. (düğún)_ω(çiçeği)_ω ‘butter cup’
 (çáy)_ω(evì)_ω ‘tea house’²⁷

Other examples of stress assignment rules that have been argued to make reference to the prosodic word rather than other constituents have been proposed by Dixon (1977a, b) for Yidiñ, Nespór & Vogel (1986, 2007) for Latin, Russell (1999) for Cree, Raffelsiefen (1999) for English, and Vigário (2003) for European Portuguese.

²⁷ According to Nespór & Vogel (1986: 120) and Lees (1961), only the first primary stress remains after compounding; the main stress of the second member is reduced to secondary stress. This is a rule sensitive to the phonological phrase domain.

In addition to stress assignment rule, pitch accent assignment in some pitch accent languages has also been reported to be sensitive to the domain of the prosodic word. For example, Godjevac (2000) argues that pitch accent assignment in Serbo-Croatian only applies to the prosodic word but not clitics. Pitch accent assignment, therefore, can be used as diagnostics to the prosodic word in such languages.

4.2.3 The prosodic word as the domain for phonotactic constraints

Besides phonological rules, the prosodic word can also serve as the domain for phonotactic constraints. This is not reported in Nespor & Vogel (1986, 2007), but has been noticed by quite a few other linguists (cf. Booij 1995, 1999, Peperkamp 1997, Hall 1999, Raffelsiefen 1999, Vigário 2003, among others). These linguists contend that phonotactic constraints can cue the prosodic word since phonotactic constraints in some languages only hold at the edge of the prosodic word domain or prosodic word internally.

Here are a few examples presented in the literature. As Peperkamp (1997) points out, in Italian, there is a phonotactic constraint barring the sound [ʎ] at the beginning of a prosodic word. Booij (1999) posits a Dutch Syllable Contact Law, which says that the first consonant should be more sonorous than the second in a sequence of adjacent consonants, i.e., $*(VC_1.C_2V)_\omega$ if C_2 is more sonorous than C_1 . Hall (1999) argues that short lax non-low vowels in German, i.e., [ɪ], [ʏ], [ɛ], [œ], [ʊ], [ɔ], are not allowed at the right edge of the prosodic word domain. In English, according to

Raffelsiefen (1999), there are more consonantal clusters ω -internally than ω -initially or ω -finally.

From the above examples, we can see that phonotactic constraints barring or allowing certain sounds in a language can also provide evidence for the prosodic word domain.

4.2.4 The prosodic word as the domain for minimal word requirements

In addition to serving as the domain for phonological rules and phonotactic constraints, the prosodic word is also necessary for minimal word requirements, as have been recognized by a wide number of linguists. Many languages have been reported to impose restrictions on the minimal size of the prosodic word, usually being at least disyllabic or bimoraic. Scholars have found that in some languages, sequences of sounds that do not form morpho-syntactic words, e.g., prefixes and suffixes, can constitute prosodic words on their own if they exhibit minimal word requirements. For example, disyllabic affixes form independent prosodic words in Yidj, since Yidj imposes a disyllabic minimum for its prosodic words (cf. Dixon 1977a, Nespor & Vogel 1986: 134-136). Moreover, in many languages that exhibit the minimal word syndrome, there are rules that conspire to maintain the minimality restriction. For example, SiSwati has a disyllabic minimality requirement on the formation of imperatives. Thus, the imperative form of a verb must contain the suffix *-ni*, if the original verb stem is monosyllabic (cf. Downing 1999).

It should be noticed that, nonetheless, not all languages have minimal word requirements. Thus, languages can be divided into three types with respect to the minimal size of the prosodic word, presented in (5).

(5) Minimal word requirement across languages (cf. Dixon 1977a, b, McCarthy & Prince 1986, 1990, Kenstowicz 1994)

Type 1: disyllabic (e.g., Yidiñ, cf. Dixon 1977a, b; Lardil, cf. Hale 1973)

Type 2: bimoraic (e.g., German, cf. Hall 1999, Japanese, cf. Itô 1990;

Estonian, cf. Prince 1980; Choctaw, cf. Lombardi & McCarthy

1991; Iraqw, cf. Mous 1993)

Type 3: no minimal word requirements: a prosodic word may consist of a

single mora/syllable. (e.g., Irish, cf. Green 1997; Brazilian

Portuguese, cf. Bisol 2000; European Portuguese, cf. Vigário 2003)

4.2.5 Summary

In this section, I have discussed several types of phonological phenomena across languages that refer crucially to the prosodic word domain. These phonological phenomena are thus taken as evidence and diagnostics for the prosodic word domain. Notice, nevertheless, that not all languages exhibit all these diagnostics for the prosodic word—it is possible that only some of the diagnostics discussed above may demonstrate the existence of the prosodic word in a particular language. I will show in the following sections that the existence of the prosodic word in the Fuzhou dialect can be evidenced by several phonological phenomena as well as phonotactic constraints, as we have seen in many other languages in the world.

4.3 Morpho-syntactic word formation in the Fuzhou dialect

From the discussion in the preceding sections, we have seen that there are two major issues with respect to the definition and the domain formation of the prosodic word: on the one hand, languages vary in the type of morpho-syntactic information (e.g., prefixes, suffixes, members of a compound) integrated into the prosodic word domain formation; on the other hand, languages differ in the type of phonological phenomena that serve as the diagnostics for the prosodic word domain. The present section and the following sections will focus on these two topics, as far as the prosodic word in the Fuzhou dialect is concerned. Since the prosodic word is roughly the size of a morph-syntactic word, and the domain formation of the prosodic word must involve morpho-syntactic information, it is necessary to begin with a survey of major types of morpho-syntactic word formation in the Fuzhou dialect. For the sake of brevity, only the citation/underlying segmental structure of syllables is presented in this section.

4.3.1 Monomorphemic words

Like morpho-syntactic words in most languages in the world, morpho-syntactic words in the Fuzhou dialect can be divided into several types on the basis of the morphological process of their formation.

It is generally accepted that a morpho-syntactic word is composed of morphemes (free or bound). A word that consists of a single morpheme is called monomorphemic word. Fuzhou has a large number of monomorphemic words, most of which contain only one syllable. There are a few disyllabic monomorphemic words in Fuzhou, while

monomorphemic words containing three or more syllables are very rare. Examples of Fuzhou monomorphemic words are presented as follows in (6)²⁸.

(6) a. Monosyllabic:

书	tsy	‘book’	山	saŋ	‘mountain’
红	ʔøyŋ	‘red’	肥	pui	‘fat’
水	tsy	‘water’	讲	kouŋ	‘to say, to speak’
好	xo	‘good’	看	k ^h aŋ	‘to look’
慢	maiŋ	‘slow’	笨	pouŋ	‘stupid’
福	xouʔ	‘fortune’	雪	suoʔ	‘snow’
食	siεʔ	‘to eat’	白	paʔ	‘white’

b. Disyllabic:

葡萄	pu	to	‘grape’	枇杷	pi	pa	‘loquat’
橄榄	ka	laŋ	‘olive’	沙发	sa	xuaʔ	‘sofa’
支离	tsiε	liε	‘miserable, tragic’				
印尼	ʔeiŋ	nε	‘Indonesia’				

c. Trisyllabic:

新加坡	siŋ	ka	p ^h o	‘Singapore’
马腊加	ma	laʔ	ka	‘Malacca’
加拿大	ka	na	tai	‘Canada’

²⁸ Monosyllabic words containing more than three syllables are very rare in the Fuzhou dialect, and thus are not discussed here.

4.3.2 Derived words

The second major type of morpho-syntactic words in the Fuzhou dialect is derived words. A derived word is a new word created from one existing word through the application of some morphological process, usually affixation.

In the Fuzhou dialect, there are several affixes, which mostly attach to the stem of nouns to derive new nouns. Some commonly used affixes are discussed below with examples (cf. Li et al 1994, Li & Liang 2001, Lin 2002, among others).

4.3.2.1 Prefix 依- [ʔi⁴⁴]

依- [ʔi⁴⁴] is one of the most frequently used prefixes in the Fuzhou dialect. It usually attaches to a noun (usually a monosyllabic noun). Derived words composed of 依- and the stem are generally used as terms of address. Most of these terms of address are kinship terms, as in (7a), and some of them are social terms, as in (7b).

- | | | | |
|--------|----|---------|----------------------------------|
| (7) a. | 依伯 | ʔi paʔ | ‘uncle (father’s elder brother)’ |
| | 依姆 | ʔi mu | ‘aunt’ |
| | 依弟 | ʔi tie | ‘younger brother; little boy’ |
| | 依妹 | ʔi mui | ‘younger sister; little girl’ |
| b. | 依板 | ʔi peiŋ | ‘boss’ |
| | 依志 | ʔi tsei | ‘comrade’ |

4.3.2.2 Prefix 老- [lau²⁴²]/[lo³¹]

When used as a free morpheme, 老 means ‘old’. When it is used as a prefix, 老- in the Fuzhou dialect can be attached to a name (usually a family name) to indicate a

sense of familiarity, as exemplified in (8a), which is similar to *lao* 老- in Mandarin Chinese. It is also used in front of other nouns to refer to people, as in (8b), with most cases indicating a sense of familiarity. Such a sense of familiarity, however, is not present when 老- is used in animal terms, as in (8c). 老- has two pronunciations, [lau²⁴²] and [lo³¹]. Pronunciations of 老- in the following examples are based on the data from Li et al (1994), Feng (1998), and my informants.

- (8) a. 老郑 lo taŋ ‘Old Zheng’ 老林 lo liŋ ‘Old Lin’
 b. 老公 lau kuŋ ‘husband’ 老妈 lau ma ‘wife’
 老爹 lo tia ‘government official (in the old times)’
 c. 老蛇 lau sie ‘snake’ 老鼠 lo ts^hy ‘mouse’

4.3.2.3 Suffix -囡 [kiaŋ³¹]

As a free morpheme, 囡 [kiaŋ³¹] in the Fuzhou dialect means ‘son’ or ‘child’. When it is used as a suffix, it can attach to nouns to create diminutive forms or attach to adjectives to refer to a kind of people, as exemplified in (9).

- (9) a. 厝囡 ts^huo kiaŋ ‘small house’
 b. 刀囡 to kiaŋ ‘small knife’
 c. 蠢囡 ŋouŋ kiaŋ ‘fool’
 d. 矮囡 ?ε kiaŋ ‘short person’
 e. 诸娘囡 tsy noyŋ kiaŋ ‘young girl; daughter’

4.3.2.4 Suffix -头 [t^hau⁵¹]

头 [t^hau⁵¹] as a free morpheme in Fuzhou refers to the head of a human or an animal body, to the root of some vegetables, or to the top of a mountain. Like its counterpart in Mandarin Chinese, it can attach to nouns as a suffix with no easily definable meaning. Examples of -头 [t^hau⁵¹] are presented as follows.

- (10)a. 骨头 kou? t^hau ‘bone’ b. 拳头 kuŋ t^hau ‘fist’
 c. 灶头 tsau t^hau ‘stove’ d. 日头 ni? t^hau ‘sun’
 e. 裤头 k^hou t^hau ‘trouser waist’
 f. 心肝头 siŋ kaŋ t^hau ‘chest’

4.3.2.5 Suffixes -哥 [ko⁴⁴] and -弟 [tiɛ²⁴²]

As free morphemes, 哥 [ko⁴⁴] and 弟 [tiɛ²⁴²] mean ‘elder brother’ and ‘younger brother’ respectively. As suffixes, both can attach to nouns, adjectives, and sometimes verbs (or verb phrases). -哥 [ko⁴⁴] is more often used than -弟 [tiɛ²⁴²] in the Fuzhou dialect. A derived word that contains -哥 [ko⁴⁴] or -弟 [tiɛ²⁴²] usually refers to a kind of people (not necessarily male), with a derogatory sense in most cases, as seen in (11).

- (11)a. 兵哥 piŋ ko ‘soldier’
 b. 癞哥 la? ko ‘baldheaded person’
 c. 单身哥 taŋ siŋ ko ‘bachelor (a man who is not married)’
 d. 白面哥 pa? meij ko ‘prostitute’
 e. 流鼻哥 lau p^hei ko ‘running-nose child’
 f. 派头弟 p^huai t^hau tiɛ ‘stylish young man’

4.3.2.6 Suffixes -婆 [po⁵¹] and -妈 [ma³¹]

In the Fuzhou dialect, -婆 [po⁵¹] and -妈 [ma³¹] are suffixes that attach to nouns, adjectives, and sometimes verbs (or verb phrases). The function of these two suffixes is similar to that of -哥 [ko⁴⁴] and -弟 [tiε²⁴²]. Derived words that contain -婆 [po⁵¹] or -妈 [ma³¹] usually refer to a kind of people (not necessarily female), with a derogatory sense in most cases, as exemplified in (12).

- (12)a. 菜婆 ts^hai po ‘Buddhist nun’
 b. 贪食婆 taŋ siε? po ‘voracious eater’
 c. 恶妈 ?ou? ma ‘evil person’
 d. 见事妈 kiεŋ tai ma ‘nosy person’

4.3.2.7 Suffix -角 [koy²³]

Suffix -角 [koy²³] denotes masculine animals in Fuzhou, as in (13).

- (13)a. 鸡角 kiε koy? ‘rooster’ b. 猪角 ty koy? ‘boar’

4.3.2.8 Suffix -母 [mo³¹]

-母 [mo³¹] is a suffix denoting feminine animals, and it can also present an object or animal with a large size, as in (14).

(14)I. Feminine animals:

- a. 鸡母 kiε mo ‘hen’ b. 猪母 ty mo ‘sow’

II. Objects/animals with a large size:

- a. 缸母 kouŋ mo ‘large bowl’
 b. 蚨蝇母 pu siŋ mo ‘big fly’

4.3.2.9 Derived words containing more than one affixes

A derived word in Fuzhou can have more than one affixes, as exemplified in (15).

(15)I. Stem + two suffixes:

- | | | | |
|----|-----|-----------------------------|---------------|
| a. | 鸡母团 | kiɛ mo kiaŋ | ‘pullet’ |
| b. | 儿团哥 | niɛ kiaŋ ko | ‘child’ |
| c. | 拳头母 | kuŋ t ^h au mo | ‘(big) fist’ |
| d. | 石头团 | suoʔ t ^h au kiaŋ | ‘small stone’ |

II. Prefix + stem + suffix:

- | | | | |
|----|-----|--------------|---------------|
| a. | 依解哥 | ?i kai ko | ‘PLA soldier’ |
| b. | 老蛇团 | lau siɛ kiaŋ | ‘small snake’ |
| c. | 老虎母 | lau xu mo | ‘tigress’ |

4.3.3 Compounds

A compound is a word resulting from the combination of two, at times three or more, free morphemes (stems). According to the syntactic/semantic relationship between the members, compounds in the Fuzhou dialect can be subdivided into at least four major types: (1) coordination; (2) modifier-head; (3) verb-object; and (4) verb-complement.²⁹

²⁹ It is generally recognized that in Mandarin Chinese there is another subtype of compounds, namely, subject-predicate compounds, in addition to these four types. In a subject-predicate compound, the stem on the right serves as the predicate of the subject symbolized by the stem on the left, such as *cin*⁵⁵*l^həŋ*³⁵ 心疼 heart-painful ‘to love dearly; to grudge’ and *nien*³⁵*te^hiŋ*⁴⁴ 年轻 year-light ‘young’. This type of compounds is not presented in this chapter, since the examples of this subtype are very rare in the Fuzhou dialect and almost all the subject-predicate compounds are borrowed from Mandarin Chinese.

4.3.3.1 Coordination compounds

A coordination compound is created through the combination of stems that have identical, similar, related, or opposite semantic meanings, as presented in (16I-IV).

(16)I. Stems with identical or similar meanings

- a. 暝晡 maŋ puo ‘evening’ + ‘evening’ → ‘evening’
- b. 思想 sy suoŋ ‘to think’ + ‘to think’ → ‘thoughts; to miss’

II. Stems with related meanings (the resulting compound has a new meaning which is not simply the combination of the meanings of stems)

- a. 尺寸 ts^huo? ts^houŋ ‘foot’ + ‘inch’ → ‘length’
- b. 骹手 k^ha ts^hiu ‘leg’ + ‘hand’ → ‘subordinates’

III. Stems with related meanings (the resulting compound obtains the meaning from one of the stems)

- a. 事计 tai kie ‘affair, job’ + ‘idea, tactics’ → ‘affair, job’
- b. 国家 kuo? ka ‘country’ + ‘family’ → ‘country’

IV. Stems with opposite meanings (the resulting compound has a new meaning which is not simply the combination of the meanings of stems)

- a. 开关 k^hai kuaŋ ‘to turn on’ + ‘to turn off’ → ‘switch’
- b. 长短 touŋ tøy ‘long’ + ‘short’ → ‘discrepancy’

4.3.3.2 Modifier-head compounds

In a modifier-head compound, generally speaking, the stem on the left modifies the stem on the right. The relationship between members of a modifier-head

4.3.3.4 Verb-complement compounds

Verb-complement compounds generally consist of a verb that is followed by a complement.³⁰ A common characteristic of the stem on the right in a verb-complement compound is to denote the result of an action indicated by the stem on the left. Examples of verb-complement compounds in Fuzhou are presented as follows.

- (19)a. 看见 k^haŋ kiɛŋ ‘to look’ + ‘to see’ → ‘to see’
 b. 抓紧 tsua kiŋ ‘to grab’ + ‘tight, firm’ → ‘to firmly grasp’
 c. 改善 kai siɛŋ ‘to change’ + ‘good, kind’ → ‘to improve’
 d. 拍平 p^haʔ paŋ ‘to pat, to hit’ + ‘flat, level’ → ‘to equalize’

4.3.4 Reduplication: “diminutive” nouns

Reduplication is a morphological process that repeats all or part of a given stem. In the Fuzhou dialect, reduplication can be subdivided into several types according to the resulting forms of reduplication.

The first type of reduplication creates disyllabic “diminutive” nouns. I put the word “diminutive” in quotation marks since this group of nouns in the Fuzhou dialect does not necessarily convey the smallness of the object or quality, or a sense of intimacy or endearment, although these nouns refer to small things in many cases. Moreover, these “diminutive” nouns not only can be used when speaking to children, but also can be used when speaking to an adult without expressing tenderness or

³⁰ It should be noted that the resultative complement here is different from the term “complement” used under X-bar framework of syntax. In syntactic theory, the term “complement” often refers to the sister node of the head and hence in the case of verb phrases, the complement is actually the object of the head verb.

intimacy (cf. Chen 1998). A monosyllabic noun in the Fuzhou dialect may have several different meanings, but a “diminutive” noun created by reduplicating its monosyllabic counterpart usually has only one specific nominal meaning, as exemplified in (20).

- (20)a. 骹 k^ha ‘leg (of human being/animals/furniture); lower part’
 骹骹 k^ha k^ha ‘leg (of furniture)’
- b. 耳 ηei ‘ear; handle’
 耳耳 ηei ηei ‘handle’

Other examples of “diminutive” nouns are presented in (21).

- (21)a. 袋袋 toy toy ‘bag’
- b. 碗碗 ʔuaŋ ʔuaŋ ‘bowl’
- c. 拍拍 p^haʔ p^haʔ ‘bat’
- d. 舀舀 ʔiu ʔiu ‘ladle’
- e. 碎碎 ts^hoy ts^hoy ‘fragment’

4.3.5 Reduplication: sound-splitting words

The second type of reduplication in the Fuzhou dialect gives rise to sound-splitting words. This group of morpho-syntactic words is referred to as the *qiejiaoci* 切脚词 (lit. ‘foot-cutting word’; cf. Liang 1982, Li et al 1994, Li & Liang 2001), *fenyinci* 分音词 (lit. ‘sound-dividing word’; cf. Feng 1998), or *dongci fenyinshi* 动词分音式 (lit. ‘sound-dividing form of verbs’; cf. Chen 1998), in the

literature. It is also called “word derivation by the principle of *fanqie* 反切”³¹ (Chan 1985), or “VL pattern” (Li 2002).

In the Fuzhou dialect, a sound-splitting word is formed through a morphological process of partial reduplication and insertion. A monosyllable, e.g., CVV (C=consonant; V=vowel), is partially reduplicated as (CV.CVV)³² in which only part of the original syllable is copied. Then, a consonant *l* is inserted to replace the original initial of the second syllable, resulting in (CV.lVV). To be more specific, the first syllable of a sound-splitting word contains the initial (if any), the glide (if any), and the nuclear vowel of the original monosyllable (i.e., no coda), while the second syllable contains an inserted initial *l* and the entire final including the glide (if any), the nuclear vowel, the coda, as well as the tone of the original monosyllable. Assume that the syllable structure in Fuzhou is (C₁)(G)V₁(C₂/V₂/V₂C₂) (G=glide; ‘/’ = ‘or’), where only the nuclear vowel V₁ is required while the other segments are all optional. Thus, the formation process of sound-splitting words can be presented as in (22).

$$(22) \quad (C_1)(G)V_1(C_2/V_2/V_2C_2) \rightarrow (C_1)(G)V_1.l(G)V_1(C_2/V_2/V_2C_2)$$

With respect to the formation and internal structure of sound-splitting words in Fuzhou, there are several subtypes, as exemplified in (23).

- (23)I. (C)(G)V → (C)(G)V.l(G)V
- a. 糊 ku → ku.lu ‘to paste’
 - b. 窝 ?uo → ?uo.luo ‘to curl up’

³¹ In traditional Chinese lexicography, *fanqie* is a method used to indicate the pronunciation of a monosyllabic character by combining syllables of two other characters. The pronunciation of the target character is composed of the initial consonant of one syllable and the final of the other.

³² The symbol ‘.’ indicates the syllable boundary here.

II. $(C_1)(G)VC_2 \rightarrow (C_1)(G)V.1(G)VC_2$

a. 塌 $t^h a?$ → $t^h a. la?$ ‘to collapse’

b. 碾 $ni\epsilon\eta$ → $ni\epsilon. li\epsilon\eta$ ‘to grind’

III. $(C)(G)V_1V_2 \rightarrow (C)(G)V_1.1(G)V_1V_2$

a. 吊 tau → $ta. lau$ ‘to hang’

b. 歪 ηuai → $\eta ua. lui$ ‘to recline’

IV. $(C_1)(G)V_1V_2C_2 \rightarrow (C_1)(G)V_1.1(G)V_1V_2C_2$

a. 揆 $t^h ou?$ → $t^h o. lou?$ ‘to poke’

b. 夹 $kei?$ → $ke?. lei?$ ‘to bind’

4.3.6 Reduplication: reduplicated adjectives

The third type of reduplication in the Fuzhou dialect is the reduplication of adjectives, usually indicating a higher degree of the quality denoted by the original adjective (cf. Chen 1998, Li & Liang 2001, among others). Using A to stand for a monosyllabic adjective and AB for a disyllabic adjective, the reduplication form of a monosyllabic adjective is AA while a disyllabic adjective can be reduplicated as AABB, AAB, and ABB. Among the three reduplicated forms of disyllabic adjectives, AABB is the most common and ABB is the least. Examples of these major forms of reduplicated adjectives are presented in (24).

(24)I. AA

a. 碎碎 $ts^h oy ts^h oy$ ‘(very) shattered’³³

³³ Notice that there is another example of 碎碎 [$ts^h oy ts^h oy$] in (21), which means ‘fragment’. These two 碎碎 should be considered as different entries in the lexicon. The one in (21) is derived by reduplicating the monosyllabic noun 碎 [$ts^h oy$] ‘fragment’, while the one in this example is derived by reduplicating the monosyllabic adjective 碎 [$ts^h oy$] ‘shattered’.

- b. 热热 ʔiɛʔ ʔiɛʔ ‘(very) hot’
 c. 慢慢 mainŋ mainŋ ‘(very) slow’
 d. 清清 ts^heiŋ ts^heiŋ ‘(very) cold’

II. AABB

- a. 四四角角 sei sei koyʔ koyʔ ‘(perfectly) square’
 b. 舒舒畅畅 ts^hy ts^hy t^huoŋ t^huoŋ ‘(very) comfortable’
 c. 妥妥当当 t^ho t^ho touŋ touŋ ‘appropriate, proper’
 d. 平平安安 piŋ piŋ ʔaŋ ʔaŋ ‘safe, peaceful’

III. AAB

- a. 四四角 sei sei koyʔ ‘(perfectly) square’
 b. 舒舒畅 ts^hy ts^hy t^huoŋ ‘(very) comfortable’
 c. 光光鲜 kuoŋ kuoŋ ts^hiɛŋ ‘(very) neat and clean’

IV. ABB

- a. 舒舒畅 ts^hy t^huoŋ t^huoŋ ‘(very) comfortable’
 b. 妥妥当 t^ho touŋ touŋ ‘appropriate, proper’
 c. 平安安 piŋ ʔaŋ ʔaŋ ‘safe, peaceful’

It should be noted that reduplicated adjectives generally cannot be used as the predicate or attributive on their own. They are bound on the right side and thus need to take elements such as 势 [sie²¹³], 式 [sei²³], 喏 [luo²³], or 其 [ki⁰] (cf. Chen 1998, Li & Liang 2001, Li 2002, among others). These elements are enclitics in the Fuzhou dialect, as will be demonstrated in Chapter V.

4.3.7 Summary

In Section 4.3, I have surveyed the major morphological processes of morpho-syntactic word formation in the Fuzhou dialect as well as subtypes of each morphological process. In the following sections, I will examine the phonological behavior of these morpho-syntactic words through the investigation of the application of several phonological phenomena that have been reported to apply to lexical items, namely, in word-sized domains.

4.4 Phonological phenomena and morpho-syntactic words in the Fuzhou dialect

In this section I examine several phonological phenomena that have been mentioned in Chapter II. Each subsection begins with a brief review of one phonological phenomenon, and then proceeds with the observation and analysis of the behavior of the major types of morpho-syntactic words with respect to the phenomenon. This investigation will enable us to find out the domain within which these phonological phenomena apply, by means of which I will figure out the formation of the prosodic word domain in the Fuzhou dialect.

4.4.1 Application of phonological tone sandhi

As discussed in Section 2.2.2.1, in the Fuzhou dialect, when two or more syllables come together within a certain domain, only the last syllable bears the citation tone while all the preceding syllables usually undergo tone sandhi. The most important tone sandhi rule in Fuzhou is the phonological tone sandhi rule (TS). It is generally accepted that the TS rule can apply to lexical items, namely,

morpho-syntactic words in Fuzhou (cf. Chen & Norman 1965a, Chan 1985, Zhang 1992, 2017, among others). Let us now begin with the investigation of the application of TS in monomorphemic words, derived words, and compounds, and then proceed to the application in “diminutive” nouns, sound-splitting words, and reduplicated adjectives. For the sake of brevity, the application of other phonological processes is not presented in the examples in Section 4.4.1.

4.4.1.1 Application of TS in monomorphemic words, derived words, and compounds

Among the major types of morpho-syntactic words discussed in Section 4.3, TS can apply in the domain formed by polysyllabic monomorphemic words, as in (25I), derived words, as in (25II), or compounds, as in (25III). Citation forms are presented on the left of the “→” mark while sandhi forms are presented on the right. Sandhi tones are marked in bold.

(25) Application of TS in monomorphemic words, derived words, and compounds

I. Monomorphemic words

Disyllabic:

- a. 沙发 $sa^{44} xua^{23} \rightarrow sa^{51} xua^{23}$ ‘sofa’
 b. 枇杷 $pi^{51} pa^{51} \rightarrow pi^{31} pa^{51}$ ‘loquat’

Trisyllabic:

- c. 新加坡 $siŋ^{44} ka^{44} p^h o^{44} \rightarrow siŋ^{21} ka^{44} p^h o^{44}$ ‘Singapore’
 d. 加拿大 $ka^{44} na^{31} tai^{242} \rightarrow ka^{21} na^{44} tai^{242}$ ‘Canada’

II. Derived words

Prefix + root:

- a. 依伯 $\text{ʔi}^{44} \text{pa}^{23} \rightarrow \text{ʔi}^{51} \text{pa}^{23}$ ‘uncle (father’s elder brother)’
 b. 老鼠 $\text{lo}^{31} \text{ts}^{\text{h}}\text{y}^{31} \rightarrow \text{lo}^{24} \text{ts}^{\text{h}}\text{y}^{31}$ ‘mouse’

Root + suffix:

- c. 厝囡 $\text{ts}^{\text{h}}\text{uo}^{213} \text{kiaŋ}^{31} \rightarrow \text{ts}^{\text{h}}\text{uo}^{51} \text{kiaŋ}^{31}$ ‘small house’
 d. 裤头 $\text{k}^{\text{h}}\text{ou}^{213} \text{t}^{\text{h}}\text{au}^{51} \rightarrow \text{k}^{\text{h}}\text{ou}^{44} \text{t}^{\text{h}}\text{au}^{51}$ ‘trouser waist’
 e. 痢哥 $\text{la}^{23} \text{ko}^{44} \rightarrow \text{la}^{21} \text{ko}^{44}$ ‘baldheaded person’
 f. 派头弟 $\text{p}^{\text{h}}\text{uai}^{213} \text{t}^{\text{h}}\text{au}^{51} \text{ti}^{\epsilon}{}^{242} \rightarrow \text{p}^{\text{h}}\text{uai}^{51} \text{t}^{\text{h}}\text{au}^{21} \text{ti}^{\epsilon}{}^{242}$ ‘stylish young man’
 g. 贪食婆 $\text{taŋ}^{44} \text{si}^{\epsilon}{}^{25} \text{po}^{51} \rightarrow \text{taŋ}^{51} \text{si}^{\epsilon}{}^{31} \text{po}^{51}$ ‘voracious eater’
 h. 见事妈 $\text{k}i^{\epsilon}{}^{213} \text{tai}^{242} \text{ma}^{31} \rightarrow \text{k}i^{\epsilon}{}^{21} \text{tai}^{51} \text{ma}^{31}$ ‘nosy person’
 i. 鸡角 $\text{k}i^{\epsilon}{}^{44} \text{koy}^{23} \rightarrow \text{k}i^{\epsilon}{}^{51} \text{koy}^{23}$ ‘rooster’
 j. 蚨蝇母 $\text{pu}^{51} \text{siŋ}^{51} \text{mo}^{31} \rightarrow \text{pu}^{31} \text{siŋ}^{31} \text{mo}^{31}$ ‘big fly’

Root + two suffixes:

- k. 鸡母囡 $\text{k}i^{\epsilon}{}^{44} \text{mo}^{31} \text{kiaŋ}^{31} \rightarrow \text{k}i^{\epsilon}{}^{21} \text{mo}^{24} \text{kiaŋ}^{31}$ ‘pullet’
 l. 拳头母 $\text{k}uŋ^{51} \text{t}^{\text{h}}\text{au}^{51} \text{mo}^{31} \rightarrow \text{k}uŋ^{31} \text{t}^{\text{h}}\text{au}^{31} \text{mo}^{31}$ ‘(big) fist’

Prefix + root + suffix:

- m. 老蛇囡 $\text{lau}^{242} \text{si}^{\epsilon}{}^{51} \text{kiaŋ}^{31} \rightarrow \text{lau}^{51} \text{si}^{\epsilon}{}^{31} \text{kiaŋ}^{31}$ ‘small snake’
 n. 依解哥 $\text{ʔi}^{44} \text{kai}^{31} \text{ko}^{44} \rightarrow \text{ʔi}^{21} \text{kai}^{21} \text{ko}^{44}$ ‘PLA soldier’

III. Compounds

Coordination:

- a. 暝晡 $\text{maŋ}^{51} \text{puo}^{44} \rightarrow \text{maŋ}^{44} \text{puo}^{44}$ ‘evening’
 b. 事计 $\text{tai}^{242} \text{k}i^{\epsilon}{}^{213} \rightarrow \text{tai}^{51} \text{k}i^{\epsilon}{}^{213}$ ‘affair, job’

Modifier-head:

- c. 绿豆 $luo\tau^5 \tau au^{242} \rightarrow luo\tau^{21} \tau au^{242}$ ‘mung bean’
 d. 衣裳师父 $\tau i^{44} suon\tau^{51} sa^{44} \tau au^{242} \rightarrow \tau i^{21} suon\tau^{21} sa^{51} \tau au^{242}$ ‘tailor’
 e. 对分 $toy^{213} puon\tau^{44} \rightarrow toy^{44} puon\tau^{44}$ ‘to halve’

Verb-object:

- f. 食力 $si\epsilon\tau^5 li\tau^5 \rightarrow si\epsilon\tau^{31} li\tau^5$ ‘tired; laborious’
 g. 有心 $\tau ou^{242} si\eta^{44} \rightarrow \tau ou^{44} si\eta^{44}$ ‘considerate’

Verb-complement:

- h. 看见 $k^h a\eta^{213} ki\epsilon\eta^{213} \rightarrow k^h a\eta^{51} ki\epsilon\eta^{213}$ ‘to see’
 i. 改善 $kai^{31} si\epsilon\eta^{242} \rightarrow kai^{44} si\epsilon\eta^{242}$ ‘to improve’

4.4.1.2 Application of TS in “diminutive” nouns

In the domain formed by “diminutive” nouns, however, TS is blocked, as exemplified in (26). Tones in question are marked in bold>.

(26) Application of TS in “diminutive” nouns

- a. 袋袋 $toy^{242} toy^{242} \rightarrow *toy^{51} toy^{242}$ ‘bag’
 b. 碗碗 $\tau uan\tau^{31} \tau uan\tau^{31} \rightarrow *\tau uan\tau^{24} \tau uan\tau^{31}$ ‘bowl’
 c. 拍拍 $p^h a\tau^{23} p^h a\tau^{23} \rightarrow *p^h a\tau^{51} p^h a\tau^{23}$ ‘bat’
 d. 舀舀 $\tau iu^{31} \tau iu^{31} \rightarrow *\tau iu^{24} \tau iu^{31}$ ‘ladle’
 e. 碎碎 $ts^h oy^{213} ts^h oy^{213} \rightarrow *ts^h oy^{51} ts^h oy^{213}$ ‘fragment’

The sandhi tones of the syllables in “diminutive” nouns in (26) are presented in (27), which follows another type of tone sandhi rule in the Fuzhou dialect, namely,

the morphological tone sandhi rule (MTS) mentioned in Section 2.2.2.2 (to be discussed in more detail in Section 4.4.2). Tones in question are marked in bold.

(27) Tonal patterns of “diminutive” nouns in (26)

- a. 袋袋 $toy^{242} toy^{242} \rightarrow toy^{21} toy^{242}$ ‘bag’
- b. 碗碗 $\text{ʔuan}^{31} \text{ʔuan}^{31} \rightarrow \text{ʔuan}^{31} \text{ʔuan}^{31}$ ‘bowl’
- c. 拍拍 $p^h a \text{ʔ}^{23} p^h a \text{ʔ}^{23} \rightarrow p^h a \text{ʔ}^{21} p^h a \text{ʔ}^{23}$ ‘bat’
- d. 舀舀 $\text{ʔiu}^{31} \text{ʔiu}^{31} \rightarrow \text{ʔiu}^{31} \text{ʔiu}^{31}$ ‘ladle’
- e. 碎碎 $ts^h oy^{213} ts^h oy^{213} \rightarrow ts^h oy^{21} ts^h oy^{213}$ ‘fragment’

4.4.1.3 Application of TS in sound-splitting words

Since sound-splitting words are created by reduplication of monosyllabic words, I assume that the two syllables in a sound-splitting word have the same citation tone. TS is blocked within the domain formed by sound-splitting words, as exemplified in (28). Tones in question are marked in bold.

(28) Application of TS in sound-splitting words

I. (C)(G)V \rightarrow (C)(G)V. 1 (G)V

- a. 跳 $t^h iu^{213} \rightarrow t^h iu^{213} liu^{213} \rightarrow *t^h iu^{51} liu^{213}$ ‘to jump’
- b. 窩 $\text{ʔuo}^{31} \rightarrow \text{ʔuo}^{31} luo^{31} \rightarrow *ʔuo^{24} luo^{31}$ ‘to curl up’

II. (C₁)(G)VC₂ \rightarrow (C₁)(G)V. 1 (G)VC₂

- a. 塌 $t^h a \text{ʔ}^{23} \rightarrow t^h a^{23} la \text{ʔ}^{23} \rightarrow *t^h a^{51} la \text{ʔ}^{23}$ ‘to collapse’
- b. 碾 $nie \text{ŋ}^{31} \rightarrow nie^{31} lie \text{ŋ}^{31} \rightarrow *nie^{24} lie \text{ŋ}^{31}$ ‘to grind’

III. (C)(G)V₁V₂ \rightarrow (C)(G)V₁. 1 (G)V₁V₂

- a. 吊 $tau^{213} \rightarrow ta^{213} lau^{213} \rightarrow *ta^{51} lau^{213}$ ‘to hang’

b. 皱 tsau²¹³ → tsa²¹³ lau²¹³ → *t^hsa⁵¹ lau²¹³ ‘to wrinkle’

IV. (C₁)(G)V₁V₂C₂ → (C₁)(G)V₁.1(G)V₁V₂C₂

a. 揆 t^houʔ²³ → t^ho²³ louʔ²³ → *t^ho⁵¹ louʔ²³ ‘to poke’

b. 扳 pain²¹³ → pa²¹³ lain²¹³ → *pa⁵¹ lain²¹³ ‘to turn over’

The sandhi tones of the syllables in sound-splitting words in (28) are presented in (29), which also follows the morphological tone sandhi rule (MTS). Tones in question are marked in bold>.

(29) Tonal patterns of sound-splitting words in (28)

I. (C)(G)V → (C)(G)V.1(G)V

a. 跳 t^hiu²¹³ → t^hiu²¹³ liu²¹³ → t^hiu³¹ liu²¹³ ‘to jump’

b. 窝 uo³¹ → uo³¹ luo³¹ → uo³¹ luo³¹ ‘to curl up’

II. (C₁)(G)VC₂ → (C₁)(G)V.1(G)VC₂

a. 塌 t^haʔ²³ → t^ha²³ laʔ²³ → t^ha²¹ laʔ²³ ‘to collapse’

b. 碾 niεŋ³¹ → niε³¹ liεŋ³¹ → niε³¹ liεŋ³¹ ‘to grind’

III. (C)(G)V₁V₂ → (C)(G)V₁.1(G)V₁V₂

a. 吊 tau²¹³ → ta²¹³ lau²¹³ → ta²¹ lau²¹³ ‘to hang’

b. 皱 tsau²¹³ → tsa²¹³ lau²¹³ → *t^hsa²¹ lau²¹³ ‘to wrinkle’

IV. (C₁)(G)V₁V₂C₂ → (C₁)(G)V₁.1(G)V₁V₂C₂

a. 揆 t^houʔ²³ → t^ho²³ louʔ²³ → t^ho²¹ louʔ²³ ‘to poke’

b. 扳 pain²¹³ → pa²¹³ lain²¹³ → pa²¹ lain²¹³ ‘to turn over’

4.4.1.4 Application of TS in reduplicated adjectives

Unlike the domain formed by “diminutive” nouns and sound-splitting words, the domain formed by reduplicated adjectives can serve as the domain for the application of TS, as exemplified in (30). Sandhi tones are marked in bold>.

(30) Application of TS in reduplicated adjectives

I. AA

- a. 热热 $\text{ʔiɛ}^5 \text{ʔiɛ}^5 \rightarrow \text{ʔiɛ}^{\mathbf{31}} \text{ʔiɛ}^5$ ‘(very) hot’
- b. 碎碎 $\text{ts}^{\text{hoy}^{213}} \text{ts}^{\text{hoy}^{213}} \rightarrow \text{ts}^{\text{hoy}^{\mathbf{51}}} \text{ts}^{\text{hoy}^{213}}$ ³⁴ ‘(very) shattered’
- c. 慢慢 $\text{maiŋ}^{242} \text{maiŋ}^{242} \rightarrow \text{maiŋ}^{\mathbf{51}} \text{maiŋ}^{242}$ ‘(very) slow’
- d. 清清 $\text{ts}^{\text{heij}^{213}} \text{ts}^{\text{heij}^{213}} \rightarrow \text{ts}^{\text{heij}^{\mathbf{51}}} \text{ts}^{\text{heij}^{213}}$ ‘(very) cold’

II. AABB

- a. 四四角角 $\text{sei}^{213} \text{sei}^{213} \text{koy}^{\mathbf{23}} \text{koy}^{\mathbf{23}} \rightarrow \text{sei}^{\mathbf{21}} \text{sei}^{\mathbf{21}} \text{koy}^{\mathbf{44}} \text{koy}^{\mathbf{23}}$
‘(perfectly) square’
- b. 舒舒畅畅 $\text{ts}^{\text{hy}^{44}} \text{ts}^{\text{hy}^{44}} \text{t}^{\text{uon}^{213}} \text{t}^{\text{uon}^{213}} \rightarrow \text{ts}^{\text{hy}^{\mathbf{21}}} \text{ts}^{\text{hy}^{\mathbf{21}}} \text{t}^{\text{uon}^{\mathbf{51}}} \text{t}^{\text{uon}^{213}}$
‘(very) comfortable’
- c. 妥妥当当 $\text{t}^{\text{ho}^{31}} \text{t}^{\text{ho}^{31}} \text{toun}^{213} \text{toun}^{213} \rightarrow \text{t}^{\text{ho}^{\mathbf{21}}} \text{t}^{\text{ho}^{\mathbf{21}}} \text{toun}^{\mathbf{51}} \text{toun}^{213}$
‘appropriate, proper’
- d. 平平安安 $\text{piŋ}^{\mathbf{51}} \text{piŋ}^{\mathbf{51}} \text{ʔaŋ}^{44} \text{ʔaŋ}^{44} \rightarrow \text{piŋ}^{\mathbf{21}} \text{piŋ}^{\mathbf{21}} \text{ʔaŋ}^{44} \text{ʔaŋ}^{44}$
‘safe, peaceful’

III. AAB

- a. 四四角 $\text{sei}^{213} \text{sei}^{213} \text{koy}^{\mathbf{23}} \rightarrow \text{sei}^{\mathbf{21}} \text{sei}^{\mathbf{51}} \text{koy}^{\mathbf{23}}$
‘(perfectly) square’

³⁴ Notice that the sandhi form of tones of 碎碎 [$\text{ts}^{\text{hoy}^{\mathbf{51}}} \text{ts}^{\text{hoy}^{213}}$] ‘(very) shattered’ in (30Ib) is different from that of 碎碎 [$\text{ts}^{\text{hoy}^{\mathbf{21}}} \text{ts}^{\text{hoy}^{213}}$] ‘fragment’ in (27e).

- b. 舒舒畅 $ts^{h44} ts^{h44} t^{h213} uoŋ^{213} \rightarrow ts^{h21} ts^{h51} t^{h213} uoŋ^{213}$
 ‘(very) comfortable’
- c. 光光鲜 $kuoŋ^{44} kuoŋ^{44} ts^{h44} ien^{44} \rightarrow kuoŋ^{21} kuoŋ^{44} ts^{h44} ien^{44}$
 ‘(very) neat and clean’

IV. ABB

- a. 舒畅畅 $ts^{h44} t^{h213} uoŋ^{213} t^{h213} uoŋ^{213} \rightarrow ts^{h21} t^{h51} uoŋ^{213} t^{h213} uoŋ^{213}$
 ‘(very) comfortable’
- b. 妥当当 $t^{h31} touŋ^{213} touŋ^{213} \rightarrow t^{h21} touŋ^{51} touŋ^{213}$
 ‘appropriate, proper’
- c. 平安安 $piŋ^{51} ?aŋ^{44} ?aŋ^{44} \rightarrow piŋ^{21} ?aŋ^{44} ?aŋ^{44}$
 ‘safe, peaceful’

4.4.1.5 Summary

Based on the discussion above, we can find that TS applies in the domain formed by polysyllabic monomorphemic words, derived words, compounds, and reduplicated adjectives in the Fuzhou dialect. It does not apply to monosyllabic monomorphemic word (due to the lack of appropriate phonological environment), “diminutive” nouns, and sound-splitting words. Tonal patterns of “diminutive” nouns and sound-splitting words, in fact, are derived by another tone sandhi rule in the domain, namely, the morphological tone sandhi rule (MTS).

4.4.2 Application of morphological tone sandhi

4.4.2.1 Application of MTS in morpho-syntactic words in the Fuzhou dialect

As discussed in Section 2.2.2.2, there is another tone sandhi rule, MTS, in the Fuzhou dialect, whose application is restricted to some particular disyllabic morpho-syntactic words formed through reduplication. In the domain of TS, the sandhi tone of a non-final syllable is determined by its own citation tone as well as the tone of the following syllable. In contrast, the sandhi tone of the first syllable within the domain of MTS is only conditioned by its own citation tone. The rule of MTS can be re-presented here as in Table 11.

Table 11. Morphological tone sandhi (MTS) (refined)

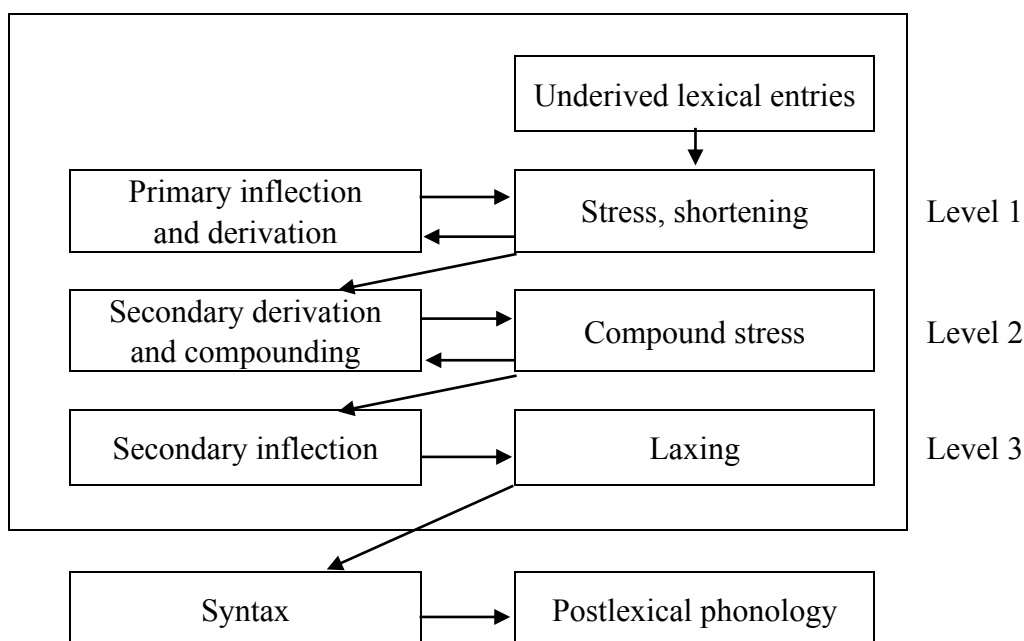
T (monosyllabic word)	T+T (“diminutive” nouns and sound-splitting words)
44	44+44 (cf. Chen & Norman 1965a, Chen 1998)
51/31/5	31+44/51/31/5 (cf. Liang 1982, Lin 2002)
213/242/23	21+213/242/23

From the discussion in Section 4.4.1, we can find that MTS applies in the domain formed by reduplication words including “diminutive” nouns and sound-splitting words in the Fuzhou dialect, as exemplified in (27) and (29). Nonetheless, MTS is blocked in the domain formed by monomorphemic words, derived words, compounds, or reduplicated adjectives, in which only TS applies.

4.4.2.2 MTS vs. TS in morpho-syntactic words in the Fuzhou dialect

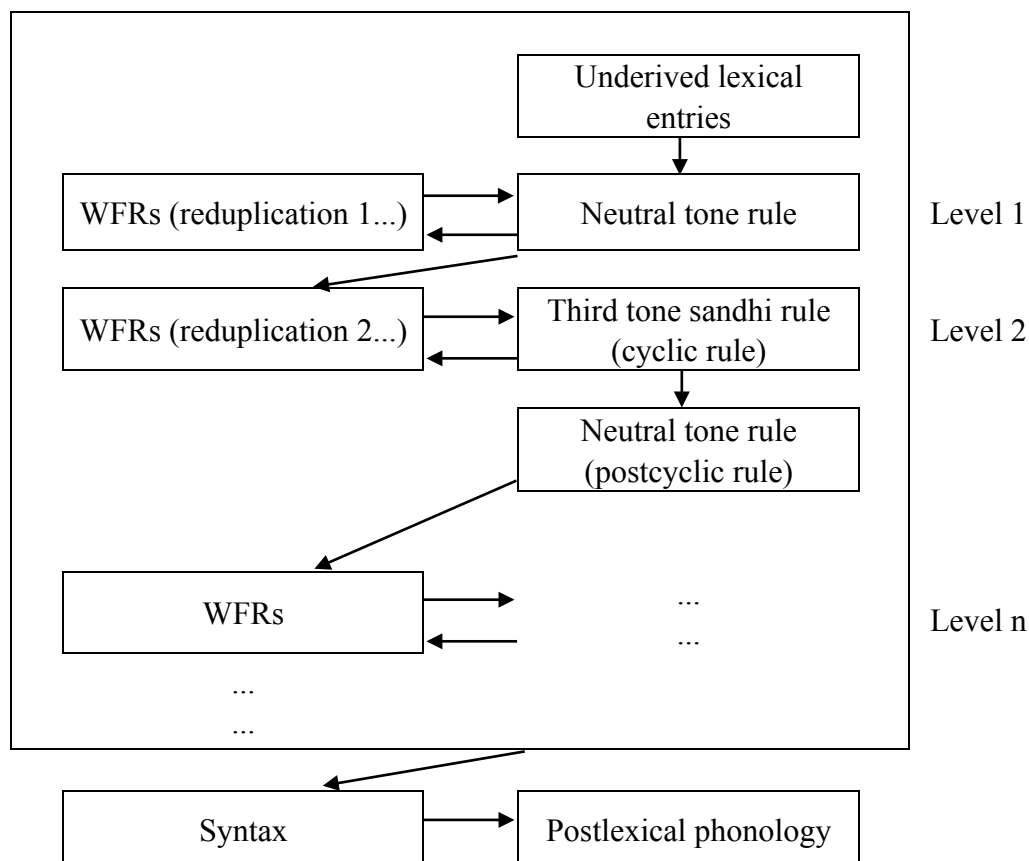
Since the primary concern in this chapter is to identify the domain of application of phonological phenomena like MTS and TS, here I just give a brief tentative explanation of the relationship between MTS and TS in terms of their application in morpho-syntactic words in the Fuzhou dialect. The relationship between MTS and TS can be accounted for if we assume that the lexicon is composed of a series of levels and different morphological processes may belong to different levels. According to the theory of Lexical Phonology (cf. Kiparsky 1982, 1985, Mohanan 1982, among others), there are two classes of phonological rules, namely, lexical rules and post-lexical rules. The lexical phonological rules and morphological processes, or word formation rules (WFRs), can be partitioned into a series of levels in the lexicon. Each level has the lexical phonological rules distinctive of that level. Thus, the organization of the English lexicon can be presented as in Figure 6.

Figure 6. Lexical phonology in English (cf. Kiparsky 1982)



Under the framework of lexical phonology, Zhang & Yu (2009) and Yu & Yin (2014) have accounted for the application of the third tone sandhi rule and the neutral tone rule to reduplication words in Mandarin Chinese. The Mandarin Chinese lexicon is organized as in Figure 7, proposed by Yu & Yin (2014).

Figure 7. Lexical phonology in Mandarin Chinese³⁵

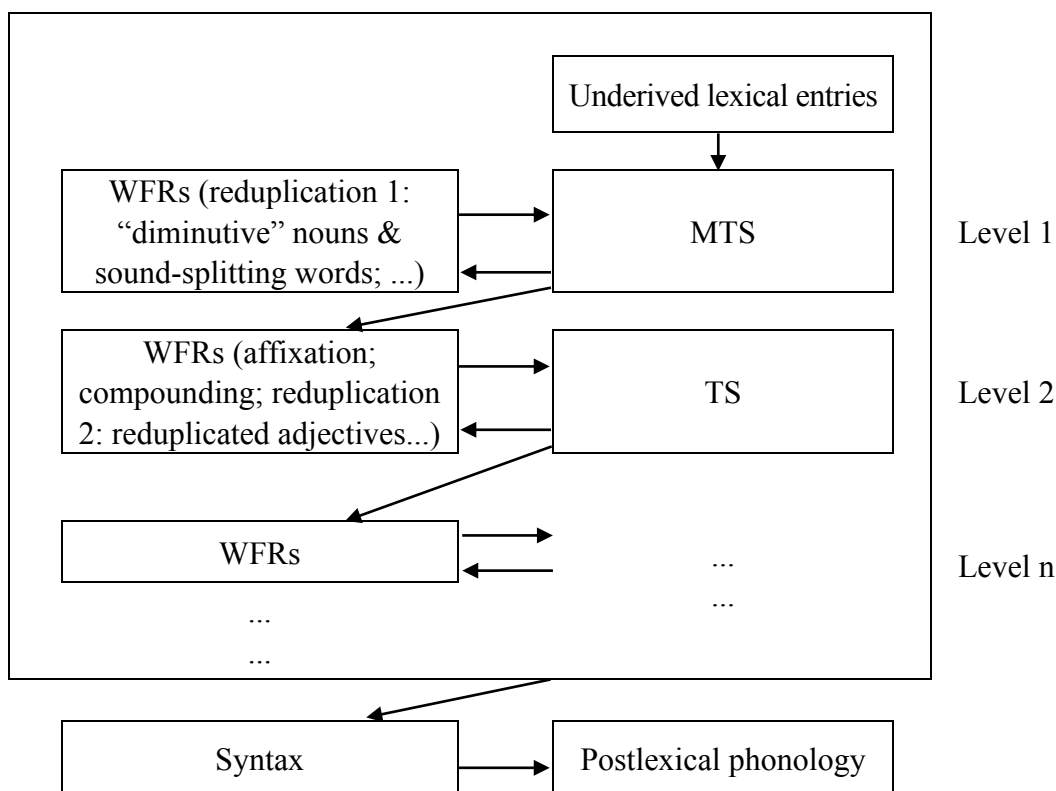


In the Fuzhou dialect, likewise, we can assume that rules like MTS and TS are placed at different levels within the lexicon, so are the morphological processes such as

³⁵ Following Xu (2001), Yu & Yin (2014) distinguish two types of reduplication in the lexicon of Mandarin Chinese. The first type of reduplication, “reduplication 1”, refers to the formation of reduplicated forms such as 奶奶 [nai²¹⁴ nai⁰] ‘grandmother’ and 宝宝 [pau²¹⁴ pau⁰] ‘baby’ (‘0’ denotes the neutral tone). In these words, the first syllable bears the third tone in Mandarin while the second syllable bears a neutral tone. By contrast, the second type of reduplication, “reduplication 2”, refers to the formation of reduplicated forms such as 走走 [zou³⁵ zou⁰] ‘to walk a while’ and 跑跑 [p^hau³⁵ p^hau⁰] ‘to run a while’ in which the first syllable bears the sandhi form of the third tone while the second syllable bears a neutral tone.

affixation, compounding, and different types of reduplication. Thus, the Fuzhou lexicon can be presented as follows.

Figure 8. Lexical phonology in the Fuzhou dialect



From Figure 8, we can find that “diminutive” nouns and sound-splitting words are formed by reduplication 1 at Level 1 in the lexicon, where MTS applies. By contrast, other morpho-syntactic words such as derived words, compounds, and reduplicated adjectives, are formed at Level 2, where TS applies. This is why MTS and TS apply to different types of morpho-syntactic words in the Fuzhou dialect. After undergoing MTS at Level 1, “diminutive” nouns and sound-splitting words will then be “sent” to the syntactic component of the grammar, if they do not undergo morphological processes such as affixation, compounding, or reduplication 2. This has been illustrated by examples in (27) and (29). In contrast, if a word formed by reduplication

1 at Level 1 goes further to undergo morphological processes at Level 2, TS will apply to it. This can be illustrated by examples in (31).

(31)a.	瓶瓶囡		‘small bottle’
	瓶	piŋ ⁵¹	Underived lexical entry
	瓶瓶	piŋ ⁵¹ piŋ ⁵¹	Level 1-reduplication
	瓶瓶	piŋ ³¹ piŋ ⁵¹	Level 1-MTS
	瓶瓶囡	piŋ ³¹ piŋ ⁵¹ kian ³¹	Level 2-affixation
	瓶瓶囡	piŋ ²⁴ piŋ ³¹ kian ³¹	Level 2-TS
	瓶瓶囡	piŋ ²⁴ piŋ ³¹ kian ³¹	Surface Representation
b.	霸霸囡		‘penis of (young boys)’
	霸	pa ²¹³	Underived lexical entry
	霸霸	pa ²¹³ pa ²¹³	Level 1-reduplication
	霸霸	pa ²¹ pa ²¹³	Level 1-MTS
	霸霸囡	pa ²¹ pa ²¹³ kian ³¹	Level 2-affixation
	霸霸囡	pa ²¹ pa ⁵¹ kian ³¹	Level 2-TS
	霸霸囡	pa ²¹ pa ⁵¹ kian ³¹	Surface Representation

4.4.2.3 Summary

On the basis of the discussion above, we can find that similar to TS, MTS also applies to some types of morpho-syntactic words in the Fuzhou dialect. These two tone sandhi rules, however, interact with different morphological processes within the morphological component—MTS only applies to morpho-syntactic words formed by

reduplication 1 at an earlier level, while TS applies to other morpho-syntactic words formed by affixation, compounding, or reduplication 2, at a later level.

4.4.3 Application of final change

Final change (FC) in the Fuzhou dialect, as discussed in Section 2.2.2.4, is a tonally-conditioned phonological process. FC specifies that in a particular domain where the tone of a non-final syllable is *yinping*, *yangping*, *shang*, *yangru*, half *yinqu*, or half *yangqu*, if the final of this syllable belongs to Group B, it will be replaced by its Group A counterpart (cf. Chen & Norman 1965a, Chan 1985, Chen 1998, among others). For the sake of brevity, the application of the initial consonant lenition (CL) is not presented in the examples in Section 4.4.3. Sandhi forms of finals are marked in bold.

4.4.3.1 Application of FC in monomorphemic words, derived words, and compounds

FC applies in the domain formed by polysyllabic monomorphemic words, as in (32I), derived words, as in (32II), or compounds, as in (32III). The application of TS is presented in the following examples as well.

(32) Application of FC in monomorphemic words, derived words, and compounds

I. Monomorphemic words³⁶

- a. 蟋蟀 sei²³ sou²³ → **si⁴⁴** sou²³ ‘cricket’
- b. 鹭鸶 lou²⁴² si⁴⁴ → **lu⁴⁴** si⁴⁴ ‘egret’

³⁶ Due to the small number of trisyllabic monomorphemic words in the Fuzhou dialect, I couldn't find any examples of the application of FC involving trisyllabic monomorphemic words in any published sources.

II. Derived words³⁷

Stem + suffix:

- a. 竹团 tøy²³ kian³¹ → ty²⁴ kian³¹ ‘small bamboo’
- b. 裤头 k^hou²¹³ t^hau⁵¹ → k^hu⁴⁴ t^hau⁵¹ ‘trouser waist’
- c. 恶妈 ʔou²³ ma³¹ → ʔu²⁴ ma³¹ ‘bad person’
- d. 虱母 sai²³ mo³¹ → sei²⁴ mo³¹ ‘(big) louse’
- e. 豆腐团 ta²⁴² xou²⁴² kian³¹ → ta²¹ xu⁵¹ kian³¹ ‘jellied bean curd’
- f. 流鼻哥 lau⁵¹ p^hei²¹³ ko⁴⁴ → lau²¹ p^hi⁴⁴ ko⁴⁴ ‘running-nose child’

Stem + two suffixes:

- g. 鸡角团 kiε⁴⁴ koy²³ kian³¹ → kiε²¹ køy⁵¹ kian³¹ ‘pullet’

III. Compounds

Coordination:

- a. 备办 pei²⁴² pain²⁴² → pi⁵¹ pain²⁴² ‘to prepare’
- b. 诉念 sou²¹³ nain²⁴² → su⁵¹ nain²⁴² ‘to narrate, to recount’

Modifier-head:

- c. 醋心 ts^hou²¹³ sij⁴⁴ → ts^hu⁴⁴ sij⁴⁴ ‘jealous mind’
- d. 共产主义 køyŋ²⁴² saŋ³¹ tsuo³¹ ŋjε²⁴² → kyŋ²¹ saŋ²¹ tsuo⁴⁴ ŋjε²⁴²
‘Communism’

- e. 对分 toy²¹³ puoŋ⁴⁴ → tøy⁴⁴ puoŋ⁴⁴ ‘to halve’

Verb-object:

- f. 咒嘴 tsou²¹³ ts^hui²¹³ → tsu⁵¹ ts^hui²¹³ ‘to swear’

³⁷ As mentioned above, FC applies only if the first syllable in a certain domain has a Group B final. Thus, I couldn't find any examples of the application of FC in derived words containing the prefix, since neither 依- [ʔi⁴⁴] nor 老- [lo³¹]/[lau²⁴²] has a Group B final.

g. 有心 $\text{ʔou}^{242} \text{siŋ}^{44} \rightarrow \text{ʔu}^{44} \text{siŋ}^{44}$ ‘considerate’

Verb-complement:

h. 注紧 $\text{tsoy}^{213} \text{kiŋ}^{31} \rightarrow \text{tsøy}^{51} \text{kiŋ}^{31}$ ‘to pay attention to’

i. 睡着 $\text{k}^{\text{h}}\text{ouŋ}^{213} \text{tu}^{\text{ʔ}5} \rightarrow \text{k}^{\text{h}}\text{uŋ}^{44} \text{tu}^{\text{ʔ}5}$ ‘to fall asleep’

4.4.3.2 Application of FC in “diminutive” nouns

It has been reported that FC can apply in the domain formed by “diminutive” nouns (cf. Chen 1998, Li & Liang 2001, among others), as exemplified in (33). The application of MTS is presented as well.

(33) Application of FC in “diminutive” nouns

- a. 袋袋 $\text{toy}^{242} \text{toy}^{242} \rightarrow \text{tøy}^{21} \text{toy}^{242}$ ‘bag’
- b. 锯锯 $\text{køy}^{213} \text{køy}^{213} \rightarrow \text{ky}^{21} \text{køy}^{213}$ ‘saw’
- c. 碎碎 $\text{ts}^{\text{h}}\text{oy}^{213} \text{ts}^{\text{h}}\text{oy}^{213} \rightarrow \text{ts}^{\text{h}}\text{øy}^{21} \text{ts}^{\text{h}}\text{oy}^{213}$ ‘fragment’

4.4.3.3 Application of FC in sound-splitting words

As we can see in Table 4 in Chapter II, Group B finals all contain a diphthong. Thus, at first glance, it seems that FC is not able to apply in the domain formed by sound-splitting words since the vowel of the first syllable in a sound-splitting word is always a monophthong. However, evidence from the Fuzhou dialect shows that FC may apply to sound-splitting words as well. For example, it has been reported in Liang (1982) that the example of 揆 [$\text{t}^{\text{h}}\text{ou}^{\text{ʔ}23} \rightarrow \text{t}^{\text{h}}\text{o}^{21} \text{lou}^{\text{ʔ}23}$] ‘to poke’ in (29IVa) can also be pronounced as [$\text{t}^{\text{h}}\text{u}^{21} \text{lou}^{\text{ʔ}23}$], in which the Group B final [ouʔ] is first changed into the correspondent Group A final [uʔ] by FC, and then drops its consonant coda.

Some similar examples presented in Liang (1982) are cited as follows. According to Liang, these sound-splitting words always have two types of pronunciations. One is derived on the basis of the application of FC, as presented on the left of the slash, while the other is derived simply by deleting the segment(s) following the nuclear vowel, as presented on the right of the slash. As can be seen from the following examples, FC is an optional rule within the domain formed by sound-splitting words.

- (34) a. 拂 $xou\text{?}^{23} \rightarrow xu^{21}/xo^{21} lou\text{?}^{23}$ ‘to flit, to sweep’
 b. 屑 $xou^{213} \rightarrow xu^{21}/xo^{21} lou^{213}$ ‘to sprinkle’
 c. 擗 $ts^h ou\eta^{242} \rightarrow ts^h u^{21}/ts^h o^{21} lou\eta^{242}$ ‘to wring’
 d. 唧 $tsei\text{?}^{23} \rightarrow tsi^{21}/tse^{21} lei\text{?}^{23}$ ‘to squeeze’
 e. 歛 $xei\text{?}^{23} \rightarrow xi^{21}/xe^{21} lei\text{?}^{23}$ ‘to sniff’

4.4.3.4 Application of FC in reduplicated adjectives

It has been recognized that FC can apply to reduplicated adjectives (cf. Chen 1998, Li & Liang 2001, Li 2002, among others), as exemplified in (35).

(35) Application of FC in reduplicated adjectives

I. AA

- a. 碎碎 $ts^h oy^{213} ts^h oy^{213} \rightarrow ts^h \text{?}y^{51} ts^h oy^{213}$ ‘(very) shattered’
 b. 慢慢 $mai\eta^{242} mai\eta^{242} \rightarrow mei\eta^{51} mai\eta^{242}$ ‘(very) slow’
 c. 清清 $ts^h ei\eta^{213} ts^h ei\eta^{213} \rightarrow ts^h i\eta^{51} ts^h ei\eta^{213}$ ‘(very) cold’

II. AABB

- a. 四四角角 $sei^{213} sei^{213} koy\text{?}^{23} koy\text{?}^{23} \rightarrow si^{21} si^{21} koy\text{?}^{44} koy\text{?}^{23}$
 ‘(perfectly) square’

III. AAB

- a. 四四角 sei²¹³ sei²¹³ koyʔ²³ → si²¹ si⁵¹ koyʔ²³ ‘(perfectly) square’

IV. ABB

- a. 四角角 sei²¹³ koyʔ²³ koyʔ²³ → si²¹ koyʔ⁴⁴ koyʔ²³
 ‘(perfectly) square’

4.4.3.5 Summary

On the basis of the discussion above, we can find that FC applies to all major types of morpho-syntactic words with the exception of monosyllabic monomorphemic words since one single syllable never undergo tone sandhi and final change in the Fuzhou dialect. The other noteworthy case is sound-splitting words, which optionally create the environment for the application of FC.

4.4.4 Application of initial consonant lenition

As discussed in Section 2.2.2.5, initial consonant lenition (CL) in the Fuzhou dialect usually changes the initials of all non-first syllables according to the preceding finals in a domain formed by more than two syllables (cf. Chen & Norman 1965a, Chan 1985, Li et al 1994, Chen 1998, among others). Sandhi forms of initial consonants are marked in bold in the examples in Section 4.4.4.

4.4.4.1 Application of CL in monomorphemic words, derived words, and compounds

Polysyllabic monomorphemic words, derived words, as well as compounds, can all form the domain for the application of CL, as exemplified in (36).

(36) Application of CL in monomorphemic words, derived words, and compounds

I. Monomorphemic words

Disyllabic:

- a. 沙发 $sa^{44} xua\text{?}^{23} \rightarrow sa^{51} \text{?}ua\text{?}^{23}$ ‘sofa’
 b. 枇杷 $pi^{51} pa^{51} \rightarrow pi^{31} \beta a^{51}$ ‘loquat’

Trisyllabic:

- c. 新加坡 $si\eta^{44} ka^{44} p^h o^{44} \rightarrow si\eta^{21} \eta a^{44} \beta o^{44}$ ‘Singapore’
 d. 加拿大 $ka^{44} na^{31} tai^{242} \rightarrow ka^{21} na^{44} lai^{242}$ ‘Canada’

II. Derived words

Prefix + stem:

- a. 依伯 $\text{?}i^{44} pa\text{?}^{23} \rightarrow \text{?}i^{51} \beta a\text{?}^{23}$ ‘uncle (father’s elder brother)’
 b. 老鼠 $lo^{31} ts^h y^{31} \rightarrow lo^{24} \text{?}y^{31}$ ‘mouse’

Stem + suffix:³⁸

- c. 厝团 $ts^h uo^{213} kia\eta^{31} \rightarrow ts^h uo^{51} \text{?}ia\eta^{31}$ ‘small house’
 d. 裤头 $k^h ou^{213} t^h au^{51} \rightarrow k^h u^{44} lau^{51}$ ‘trouser waist’
 e. 兵哥 $pi\eta^{44} ko^{44} \rightarrow pi\eta^{44} \eta o^{44}$ ‘soldier’
 f. 派头弟 $p^h uai^{213} t^h au^{51} tie^{242} \rightarrow p^h uai^{51} lau^{21} lie^{242}$ ‘stylish young man’
 g. 贪食婆 $ta\eta^{44} si\epsilon\text{?}^5 po^{51} \rightarrow ta\eta^{51} nie\text{?}^{31} \beta o^{51}$ ‘voracious eater’
 h. 鸡角 $ki\epsilon^{44} koy\text{?}^{23} \rightarrow ki\epsilon^{51} \text{?}oy\text{?}^{23}$ ‘rooster’

Stem + two suffixes:

- i. 儿团哥 $nie^{51} kia\eta^{31} ko^{44} \rightarrow nie^{21} \text{?}ia\eta^{21} \eta o^{44}$ ‘child’
 j. 石头团 $suo\text{?}^5 t^h au^{51} kia\eta^{31} \rightarrow suo\text{?}^{31} lau^{31} \text{?}ia\eta^{31}$ ‘small stone’

³⁸ Suffixes -母 [mo³¹] and -妈 [ma³¹] never undergo CL since they both begin with /m/.

Prefix + stem + suffix:

- k. 老蛇团 $lau^{242} si\epsilon^{51} kian^{31} \rightarrow lau^{51} li\epsilon^{31} \eta ian^{31}$ ‘small snake’
 l. 依解哥 $\eta i^{44} kai^{31} ko^{44} \rightarrow \eta i^{21} \eta ai^{21} \eta o^{44}$ ‘PLA soldier’

III. Compounds

Coordination:

- a. 暝晡 $ma\eta^{51} puo^{44} \rightarrow ma\eta^{44} muo^{44}$ ‘evening’
 b. 事计 $tai^{242} kie^{213} \rightarrow tai^{51} \eta i\epsilon^{213}$ ‘affair, job’

Modifier-head:

- c. 绿豆 $luo\eta^{5} tau^{242} \rightarrow luo\eta^{21} lau^{242}$ ‘mung bean’
 d. 共产主义 $k\oey\eta^{242} sa\eta^{31} tsuo^{31} \eta i\epsilon^{242} \rightarrow ky\eta^{21} na\eta^{21} \eta uo^{44} \eta i\epsilon^{242}$

‘Communism’

- e. 对分 $toy^{213} puo\eta^{44} \rightarrow t\oey^{44} muo\eta^{44}$ ‘to halve’

Verb-object:

- f. 咒嘴 $tsou^{213} ts^{h}ui^{213} \rightarrow tsu^{51} \eta ui^{213}$ ‘to swear’
 g. 有心 $\eta ou^{242} si\eta^{44} \rightarrow \eta u^{44} li\eta^{44}$ ‘considerate’

Verb-complement:

- h. 看见 $k^{h}a\eta^{213} ki\epsilon\eta^{213} \rightarrow k^{h}a\eta^{51} \eta i\epsilon\eta^{213}$ ‘to see’
 i. 改善 $kai^{31} si\epsilon\eta^{242} \rightarrow kai^{44} li\epsilon\eta^{242}$ ‘to improve’

4.4.4.2 Application of CL in “diminutive” nouns

Controversy exists in the literature as to whether CL applies in the domain formed by “diminutive” nouns. Li (2002) and Lin (2002) both claim that the original initial of the second syllable of a “diminutive” noun remains unchanged. Data

collected in Li et al (1994), Chen (1998), Feng (1998), and Li (1998) provide evidence to support this claim. In Li & Liang (2001), however, it is argued that the initial of the second syllable undergoes CL in a “diminutive” noun. Examples listed in Li & Liang (2001) are reproduced in (37), with sandhi forms of initial consonants in question marked in bold.

(37) Examples of CL in “diminutive” nouns from Li & Liang (2001: 195).

- a. 杯 → 杯杯 $\text{pui}^{44} \rightarrow \text{pui}^{31} \mathbf{\beta}\text{ui}^{44}$ ‘cup’
 b. 桶 → 桶桶 $\text{t}^{\text{h}}\text{øy}\eta^{31} \rightarrow \text{t}^{\text{h}}\text{øy}\eta^{31} \mathbf{l}\text{øy}\eta^{31}$ ‘bucket’

Data elicited from my informants, however, show that examples in (37) are quite suspicious. According to my informants, it is only when they say diminutive nouns such as 杯杯 [$\text{pui}^{31} \text{pui}^{44}$] and 桶桶 [$\text{t}^{\text{h}}\text{øy}\eta^{31} \text{t}^{\text{h}}\text{øy}\eta^{31}$] very quickly in the speech that the initial of the second syllable might be changed; otherwise, the pronunciation of diminutive nouns in (37) sounds odd to them. Such phenomenon, which is related to rate of speech, will be explored in Chapter VIII.

Data from my informants as well as those in other published sources therefore suggest that CL should be blocked when applying to “diminutive” nouns, although the domain formed by “diminutive” nouns provides the environment for the application of CL.

4.4.4.3 Application of CL in sound-splitting words

As can be seen from the discussion in Section 2.2.2.5, when the initial of a non-first syllable in a domain is *l*, it becomes *n* if preceded by the nasal coda *-ŋ*.

Otherwise, *l* remains unchanged. Notice that the first syllable of a sound-splitting word does not contain the nasal coda *-ŋ*. Therefore, CL is not able to apply within the domain formed by sound-splitting words for lack of phonological environment.

4.4.4.4 Application of CL in reduplicated adjectives

It has been noticed that CL fails to apply within the domain formed by the reduplication of monosyllabic adjectives (cf. Chen 1998, Li & Liang 2001, Li 2002, among others), as can be seen in (38).

(38) Blocking of CL in reduplicated forms of monosyllabic adjectives

- a. 白白 $paʔ^5 paʔ^5 \rightarrow paʔ^{31} paʔ^5$ * $paʔ^{31} \beta aʔ^5$ ‘(very) white’
- b. 清清 $ts^h eiŋ^{213} ts^h eiŋ^{213} \rightarrow ts^h in^{51} ts^h eiŋ^{213}$ * $ts^h in^{51} ʒ eiŋ^{213}$ ‘(very) cold’

By contrast, CL applies within the domain formed by the reduplication of disyllabic adjectives (cf. Chen 1998, Li & Liang 2001, Li 2002, among others), as exemplified in (39).

(39) Application of CL in reduplicated forms of disyllabic adjectives

I. AABB

- a. 四四角角 $sei^{213} sei^{213} koyʔ^{23} koyʔ^{23} \rightarrow si^{21} li^{21} ʔoyʔ^{44} koyʔ^{23}$
‘(perfectly) square’
- b. 舒舒畅畅 $ts^h y^{44} ts^h y^{44} t^h uoŋ^{213} t^h uoŋ^{213} \rightarrow ts^h y^{21} ʒy^{21} luoŋ^{51} nuoŋ^{213}$
‘(very) comfortable’
- c. 妥妥当当 $t^h o^{31} t^h o^{31} touŋ^{213} touŋ^{213} \rightarrow t^h o^{21} lo^{21} louŋ^{51} nouŋ^{213}$
‘appropriate, proper’

II. AAB

- a. 四四角 $sei^{213} sei^{213} koy^{23} \rightarrow si^{21} li^{21} \text{ʔ}oy^{44}$
 ‘(perfectly) square’
- b. 舒舒畅 $ts^h y^{44} ts^h y^{44} t^h uoŋ^{213} \rightarrow ts^h y^{21} \text{ʒ}y^{21} luoŋ^{51}$
 ‘(very) comfortable’
- c. 光光鲜 $kuoŋ^{44} kuoŋ^{44} ts^h ien^{44} \rightarrow kuoŋ^{21} \eta uoŋ^{44} \text{ʒ}ien^{44}$
 ‘(very) neat and clean’

III. ABB

- a. 舒畅畅 $ts^h y^{44} t^h uoŋ^{213} t^h uoŋ^{213} \rightarrow ts^h y^{21} luoŋ^{51} nuoŋ^{213}$
 ‘(very) comfortable’
- b. 妥当当 $t^h o^{31} touŋ^{213} touŋ^{213} \rightarrow t^h o^{21} louŋ^{51} nouŋ^{213}$
 ‘appropriate, proper’
- c. 平安安 $piŋ^{51} \text{ʔ}aŋ^{44} \text{ʔ}aŋ^{44} \rightarrow piŋ^{21} \eta aŋ^{44} \eta aŋ^{44}$
 ‘safe, peaceful’

4.4.4.5 Summary

We can see from the discussion above that CL applies within the domain formed by polysyllabic monomorphemic words, derived words, compounds, as well as reduplicated forms of disyllabic adjectives. It is blocked when applying to “diminutive” nouns and reduplicated monosyllabic adjectives although the domain formed by these morpho-syntactic words can serve as an appropriate environment for its application. CL also fails to apply to monosyllabic monomorphemic words and

sound-splitting words, since there is no applicable environment for the application of CL.

Notice that CL may give rise to two sandhi initials [β] and [ʒ], which do not exist in the underlying initial inventory in the Fuzhou dialect. These two initials can only appear in the initial position of a non-first syllable within the domain constituted by polysyllabic monomorphemic words, derived words, compounds, and reduplicated forms of disyllabic adjectives.

4.4.5 Summary

Based on the discussion above, the application of TS, MTS, FC, and CL within the domain formed by the major types of morpho-syntactic words in the Fuzhou dialect can be summarized as below.

Table 12. Phonological phenomena and morpho-syntactic words in the Fuzhou dialect³⁹

Application \ Phenomena		TS	MTS	FC	CL
		Words			
Monomorphemic words	monosyllabic	N/A	N/A	N/A	N/A
	disyllabic	√	×	√	√
	trisyllabic				
Derived words	prefix+stem			N/A	
	stem+suffix(es)	√	×	√	√
	prefix+stem+suffix				
Compounds	coordination				
	modifier-head	√	×	√	√
	verb-object				
	verb-complement				
Reduplication: “diminutive” nouns		×	√	√	×

³⁹ ‘√’ denotes the application of the rule; N/A indicates no phonological environment for the rule to apply; ‘×’ indicates that the rule is blocked although there is an appropriate environment; ‘opt.’ suggests that the rule is optional in a given domain.

Reduplication: sound-splitting words		×	√	√ (opt.)	N/A
Reduplication: reduplicated adjectives	AA	√	×	√	×
	ABAB/AAB/ABB	√	×	√	√

4.5 The prosodic word domain in the Fuzhou dialect

From Table 12 and the discussion in Section 4.3 and 4.4, we can find the following facts about the domain formed by the major types of morpho-syntactic words in the Fuzhou dialect:

- (40) I. There are phonological rules (both segmental and suprasegmental) that are sensitive to the domain formed by morpho-syntactic words as long as the phonological environment is available:
- a. TS obligatorily applies to polysyllabic monomorphemic words, derived words, compounds, and reduplicated adjectives, regardless of the internal structure of these words;
 - b. MTS obligatorily applies to “diminutive” nouns and sound-splitting words;
 - c. FC obligatorily applies to polysyllabic monomorphemic words, derived words, compounds, “diminutive” nouns, and reduplicated adjectives, regardless of the internal structure. It optionally applies to sound-splitting words;
 - d. CL obligatorily applies to polysyllabic monomorphemic words, derived words, compounds, and reduplicated disyllabic adjectives, regardless of the internal structure of these words.

II. There are phonotactic constraints referring to the domain formed by morpho-syntactic words:

Consonant initials [β] and [ʒ] can only occur within the domain formed by polysyllabic monomorphemic words, derived words, compounds, and reduplicated disyllabic adjectives (at the initial position of non-first syllables).

Thus, we can find that morpho-syntactic words in the Fuzhou dialect form the domain for phonological rules (both segmental and suprasegmental) and phonotactic constraints. Since morpho-syntactic words in the Fuzhou dialect are composed of (a) a single stem (e.g., monomorphemic words); (b) the stem plus any adjacent affixes (e.g., derived words); or (c) all members of a compound (e.g., compounds), the size of the domain they form corresponds to the terminal element of the syntactic tree. Another characteristic of the domain formed by Fuzhou morpho-syntactic words is that the domain can ideally contain an unlimited number of syllables, as long as the syllables it contains belong to the same morpho-syntactic word. Hence, the domain formed by morpho-syntactic words in the Fuzhou dialect can only correspond to the prosodic word domain, which is coextensive with the terminal node of the syntactic tree (recall that it has been mentioned in Chapter III that the foot domain can generally contain no more than three syllables cross-linguistically). As discussed in Section 4.2, the prosodic word is treated as an indispensable prosodic constituent in a given language since there are various phonological generalizations that make crucial reference to this constituent. Clearly, facts summarized in (40) can be taken as evidence that the

prosodic word domain constituted by morpho-syntactic words in the Fuzhou dialect is indispensable in the Fuzhou dialect. I can now proceed to give the definition of the prosodic word domain in the Fuzhou dialect, as presented in (41).

(41) Prosodic Word (ω) domain in the Fuzhou dialect

The domain of ω in Fuzhou is the terminal node of the syntactic tree.

The domain formation of the prosodic word in Fuzhou, therefore, is the same as that in languages like Greek and Latin.

Regarding another type of common diagnostics for the prosodic word domain, minimal word requirement, Fuzhou does not seem to show the minimal word syndrome. In this dialect, we have not seen any strings of segments that do not correspond to morpho-syntactic words (e.g., prefixes and suffixes) exhibit any minimal word effects, nor have we found any rules that conspire to maintain any minimality restriction. Hence I assume that the Fuzhou dialect does not have minimal word requirement. Therefore, a monosyllabic morpho-syntactic word in Fuzhou is required to form an independent prosodic word domain since it occupies the terminal node of the syntactic tree. Rules discussed in this chapter fail to apply within the prosodic word domain formed by monosyllabic monomorphemic words simply due to the lack of phonological environment.

4.6 Summary

The main goal of this chapter is to identify the phonological properties that define the prosodic word in the Fuzhou dialect.

In this chapter, I first briefly review the definition of the prosodic word, as well as evidence and diagnostics for the domain of the prosodic word across languages. There are basically three types of phonological generalizations that can serve as diagnostics for the prosodic word, namely, phonological rules (segmental and suprasegmental), phonotactic constraints, and minimal word requirement.

Then, I survey the major types of morpho-syntactic words in the Fuzhou dialect. By examining the application of major Fuzhou phonological rules within the domain formed by morpho-syntactic words, we have seen that evidence for the prosodic word in the Fuzhou dialect is abundant—there are a number of phonological phenomena (phonological rules and phonotactic constraints) referring to the domain formed by morpho-syntactic words. Therefore, I argue that these consequently constitute reliable diagnostics for the prosodic word and that morpho-syntactic words form the prosodic word domain in the Fuzhou dialect. Since morpho-syntactic words are terminal elements of the syntactic tree, I further give the definition of the prosodic word domain in Fuzhou, as presented in (41).

With the definition in (41), phonological phenomena that are sensitive to the prosodic word domain can be roughly formulated as follows.

(42) ω -domain phonological phenomena in the Fuzhou dialect

- a. TS: $T_n \rightarrow T_n' / [____ T_{n+1}]_\omega \quad (n \geq 1)$
- b. MTS: $T_1 \rightarrow 21/31(44) / [____ T_2]_\omega \quad \text{in reduplication 1}$
- c. FC: $\text{Group B} \rightarrow \text{Group A} / [[C_0 ____]_{\sigma_n} \dots]_{\sigma_{n+1}}]_\omega \quad (n \geq 1)$
- d. CL: $C \rightarrow C' / [[\dots]_{\sigma_n} [____ \dots]_{\sigma_{n+1}}]_\omega \quad (n \geq 1)$

Recall that some scholars (e.g., Wright 1983, Chan 1985, among others) argue that the domain of application for TS and FC at the lexical level in the Fuzhou dialect is the foot, as reviewed in Chapter III. I have argued in Chapter III that the foot domain is not required in the Fuzhou dialect since phonological rules such as TS and FC can be treated as prosodic word-domain rules with no loss of generalization, while the application of these phonological rules in examples containing more than three syllables can only be captured by referring to the prosodic word domain. The rule formulations in (42) as well as the discussion in this chapter have once again confirmed that assuming the prosodic word to be the domain of application for these rules at the lexical level (i.e., in morpho-syntactic words) is more reasonable.

In addition to phonological rules, phonotactic constraints we have seen in Fuzhou morpho-syntactic words can also be stated by making reference to the prosodic word domain, as summarized in (43).

(43) ω -domain phonotactic constraints

Consonant initials [β] and [ζ] are only allowed ω -internally.

Moreover, as argued in Section 4.5, Fuzhou does not impose restrictions on the minimal size a prosodic word can have. Thus, there is no minimal word requirement in the Fuzhou dialect, and a prosodic word may consist of a monosyllabic word. The assignment of the ω status to monosyllabic words not only follows the definition of the prosodic word domain in (41), but also plays an important role in the formation of prosodic domains larger than the prosodic word (e.g., the clitic group and the phonological phrase), as to be seen in the following chapters.

Chapter V. Enclitics and Type A Clitic Group in the Fuzhou Dialect⁴⁰

The prosodic constituent located immediately above the prosodic word in the prosodic hierarchy is referred to as the clitic group (cf. Hayes 1984/1989, Nespor & Vogel 1986, among others), which groups together a prosodic word plus adjacent clitics. As mentioned in Chapter II, Fuzhou clitics can be divided into enclitics and proclitics, and there are two types of clitic groups in this dialect. This chapter deals with the morpho-syntactic functions and phonological behavior of enclitics and the clitic group formed by “host+enclitic” (Type A clitic group) in the Fuzhou dialect. The properties of Fuzhou proclitics and the clitic group formed by “proclitic+host” (Type B clitic group) will be discussed in detail in Chapter VII, after the discussion on Fuzhou phonological phrase.

This chapter is organized as follows. Section 5.1 contains a basic introduction to the definition, classification, and common properties of clitics cross-linguistically. Section 5.2 offers the definition of the clitic group as well as evidence for the clitic group as the domain of application for phonological rules in different languages. Section 5.3 identifies enclitics in Fuzhou and discusses their morpho-syntactic functions. Section 5.4 examines the application of various phonological phenomena within the domain of Type A clitic group in the Fuzhou dialect. Based on the discussion in Section 5.3 and Section 5.4, Section 5.5 provides a discussion of the

⁴⁰ An earlier version of this chapter was presented at the 24th Columbia University Graduate Conference on East Asia in New York, NY, February 2015. Thanks go to the audience at the conference for various questions and comments.

properties of enclitics and Type A clitic group in the Fuzhou dialect, and closes with a summary of main findings in this chapter.

5.1 Introduction

5.1.1 Definition of clitics

Many languages contain a specific type of elements, often referred to as clitics, which come from the Greek verb *κλίνω* ‘to lean’. It has long been recognized that this specific type of elements exhibits properties of both the word and the affix. In the latest edition of Crystal’s *Dictionary of Linguistics and Phonetics* (Crystal 2008), the term “clitic” is defined as follows.

(1) Definition of clitics (Crystal 2008)

A term used in grammar to refer to a form which resembles a word, but which cannot stand on its own as a normal utterance, being phonologically dependent upon a neighboring word (its host) in a construction.

The definition of the term “clitic” provided in Russi (2008) is presented in (2).

(2) Definition of clitics (Russi 2008)

Clitics refer to intermediate linguistic units, which grammatically behave like words in that they combine with other words or phrases to make phrases, but are phonologically bound to an adjacent word traditionally referred to as the “host” (also cf. Zwicky 1977, Klavans 1982, Matthews 1991, Halpern 1998, Riemsdijk 1999, among others).

With respect to the classification of clitics, two main types of clitics can be distinguished: simple clitics and special clitics, according to their syntactic positioning. A simple clitic is the result of phonological reduction of a free form and tends to appear in the same syntactic position as its correspondent free form (cf. Zwicky 1977, Halpern 1998, Haspelmath & Sims 2010, among others). Typical examples of simple clitics are the unstressed pronouns and reduced auxiliaries in English, illustrated in (3a) and (3b) respectively. The clitics are marked in bold.

(3) Simple clitics

a. English unstressed pronouns

Jonathan saw **him**. [sɔhɪm]/[sɔm]/[sɔm] (from Halpern 1998)

What is **he** to do? [ɪzi] (from Zwicky 1977)

b. English reduced auxiliaries

He is tall. → He's tall.

I will have to go now. → I'll have to go now.

A special clitic may also have its related free form. The syntactic distribution of a special clitic, however, differs from that of its free form and thus must be described on its own (cf. Zwicky 1977, Haspelmath & Sims 2010, among others). Romance clitic pronouns are often cited as examples of special clitics. In nearly all of the modern Romance languages, clitic pronouns are placed before the tensed verb while the stressed forms with analogous syntactic functions must follow the verbs (cf. Zwicky 1977, Klavans 1982, Halpern 1998), as exemplified by examples from French in (4), in which the clitic pronoun *le* is marked in bold.

(4) Special clitics (French)

- | | | | |
|----|------------------------|----|-----------------------|
| a. | Jean le vois. | b. | Jean vois le livre. |
| | Jean it sees | | Jean sees the book |
| | ‘Jean sees it.’ | | ‘Jean sees the book.’ |
| | *Jean vois le . | | *Jean le livre vois. |

The second-position clitics are another commonly discussed type of special clitics, also known as Wackernagel clitics, after Wackernagel (1892). In accordance to Wackernagel’s Law, second-position clitics must occur after the first element (either the first stressed word or the first syntactic constituent, depending on languages) of the sentence, while their corresponding full forms are not constrained by this law (cf. Halpern 1998, Haspelmath & Sims 2010, among others). The following examples come from Serbian, in which *ga* is the accusative clitic pronoun and *njega* is the free form.

(5) Special clitics (Serbian)

- | | | | |
|----|--------------------------|----|--------------------|
| a. | Marija ga voli. | b. | Marija njega voli. |
| | Marija him loves | | Marija him loves |
| | ‘Marija loves him.’ | | ‘Marija loves him’ |
| | *Marija voli ga . | | Marija voli njega. |

On the other hand, depending on their position in relation to the host they attach to, clitics are mainly divided into proclitics and enclitics.⁴¹ A clitic preceding its host is called proclitic, e.g., French clitic pronoun *le* in (4). In contrast, a clitic appearing after its host is called enclitic, e.g., English reduced auxiliaries in (3b). In the Fuzhou dialect, some clitics attach to the right of their hosts and thus belong to enclitics, while others occur at the left of their hosts and thus should be labeled as proclitics.

5.1.2 Properties of clitics

It has long been noticed that clitics “exhibit some of the properties of the word and some of the properties of the affix” (Klavans 1982). As early as in Sapir (1930), it has been noticed that “enclisis is neither true suffixation nor juxtaposition of independent elements. It has the external characteristics of the former, the inner feeling of the latter”. In Zwicky (1977), he distinguishes two types of clitics, namely “# behavior” clitics and “+ behavior” clitics. Clitics of the former type behave as if they were independent words. For instance, the Spanish clitic pronouns have no effect on the position of stress in their hosts, as exemplified in (6), in which *nos* ‘us’ and *los* ‘them’ are both clitic pronouns.

(6) “# behavior” of Spanish clitic pronouns (cf. Zwicky 1977)

- a. dando ‘giving’ b. dándonoslos ‘giving us them’

⁴¹ In addition to these two main types of clitics, mesoclitics and endoclitics are also reported in a few languages. A mesoclitic occurs between the stem of the host and the affix(es), as can be found in Portuguese (cf. Zwicky 1987, Halpern 1995, among others). An endoclititic is inserted within a single word, as reported in languages like Udi, Degema, and Pashto (cf. Harris 2002, Kari 2003, Korpris & Davis 2005, among others).

By contrast, clitics of the latter type behave as if they were integrated with their hosts. For example, a stress shift may be caused when an enclitic is attached to the host word in Latin, as exemplified in (7), in which *-que* ‘and’, interrogative *-ne*, and *-cum* ‘with’ are all enclitics.

(7) “+ behavior” of Latin enclitics (cf. Zwicky 1977)

- | | | | | |
|----|-----------|------------------|----------|----------------------|
| a. | vírum | ‘the man (acc.)’ | virúmque | ‘and the man (acc.)’ |
| b. | vídēs | ‘you see’ | vidésne? | ‘do you see?’ |
| c. | cum vóbis | ‘with you (pl.)’ | vobíscum | ‘with you (pl.)’ |

In addition, from the historical point of view, it has also been suggested that clitics are at an intermediate stage: they generally develop from free words and frequently develop into affixes (cf. Zwicky 1977, Spencer 1991, Russi 2008, among others).

This mixed behavior and unclear linguistic status of clitics have posed problems for linguists. Starting with Zwicky’s (1977) pioneering study on clitics, a vast amount of research has been devoted to identify the morpho-syntactic and phonological properties of clitics across languages. Some linguists have argued that clitics should be incorporated into one of the two uncontroversial categories, namely words (cf. Crysmann 1997, 2000, among others) or affixes (cf. Miller 1992, Monachesi 1999, Cocchi 2000, among others). However, it has also been argued that clitics represent an independent category due to their morpho-syntactic and phonological properties and thus should be distinguished from both words and affixes (cf. Hayes 1984/1989, Nespor & Vogel 1986, Haspelmath & Sims 2010, among others).

On the one hand, clitics should be differed from independent words in several ways. First of all, clitics exhibit a type of phonological dependency while independent words are free in terms of their occurrence. In other words, a clitic can never occur alone and must “lean” on a prosodic host adjacent to it. Due to the phonological dependency of clitics, it is impossible to (a) pause between a clitic and its host, (b) assign stress to clitics in stress languages, (c) assign contrastive stress to clitics, and (d) freely move clitics in an utterance (cf. Haspelmath & Sims 2010, among others). The second property of clitics, which distinguishes them from independent words, is clitics commonly belong to some functional and considerably closed categories, such as auxiliaries, pronouns, determiners, prepositions, postpositions, conjunctions, as well as functional particles like negatives and interrogative particles (cf. Zwicky 1977, Klavans 1982, 1985, among others). By contrast, independent words typically come from open categories such as nouns, verbs (excluding auxiliaries), and adjectives.

On the other hand, several criteria have been proposed to distinguish clitics and affixes (cf. Zwicky & Pullum 1983, Haspelmath & Sims 2010, among others), as presented as follows.

(8) Clitics vs. Affixes

- a. Host selection: clitics can attach to words of virtually any category, e.g., English auxiliary 's, which can attach to nouns, prepositions, verbs, adjectives, and adverbs, while affixes are quite specific in their selections of stems, e.g., English plural suffix -s, which attaches only to noun stems;

- b. Arbitrary gaps: clitics do not exhibit arbitrary gaps while affixes do; e.g., English plural suffix *-s* does not attach to “child”;
- c. Morpho-phonological idiosyncrasies: clitics do not exhibit morpho-phonological idiosyncrasies while irregular forms are quite common in groupings of stems and affixes, e.g., forms like *feet* for the plural affix, *went* for the past affix, and *best* for the superlative affix;
- d. Semantic idiosyncrasies: the meaning of the string of the host plus the clitic(s) is predictable from the meaning of the host and that of the clitic(s), while affix-stem combinations may have an idiosyncratic meaning; e.g., the Dutch inflected form *ouder* is a comparative (‘older’) in its literal meaning, but has also been extended to use as a noun, which means ‘parent’;
- e. Syntactic operations: an affixed word is regularly treated as one unit by syntactic operations, while a string of the host plus the clitic(s) are usually treated as separated units by syntactic operations;
- f. Ordering: clitics can attach to material already containing clitics or affixes, but affixes cannot attach to a host containing clitics.

Furthermore, as argued by a number of linguists (e.g., Hayes 1984/1989, Nespor & Vogel 1986, among others), the phonological behavior of clitics is often different from that of both independent words and affixes. Specifically, in a given language, there are phonological phenomena that apply only in relation to a constituent consisting of a word host and the clitic(s), namely the clitic group. Hence, the role

played by the clitic group as the domain of application for various phonological generalizations can serve as another important criterion to distinguish clitics from both independent words and affixes (to be discussed in more detail in Section 5.2).

5.1.3 Summary

In this section, we have seen the basic definition and classification of clitics, as well as properties of clitics compared with independent words and affixes. Clitics, as an intermediate unit between independent words and affixes, should be treated as an independent morpho-syntactic category in grammar due to their distinctive morpho-syntactic and phonological properties. Correspondingly, an intermediate prosodic constituent comprised of a word host and the clitic(s) should also be established in the prosodic hierarchy, which is distinguished from both the prosodic word, which groups affixes with stems, and the phonological phrase, which groups words with other words.

5.2 The clitic group

5.2.1 Definition of the clitic group

Based on the observation that there are certain phonological rules that only apply within the domain formed by a word host and the clitic(s) but not in any other context in languages, the string of the word host plus clitic(s) is treated as a unique prosodic constituent in the prosodic hierarchy. This constituent is referred to as the clitic group, located between the prosodic word and the phonological phrase. First proposed by Hayes (1984/1989), the notion of the clitic group was then adopted in Nespor &

Vogel (1986) and much subsequent work (e.g., Vogel 1990, 1991, Hannahs 1995a, Nespor 1999, among others). We have seen the definition of the clitic group domain presented in Nespor & Vogel (1986: 154) in Chapter II, which is reproduced here in (9).

(9) Clitic group (CG) formation

The domain of the CG consists of a ω containing an independent (i.e., nonclitic) word plus any adjacent phonological words containing

- a. a directional clitic, or
- b. a plain clitic/nondirectional clitic such that there is no possible host with which it shares more category memberships.

The clitic group, according to Nespor & Vogel (1986), is the first level of the prosodic hierarchy that represents the mapping between the syntactic and the phonological components since certain clitics choose their direction of attachment according to the syntactic constituent structure. As Nespor & Vogel (1986) suggest, the clitic group formed by the mapping from the syntactic structure is nevertheless not necessarily isomorphic to a syntactic constituent.

As discussed in Section 2.1.4.2, despite the controversy raised by the notion of the clitic group and arguments against the existence of this constituent (e.g., Zec 1988, 1993, Inkelas 1990, Inkelas & Zec 1995, Booij 1996, Kleinhenz 1996, Selkirk 1996, Peperkamp 1997, among others), some researchers still embrace a position which favors the existence of the clitic group as an indispensable prosodic constituent (e.g., Hayes 1989, Zhang 1992, 2014, 2017, Kabak & Vogel 2001, among others). In

responding to the objections and problems with the original clitic group, Vogel (2009) suggests that the problems are not due to the clitic group itself but to restrictions posed by the Strict Layer Hypothesis, which can be resolved by assuming a slight weakening of the Strict Layer Hypothesis.

As will be shown in the following sections and Chapter VII, in the Fuzhou dialect, clitics may attach to constituents higher than the prosodic word, and enclitics and proclitics exhibit different phonological behavior. These are considered to be counterevidence against the existence of the clitic group in some previous studies (as discussed in Section 2.1.4.2). However, in this study, I will follow previous studies that argue for the clitic group, and assume that the clitic group is still part of the prosodic hierarchy since the clitic group in Fuzhou as a whole can be distinguished from other prosodic constituents. Moreover, I will adopt the weakened Strict Layer Hypothesis and Zhang's (1992, 2017) stipulation (as presented in Section 2.1.4.1), and argue that the violation of Exhaustivity, Nonrecursivity, and Layeredness is allowed in the Fuzhou dialect, which is well supported by the evidence from this dialect. Thus a tentative definition of the clitic group domain in the Fuzhou dialect can be formulated as in (10), by means of which the over-assignment of the prosodic word status to clitics is also avoided.

(10) Clitic group (CG) formation in the Fuzhou dialect

The domain of the CG in the Fuzhou dialect consists of one independent (i.e., nonclitic) prosodic constituent (ω , CG, or φ), plus any adjacent

a. directional clitic(s), or

- b. plain clitic(s)/nondirectional clitic(s) such that there is no possible host with which they share more category memberships.

5.2.2 Evidence for the clitic group domain across languages

Like other prosodic domains, the clitic group has been reported to form the domain for many phonological phenomena cross-linguistically, which constitutes the most substantial evidence for the existence of this constituent. In addition to the often-cited examples of stress assignment in Latin, which have been discussed in Section 2.1.4.2, there are a number of phonological phenomena that apply within clitic groups, but not across their boundaries or in other prosodic domains. For example, it has been reported that in English there is a *v*-Deletion rule, which deletes a word-final [v] before a [-syllabic] segment within a certain domain (cf. Selkirk 1972, Hayes 1984/1989, Nespor & Vogel 1986, among others). According to Hayes (1984/1989) and Nespor & Vogel (1986), this rule applies in fast speech within the domain of the clitic group, as exemplified in (11), but fails across the boundary of clitic groups, as exemplified in (12). Clitics in question are marked in bold.

(11) Application of *v*-Deletion in English (adapted from Hayes 1984/1989)

- a. [Please]CG [leave **them**]CG [alone]CG⁴²

↓
[Ø]

- b. [Will you save **me**]CG [a seat]CG

↓
[Ø]

⁴² It is noteworthy that in Hayes (1984/1989) and Nespor & Vogel (1986), prosodic words like “please” and “alone” are marked as clitic groups in cases like (11) and (12), in accordance to the Strict Layer Hypothesis.

(12) Blocking of *v*-Deletion in English (adapted from Hayes 1984/1989)

- a. [Give]CG [Maureen]CG [some]CG
 ↓
 *[Ø]
- b. [We'll save]CG [those people]CG [a seat]CG
 ↓
 *[Ø]

Another example that has been presented as evidence for the clitic group domain is Vowel Harmony in Turkish. As mentioned in Chapter IV, Vowel Harmony in Turkish applies within the domain of the prosodic word. This rule can also apply within the domain of the clitic group, according to Nespor & Vogel (1986). In Turkish, the harmonizing features are [back] for all vowels and [round] for high vowels. Within the clitic group domain, this rule applies from left to right, and thus the first vowel within the domain determines the value for [back] and [round] of all the following vowels, as illustrated in (13), in which *-mu* is an interrogative clitic in Turkish and marked in bold.

(13) Application of Vowel Harmony in Turkish (adapted from Nespor & Vogel, 1986)

- | | | | | | |
|----|----------------------------------|---------|----|----------------------------------|----------|
| a. | [doğrú] _ω | ‘true’ | b. | [bügün] _ω | ‘today’ |
| | [doğrú mu] _{CG} | ‘true?’ | | [bügün mü] _{CG} | ‘today?’ |

Other phonological phenomena, which refer crucially to the clitic group as their domain of application, include *s*, *z*-Palatalization in English, Stress Readjustment, Nasal Deletion, Nasal Assimilation, and Stop Voicing in Greek, Stress Assignment in Turkish, Penultimate Schwa Specification and Post-lexical Stress Assignment in

French, as well as *t*-Deletion in Catalan (cf. Hayes 1984/1989, Nespor & Vogel 1986, Hannahs 1995a, Kabak & Vogel 2001, among others).

5.2.3 Summary

From the discussion above, we can find that there must be a prosodic constituent consisting of a host plus clitic(s) since such a string forms the domain of application for various phonological phenomena in diverse languages. The domain of application for these phonological phenomena can hardly be captured with the notion of either the prosodic word or the phonological phrase. Therefore, the clitic group, which has exactly the extension of the host plus clitic(s), should be treated as an indispensable prosodic constituent in the prosodic hierarchy. In the following sections, it will be demonstrated that certain phonological phenomena in the Fuzhou dialect should also be accounted for with the notion of clitics (specifically, enclitics in this chapter) and the clitic group formed by the host plus the enclitic.

5.3 Enclitics in the Fuzhou dialect and their morpho-syntactic functions

5.3.1 Introduction

It has long been recognized that there are a number of clitic-like elements that have very distinctive morpho-syntactic and/or phonological behavior in the Fuzhou dialect (cf. Chen & Norman 1965a, Wright 1983, Chan 1985, Chen 1998, Li 2002, among others). However, a closer look to the relevant literature can reveal a significant absence of systematic studies on clitics in this dialect—most of the relevant literature simply treats these clitic-like elements in Fuzhou as either affixes or

words. The present section and following sections in this chapter as well as Chapter VII thus address this gap by offering a comprehensive description and analysis of the morpho-syntactic functions as well as the phonological behavior exhibited by Fuzhou clitics. It will be shown that Fuzhou clitics indeed share the common properties of clitics across languages and that there are phonological phenomena in the Fuzhou dialect making crucial reference to the domain formed by the host plus the clitic.

Fuzhou clitics, like clitics in other languages, are mostly bound morphemes which cannot be used on their own and thus have to attach to adjacent prosodic units as the host. According to their position in relation to the host they attach to, Fuzhou clitics can be divided into two categories, namely, enclitics and proclitics. As will be shown in the following subsections and relevant sections in Chapter VII, most clitics in the Fuzhou dialect belong to closed functional categories, including possessive/modificational/nominalization marker, aspect markers, interrogative particles, auxiliaries, prepositions, as well as other functional particles, together forming a considerably heterogeneous category.

In this section and following sections in this chapter, I will only focus on enclitics in the Fuzhou dialect, while the discussion of Fuzhou proclitics will be left to Chapter VII. Morpho-syntactic functions of Fuzhou enclitics are discussed in this section with a number of examples. In the examples, the group of “host+enclitic” is labeled with “CG”, the prosodic word with “ω”, and the enclitics with a lowercase “C”. For the sake of brevity, examples in this section present only the citation/underlying segmental structure.

5.3.2 Possessive/modificational/nominalization marker 其 [ki⁰]

Let us begin with the most commonly-used enclitic in the Fuzhou dialect, the possessive/modificational/nominalization marker 其 [ki⁰], which always bears a neutral tone. 其 is transcribed as [ki⁵¹]/[ki⁵³] in some published materials (e.g., Li et al 1994, Li 2002, among others), in which its correspondent full form is recorded. The full form of 其 is used in words like 蔣其 [tʃuon³¹ ki⁵¹] ‘how, why’ and 其利 [ki⁵¹ lei²¹³] ‘to shrilly cry’, and pronounced in a full tone, which is different from the reduced clitic form 其 [ki⁰]. The clitic 其 [ki⁰] is sometimes presented as [i⁰] in the literature (e.g., Chen & Norman 1965a, Chan 1985, among others). However, within a sandhi environment, if the clitic 其 is preceded by a syllable ending with the historical **-k* coda, it is pronounced with a stop initial *k-*. According to the CL rule, in a sandhi environment, citation initials following the **-k* coda remain unchanged. If the citation form of the clitic 其 has a zero initial, it should not have the stop initial *k-* when following the **-k* coda in a sandhi context. Therefore, the initial of the citation form of 其 must be the stop consonant *k-* instead of the zero initial. Thus, 其 is transcribed as [ki⁰] in this dissertation.

Like its counterpart *de* 的 in Mandarin Chinese, 其 [ki⁰] in the Fuzhou dialect can be: (a) attached to the right of a noun/pronoun to indicate possession, as in (14); (b) attached to the modifier and thus connecting the modifier and the nominal expression modified by the modifier, as in (15); and (c) used to make nouns out of verbs/verb phrases, adjectives (including reduplicated adjectives), nouns/noun phrases, or pronouns, as in (16) (cf. Chen & Norman 1965a, Li 2002, among others). 其 [ki⁰]

is presented as POSS (= possessive marker), MOD (= modificational marker), or NOM (= nominalization marker) in the gloss.

(14) Possessive marker

- | | |
|--|---|
| <p>a. [[我]_ω 其 C]CG 书⁴³</p> <p>[[ŋuai] ki] tsy</p> <p>I POSS book</p> <p>‘my book’</p> | <p>b. [[汝]_ω 其 C]CG 毛</p> <p>[[ny] ki] noʔ</p> <p>you POSS thing</p> <p>‘your things’</p> |
| <p>c. [[依妹]_ω 其 C]CG 衣裳⁴⁴</p> <p>[[ʔi mui] ki] ʔi suoŋ</p> <p>younger sister POSS clothes</p> <p>‘younger sister’s clothes’</p> | |

(15) Modificational marker

- | | |
|--|---|
| <p>a. [[旧]_ω 其 C]CG 书</p> <p>[[kou] ki] tsy</p> <p>old MOD book</p> <p>‘old book’</p> | <p>b. [[旧旧]_ω 其 C]CG 书</p> <p>[[kou kou] ki] tsy</p> <p>old old MOD book</p> <p>‘(very) old book’</p> |
| <p>c. [[鸡角]_ω 其 C]CG 肉</p> <p>[[kiɛ koyʔ] ki] nyʔ</p> <p>rooster MOD meat</p> <p>‘meat of a rooster’</p> | |

⁴³ Notice that in this example and many of the following examples, a monosyllabic monomorphemic word is assigned the prosodic word (_ω) status according to the definition of the prosodic word domain in the Fuzhou dialect proposed in Chapter IV, by means of which a clitic group can be constructed by grouping together the prosodic word host and the adjacent clitic in accordance with the definition of the clitic group domain in (10).

⁴⁴ It can be seen from this example and some of the following examples (e.g., 15c, 16e, 32d) that a Fuzhou clitic can attach to a string of sounds that already contains an affix.

(16) Nominalization marker

- | | |
|--|--|
| <p>a. [[讲]_ω 其 C]CG
[[kouŋ] ki]
speak NOM
'what is spoken'</p> | <p>b. [[红]_ω 其 C]CG
[[ʔøyŋ] ki]
red NOM
'what is red/red things'</p> |
| <p>c. [[红红]_ω 其 C]CG
[[ʔøyŋ ʔøyŋ] ki]
red red NOM
'what is (very) red/(very) red things'</p> | <p>d. [[我]_ω 其 C]CG
[[ŋuai] ki]
I NOM
'mine'</p> |
| <p>e. [[依妹]_ω 其 C]CG
[[ʔi mui] ki]
younger sister NOM
'younger sister's (things)'</p> | |

5.3.3 Adjective reduplication markers 势 [siɛ²¹³], 式 [sei²³], and 喏 [luo²³]

Chapter IV has mentioned that reduplicated adjectives in the Fuzhou dialect generally cannot be used as the predicate on their own. When used as the predicate, reduplicated adjectives are bound on the right side and thus need to take enclitics 势 [siɛ²¹³], 式 [sei²³], or 喏 [luo²³]⁴⁵ (cf. Chen 1998, Li & Liang 2001, Li 2002, among others). In the Fuzhou dialect, 势 [siɛ²¹³] can be used as a noun which means 'situation' or 'force', and 式 [sei²³] can also be used as a noun which means 'style'. 喏 [luo²³] is only used as an enclitic. As enclitics, 势 [siɛ²¹³], 式 [sei²³], and 喏

⁴⁵ 喏 [luo²³] is also recorded as 偌 or 若 in the literature (cf. Chen 1998, Li & Liang 2001, among others).

[luoʔ²³] are freely interchangeable when attached to reduplicated adjectives. Examples of these enclitics are presented as follows. These three enclitics are presented as AdjR (= adjective reduplication marker) in the gloss.

(17)a. 伊 [[悬悬]_ω 势/式/啫 C]CG

ʔi [[keiŋ keiŋ] siɛ/seiʔ/luoʔ]

he tall tall AdjR

‘He is rather tall.’

b. 面 [[白白]_ω 势/式/啫 C]CG

meiŋ [[paʔ paʔ] siɛ/seiʔ/luoʔ]

face white white AdjR

‘The face is rather white.’

c. 者 工作 [[闲闲落落]_ω 势/式/啫 C]CG

tsia køyŋ tsouʔ [[ʔeiŋ ʔeiŋ loʔ loʔ] siɛ/seiʔ/luoʔ]

this job easy/relaxing AdjR

‘This job is very easy.’

5.3.4 Aspect markers

It has long been recognized that the Fuzhou dialect has a number of aspect markers which occur after the verb/verb phrase (cf. Chen & Norman 1965a, Chan 1985, Chen 1998, Li & Liang 2001, Li 2002, among others). These post-verbal aspect markers in the Fuzhou dialect are enclitics, which attach to the host on their left to indicate the developmental status of the event or situation.

5.3.4.1 Durative aspect marker 咧 [lɛ⁰]

The first aspect marker I would like to examine is 咧 [lɛ⁰], which does not have a correspondent full form. 咧 [lɛ⁰] is a versatile enclitic in the Fuzhou dialect, and can not only serve as the durative aspect marker, but also be used as the perfective aspect marker, the post-verbal particle, and the locative marker (to be discussed in more detail in relevant following subsections). As the durative aspect marker, 咧 [lɛ⁰] behaves like the durative aspect marker *zhe* 着 in Mandarin Chinese, occurring in the post-verbal position to indicate a continuing state or situation denoted by the verb/verb phrase. Verbs preceding 咧 [lɛ⁰] are usually those denoting states or actions that can last for a certain amount of time, as exemplified in (18).

- | | | | | | | | |
|--------|--|-------------------|-------------------|-------------------|-------------------|----------------------|-------------------|
| (18)a. | 门 | [[关] _ω | 咧 _C CG | b. | 伊 | [[倚] _ω | 咧 _C CG |
| | mouŋ | [[kuoŋ] | lɛ] | | ʔi | [[k ^h iɛ] | lɛ] |
| | door | close | DUR | | he | stand | DUR |
| | ‘The door is closed.’ | | | | ‘He is standing.’ | | |
| c. | 车 | 里 | [[坐] _ω | 咧 _C CG | 两 | 隻 | 依 |
| | ts ^h ia | tiɛ | [[soy] | lɛ] | lan | tsiɛ? | nøyŋ |
| | car | inside | sit | DUR | two | Cl | people |
| | ‘There are two people sitting in the car.’ | | | | | | |

In addition, similar to *zhe* 着 in Mandarin Chinese, the durative aspect marker 咧 [lɛ⁰] can occur between two verbs. In the “V₁ 咧 V₂” construction in the Fuzhou dialect, 咧 [lɛ⁰] attaches to the preceding verb (V₁) and indicates that the event

denoted by the following verb (V_2) happens in the state of “ V_1 -ing”. This can be illustrated by examples in (19).

- (19)a. [[坐]_ω 吼_C]CG 讲
 [[soy] lɛ] kouŋ
 sit DUR speak
 ‘to speak sitting down’
- b. [[倚]_ω 吼_C]CG 等
 [[k^hiɛ] lɛ] tiŋ
 stand DUR wait
 ‘to wait standing’
- c. 目珠 [[擘]_ω 吼_C]CG 睏
 møyʔ tsiu [[paʔ] lɛ] k^houŋ
 eye open DUR sleep
 ‘to sleep with eyes open’

Moreover, the durative aspect marker 吼 [lɛ⁰] can be used in an imperative sentence, as in (20).

- (20)a. [[记]_ω 吼_C]CG 通知 伊
 [[kei] lɛ] t^huŋ ti ʔi
 remember DUR inform he
 ‘Remember to inform him.’
- b. 汝 [[倚]_ω 吼_C]CG
 ny [[k^hiɛ] lɛ]
 you stand DUR
 ‘You, stand there!’

5.3.4.2 Experiential aspect markers 过 [kuo²¹³] and 着 [tuo⁵]

Enclitics 过 [kuo²¹³] and 着 [tuo⁵] in the Fuzhou dialect are both experiential aspect markers, which occur following the verb on their left. In the Fuzhou dialect, 过 [kuo²¹³] means ‘to pass, to go through’ as a verb, and ‘excessively’ as an adverb. 着 [tuo⁵] is more versatile and can be used as a verb meaning ‘to be in’, as an

auxiliary verb meaning ‘have to’, and as a preposition meaning ‘in, at’. In contrast, as enclitics, the morpho-syntactic function of 过 [kuo²¹³] and 着 [tuo⁵] is similar to that of the Mandarin experiential aspect marker *guo* 过, indicating the past experience of the event or action denoted by the preceding verb. Experiential aspect markers 过 [kuo²¹³] and 着 [tuo⁵] are interchangeable in the Fuzhou dialect. According to Li & Liang (2001), the only difference between these two aspect markers is that 着 [tuo⁵] is more often used by the old generations while 过 [kuo²¹³] is more often used by the younger generations. 过 [kuo²¹³] may be adopted from the correspondent *guo* 过 in Mandarin Chinese. Examples of 过 [kuo²¹³] and 着 [tuo⁵] are presented as follows.

- (21)a. 我 [[去]_ω 过/着 C]CG 天津
 ŋuai [[k^ho] kuo/tuo[?]] t^hiɛŋ kiŋ
 I go EXP Tianjin
 ‘I have been to Tianjin before.’
- b. 伊 [[食]_ω 过/着 C]CG 鳗鱼
 ʔi [[siɛ[?]] kuo/tuo[?]] muanŋ ŋy
 he eat EXP eel
 ‘He has eaten eels before.’

5.3.4.3 Perfective aspect marker 咧 [lɛ⁰]

There are two perfective aspect markers in the Fuzhou dialect, 咧 [lɛ⁰] and 去 [k^ho⁰] (cf. Chen 1998, Feng 1998, among others). As the perfective aspect marker, 咧 [lɛ⁰] is recorded as 嘞 [lɛ⁰] in Chen (1998) and Lin (2002) while as 咧 [lɛ⁰] in most

literature (cf. Zheng 1988b, Li et al 1994, Feng 1998, Li 1998, among others). Here I follow most literature and mark this perfective aspect marker as 吼 [lɛ⁰]. Similar to the perfective aspect marker *le* 了 in Mandarin Chinese, both 吼 [lɛ⁰] and 去 [k^ho⁰] attach to the preceding verb/verb phrase and indicate the completion of actions. Their morpho-syntactic distributions, nevertheless, are not the same. Generally speaking, 吼 [lɛ⁰] occurs after the verb and is followed by other elements such as the object or the complement. In contrast, 去 [k^ho⁰] can appear after a bare verb or a verb-complement structure (cf. Chen 1998; see Section 5.3.4.4 for more details). Examples of the perfective aspect marker 吼 [lɛ⁰] in the Fuzhou dialect are presented as follows.

(22) V₁ 吼 (O₁) V₂ (O₂)

- a. 伊 [[食]_ω 吼_C]CG 暝 马上 去 睏
 ʔi [[siɛʔ] lɛ] maŋ ma suoŋ k^ho k^houŋ
 he eat PERF dinner immediately go sleep
 ‘He went to sleep immediately after eating the dinner.’
- b. 我 [[买]_ω 吼_C]CG 两 瓶 酒 送 丈依
 ŋuai [[mɛ] lɛ] laŋ piŋ tsiu soŋ tuoŋ nøyŋ
 I buy PERF two Cl wine give father-in-law
 ‘I bought two bottles of wine to give my father-in-law.’
- c. 汝 [[看]_ω 吼_C]CG 固 想 看
 ny [[k^haŋ] lɛ] kou suoŋ k^haŋ
 you watch PERF still think watch
 ‘You will want to watch it again after you watch it.’

(23) V+嘞+Frequency Phrase/Duration Phrase

- a. 故事 [[讲]_ω 嘞_C]CG 几 十 回
 kou sɔy [[koun] lɛ] kui sei? xui
 story speak PERF several ten times
 ‘told the story dozens of times’
- b. [[困]_ω 嘞_C]CG 大 半 日
 [[k^houŋ] lɛ] tuai puan ni?
 sleep PERF big half day
 ‘slept for most of the day’

5.3.4.4 Perfective aspect marker 去 [k^ho⁰]

The other perfective aspect marker in the Fuzhou dialect is recorded as 咯 in Chen (1998), but as 去 in most literature (e.g., Feng 1998, Li & Liang 2001, Li 2002, among others). I adopt the character used in most literature in this study. The correspondent full form of 去 in Fuzhou takes a *yinqu* tone and means ‘to go’. The enclitic 去 [k^ho⁰], which bears a neutral tone, occurs right after a bare verb or a verb-complement structure, indicating the completion of the action. If the verb originally takes an object and the object has to be mentioned in the sentence, the object should be advanced to the topic position (cf. Chen 1998). According to Li (2002), this perfective aspect marker usually indicates an unfavorable result of the action denoted by the verb/verb-complement structure. Examples of 去 [k^ho⁰] are presented as follows.

(24)a. 老 王 今 旦 [[病]_ω 去 C]CG

lo ʔuoŋ kiŋ taŋ [[paŋ] k^ho]

old Wang today sick PERF

‘Old Wang is sick today.’

b. 药 食 [[绽]_ω 去 C]CG

yoʔ siεʔ [[taŋ] k^ho]

medicine eat wrong PERF

‘took the wrong medicine’

c. 水 缸 碰 [[必]_ω 去 C]CG

tsui kouŋ p^houŋ [[peiʔ] k^ho]

water jar hit crack PERF

‘The water jar was hit and developed a crack.’

5.3.4.5 Sentence final particle 了 [lau³¹]

Another Fuzhou enclitic that is used as an aspect marker is the sentence final particle 了 [lau³¹], which does not have a correspondent full form. It occurs at the end of a sentence or a clause, indicating a change in the state or situation. Thus it by and large corresponds to the Mandarin sentence final particle *le* 了 which is considered as a perfect aspect marker indicating a change of state or a currently relevant state (CRS) (cf. Li & Thompson 1981, Sun 2006). 了 [lau³¹] can be used as the only aspect marker in a sentence/clause, as in (25). It can also coexist with other

aspects markers discussed above, as in (26) (cf. Chen 1998). It is noteworthy that the violation of Nonrecursivity is allowed in cases like (26a, b, d).⁴⁶

- (25)a. 邊 [[雨]_ω 了 C]CG b. 暝 [[好]_ω 了 C]CG
 touŋ [[ʔy] lau] maŋ [[xo] lau]
 fall rain CRS dinner good CRS
 ‘It is raining.’ ‘The dinner is ready.’

- (26)a. 門 [[[开]_ω 咧 C]CG 了 C]CG
 mouŋ [[[k^hui] lɛ] lau]
 door open DUR CRS
 ‘The door is already open.’
- b. 只 本 书 我 [[[看]_ω 过 C]CG 了 C]CG
 tsi puoŋ tsy ŋuai [[[k^haŋ] kuo] lau]
 this Cl book I read EXP CRS
 ‘I have read this book.’
- c. 故事 [[讲]_ω 咧 C]CG 几 十 [[回]_ω 了 C]CG
 kou sɔy [[kouŋ] lɛ] kui sei? [[xui] lau]
 story speak PERF several ten times CRS
 ‘have told the story for dozens of times’
- d. 天 [[[暗]_ω 去 C]CG 了 C]CG
 t^hiɛŋ [[[ʔaŋ] k^ho] lau]
 sky dark PERF CRS
 ‘The sky has become dark.’

⁴⁶ The violation of Nonrecursivity and other constraints entailed in the Strict Layer Hypothesis in cases of the clitic group in the Fuzhou dialect will be discussed in detail in Chapter VII.

5.3.4.6 Delimitative aspect marker 囍 [la²⁴²]

The enclitic 囍 [la²⁴²] in the Fuzhou dialect is used as the delimitative aspect marker, which indicates that a situation or event lasts only a short time (cf. Chen 1998, Li & Liang 2001, Li 2002, among others). It is generally suggested in the literature that 囍 [la²⁴²] is derived from the fusion of 蜀 [suoʔ⁵] ‘one’ and 下 [a²⁴²] ‘a classifier for instances/occasions’ (cf. Chen 1998, Li & Liang 2001, Li 2002, among others). Taking into consideration the pronunciation of 囍 [la²⁴²], nonetheless, I assume that it would be more reasonable to consider 囍 [la²⁴²] as the fusion of the sandhi form of 蜀 [suoʔ⁵] ‘one’ and 下 [a²⁴²], since the initial *s-* of 蜀 is usually changed into *l-* in a sandhi context following the CL rule (unless it is preceded by the codas *-ŋ* and *-k*). Otherwise, it would be difficult to account for the origin of the initial *l-* of 囍 [la²⁴²]. Like other aspect markers mentioned above, 囍 [la²⁴²] occurs on the right of the verb, as exemplified in (27).

- (27)a. 汝 [[坐]_ω 囍 C]CG b. [[歇]_ω 囍 C]CG 介 试
ny [[soy] la] [[xyoʔ] la] kai ts^hei
you sit DLM rest DLM again try
‘You sit awhile.’ ‘Take a rest and then try it again.’
- c. 伊 书 [[看]_ω 囍 C]CG 就 [[瞌]_ω 去 C]CG
ʔi tsy [[k^haŋ] la] tsiu [[ts^huŋ] k^ho]
he book read DLM immediately sleepy PERF
‘He became sleepy as soon as he read the book for minutes.’

5.3.5 Interrogative particles 无 [mo⁵¹], 未 [mui²⁴²], and 儻 [ma²⁴²]

In the Fuzhou dialect, there are three negative particles which can be used in the sentence-final position as interrogative particles, namely 无 [mo⁵¹], 未 [mui²⁴²], and 儻 [ma²⁴²]. When placed at the end of questions, they can either maintain their citation tone or acquire the neutral tone (cf. Li 2002). As negative particles, they all occur before the verb or verb phrase, and 无 [mo⁵¹] negates general actions or events, 未 [mui²⁴²] negates actions or events that have occurred in the past, and 儻 [ma²⁴²] negates the ability or possibility of doing something. As interrogative particles, they are used in questions with different functions which basically correspond to their functions as negatives. Examples of 无 [mo⁵¹], 未 [mui²⁴²], and 儻 [ma²⁴²] are presented as follow.

(28)a. 伊 有 买 [[卵糕]_ω 无 C]CG?

ʔi ʔou mɛ [[louŋ ko] mo]

he have buy cake Qu

‘Has he bought a cake?’

b. 伊 买 [[卵糕]_ω 未 C]CG?

ʔi mɛ [[louŋ ko] mui]

he buy cake Qu

‘Did he buy a cake?’

c. 伊 会 买 [[卵糕]_ω 儻 C]CG?

ʔi ʔa mɛ [[louŋ ko] ma]

he will buy cake Qu

‘Will he buy a cake?’

5.3.6 Post-verbal particles

In addition to post-verbal aspect markers discussed in Section 5.3.4, there are other three enclitics that occur right after the verb in the Fuzhou dialect: 𪗇 [kaʔ⁰], 𪗈 [kau²¹³], and 𪗉 [lɛ⁰]. These three enclitics do not indicate the developmental status of the event. In order to distinguish them from the post-verbal aspect markers, they are named post-verbal particles (PVP) in this dissertation.

5.3.6.1 Post-verbal particle 𪗇 [kaʔ⁰]

Although they occur right after the verb, 𪗇 [kaʔ⁰] and 𪗈 [kau²¹³] are different from typical post-verbal resultative complements in Fuzhou such as 完 [ʔuon⁵¹] ‘finish’ in 听完 [t^hiaŋ⁴⁴ ʔuon⁵¹] ‘finish listening’ and 饱 [pa³¹] ‘full’ in 食饱 [siɛ⁵ pa³¹] ‘have eaten to one’s fill’. Resultative complements like 完 [ʔuon⁵¹] and 饱 [pa³¹] fail to undergo the CL rule when they occur right after the verb (see Chapter VI for more details). By contrast, when enclitics 𪗇 [kaʔ⁰] and 𪗈 [kau²¹³] attach to the verb, they usually undergo CL and have their sandhi initials (to be discussed in more detail in Section 5.4). Hence I assume that enclitics 𪗇 [kaʔ⁰] and 𪗈 [kau²¹³] should be distinguished from typical resultative complements in the Fuzhou dialect.

The full form of 𪗇 [kaʔ⁰] takes a high entering tone, thus marked as 𪗇 [kaʔ⁵]. The full form 𪗇 [kaʔ⁵] is used as a preposition in the Fuzhou dialect to introduce time and location before the verb or verb phrase, meaning “in, at”. The reduced form, namely the enclitic 𪗇 [kaʔ⁰], has the same meaning and also introduces time and location of the action or event, but only occurs after the verb or verb phrase. The morpho-syntactic functions of 𪗇 [kaʔ⁰] and 𪗇 [kaʔ⁵] are similar to those of *zai* 在

in Mandarin Chinese (cf. Chen 1998, Li & Liang 2001, among others). Examples of the post-verbal particle 敲 [kaʔ⁰] are presented as in (29).

- (29)a. [[定]_ω 敲 C]CG 今旦 下昼
 [[tiaŋ] kaʔ] kiŋ taŋ ʔa tau
 set PVP today afternoon
 ‘to be scheduled this afternoon’
- b. [[安排]_ω 敲 C]CG 明旦
 [[ʔaŋ pɛ] kaʔ] miŋ taŋ
 arrange PVP tomorrow
 ‘to be scheduled tomorrow’
- c. 眠床 [[排]_ω 敲 C]CG 厅中
 miŋ ts^houŋ [[pɛ] kaʔ] t^hiaŋ touŋ
 bed put PVP drawing room
 ‘The bed is put in the drawing room.’
- d. 通知 [[贴]_ω 敲 C]CG 外斗
 t^huŋ ti [[t^haiʔ] kaʔ] ŋiɛ tau
 notice paste PVP outside
 ‘The notice is posted outside.’

5.3.6.2 Post-verbal particle 遘 [kau²¹³]

遘 [kau²¹³] in the Fuzhou dialect corresponds to the Mandarin *dao* 到 (cf. Chen 1998, among others). It can be used as a verb, which means “to arrive”. When used as a post-verbal particle, in contrast, 遘 [kau²¹³] has multiple functions. “V-遘” in the Fuzhou dialect can be followed by object nouns/noun phrases, place words, time words, and even sentences/clauses indicating the result/degree, as exemplified in (30).

- (30)a. [[收]_ω 邁 C]CG [[汝]_ω 其 C]CG 批 b. [[行]_ω 邁 C]CG 厝
 [[siu] kau] [[ny] ki] p^hiε [[kian] kau] ts^huo
 receive PVP you POSS letter walk PVP home
 ‘received your letter’ ‘to walk home’
- c. [[等]_ω 邁 C]CG 十 点
 [[tiŋ] kau] sei? teiŋ
 wait PVP ten o’clock
 ‘to wait until ten o’clock’
- d. [[做]_ω 邁 C]CG 逢依 都 满意
 [[tso] kau] xun nøyŋ tu muan ?ei
 do PVP everyone all satisfied
 ‘to do (something) and make everyone satisfied’

5.3.6.3 Post-verbal particle 咧 [lɛ⁰]

Different from the durative aspect marker 咧 [lɛ⁰] and the perfective aspect marker 咧 [lɛ⁰], the post-verbal 咧 [lɛ⁰] does not signify the aspect. Instead, it is used to connect the verb and the descriptive complement indicating the result or manner of the action. The function of the post-verbal particle 咧 [lɛ⁰] is thus similar to the Mandarin descriptive complement marker *de* 得.

Generally speaking, the descriptive complement following the post-verbal particle 咧 [lɛ⁰] must contain more than one syllable. It could be the reduplicated form of adjectives, a phrase, or a sentence/clause (cf. Zheng 1988b), as exemplified in (31).

- (31)a. 衣裳 [[颂]_ω 吼_C]CG 破破 式
 ʔi suoŋ [[søyŋ] lɛ] p^huai p^huai sei?
 clothes wear PVP ragged ragged AdjR
 ‘The clothes are worn out.’
- b. [[看]_ω 吼_C]CG 野 清楚
 [[k^haŋ] lɛ] ʔia ts^hiŋ ts^hu
 look PVP very clear
 ‘saw (something) clearly’
- c. 伊 [[跳]_ω 吼_C]CG 蜀 身 都 是 汗
 ʔi [[t^hiu] lɛ] suoʔ siŋ tu sei kaŋ
 he jump PVP one body all be sweat
 ‘He jumped and were covered in sweat.’

5.3.7 Locative marker 吼 [lɛ⁰]

The enclitic 吼 [lɛ⁰] can also serve as the locative marker, changing a regular noun into a place word. 吼 [lɛ⁰] is different from localizers in the Fuzhou dialect such as 里 [tiɛ³¹], 边 [piɛŋ⁴⁴], and 斗 [tau²¹³], since the locative marker 吼 [lɛ⁰] never triggers the application of the TS rule on the preceding syllable (to be discussed in more detail in Section 5.4) while the syllable preceding localizers like 里 [tiɛ³¹], 边 [piɛŋ⁴⁴], and 斗 [tau²¹³] does undergo TS (for examples of Fuzhou localizers like 里 [tiɛ³¹], 边 [piɛŋ⁴⁴], and 斗 [tau²¹³], please see Zheng 1995). Examples of the locative marker 吼 [lɛ⁰] are presented as follows, in which 吼 [lɛ⁰] may have different meanings.

- (32)a. [[面]_ω 咧_C]CG
 [[meiŋ] lɛ]
 face LOC
 ‘on the face’
- b. [[车]_ω 咧_C]CG
 [[ts^hia] lɛ]
 car LOC
 ‘in the car’
- c. [[书]_ω 咧_C]CG
 [[tsy] lɛ]
 book LOC
 ‘in/on the book’
- d. [[碗_囧]_ω 咧_C]CG
 [[ʔuaŋ kiaŋ] lɛ]
 small bowl LOC
 ‘in the bowl’

5.3.8 Recursive clitic group with enclitics

In addition to examples in (26a, b, d), there are other cases in which the prosodic recursivity is allowed, as can be seen in (33).

- (33)a. 只 本 书 是 [[[我]_ω 其_C]CG 了_C]CG
 tsi puoŋ tsy sei [[[ŋuai] ki] lau]
 this Cl book be I NOM CRS
 ‘This book has become mine.’
- b. 汝 其 毛 屨 [[[车]_ω 咧_C]CG 了_C]CG
 ny ki noʔ ʔeiŋ [[[ts^hia] lɛ] lau]
 you POSS thing put car LOC CRS
 ‘Your things have been put in the car.’

5.3.9 Summary

So far, we have seen the brief picture of Fuzhou enclitics and their morpho-syntactic functions. Data presented in this section demonstrate that these elements in the Fuzhou dialect share some of the most common morpho-syntactic properties of clitics across languages: (a) they all belong to functional categories; (b) they never occur as the only element of an utterance and must attach to the adjacent prosodic unit on the left; (c) the meaning of the string of the host plus the enclitic is predictable from the meaning of the host and that of the enclitic; and (d) they can attach to material already containing the affix, as in (14c), (15c), (16e), and (32d), or the enclitic, as in (26a, b, d) and (33). Therefore, it is reasonable to consider these elements in the Fuzhou dialect as clitics. Regarding the classification of clitics, Fuzhou clitics discussed in this section are all enclitics since they all attach to the right of the host. According to the definition of the clitic group (CG) domain in (10), the group of the host plus the enclitic thus forms the clitic group (Type A) in this dialect. In Section 5.4, we will see that there are phonological phenomena characteristic only of the group of “host+enclitic”, namely, Type A clitic group in the Fuzhou dialect, which provides further evidence for the existence of enclitics and the clitic group in this dialect.

5.4 Phonological phenomena and Type A clitic group in the Fuzhou dialect

This section investigates the phonological behavior of the group of “host+enclitic”, namely, Type A clitic group in the Fuzhou dialect, with respect to the application of major Fuzhou phonological rules. It will be demonstrated that the

domain of Type A clitic group in Fuzhou has different phonological behavior from the domain of the prosodic word and the domain formed by phrasal-level groups. In other words, there are phonological phenomena that refer crucially to Type A clitic group, but not in any other context.

5.4.1 Phonological tone sandhi and Type A clitic group in the Fuzhou dialect

Chapter IV has shown that the phonological tone sandhi rule (TS) can apply within the domain formed by morpho-syntactic words, namely, the prosodic word domain, as exemplified in (34I). This rule can also apply to a string of sounds at the phrasal level, as exemplified in (34II), although it may be blocked under certain circumstances, as mentioned in Section 2.2.2.1 (to be discussed in more detail in Chapter VI). For the sake of brevity, only sandhi forms of tones are presented in the following examples in Section 5.4.1. Sandhi tones are marked in bold.

(34)I. Application of TS within the prosodic word domain

- a. 沙发 $sa^{44} xua\text{?}^{23} \rightarrow sa^{51} xua\text{?}^{23}$ ‘sofa’
 b. 老鼠 $lo^{31} ts^h y^{31} \rightarrow lo^{24} ts^h y^{31}$ ‘mouse’
 c. 暝晡 $ma\text{ŋ}^{51} puo^{44} \rightarrow ma\text{ŋ}^{44} puo^{44}$ ‘evening’

II. Application of TS at the phrasal level

- | | | | |
|---------------------------------------|---------------------|-------------------------------|----------------------|
| a. 食 | 饭 | b. 野 | 俊 |
| $si\epsilon\text{?}^5$ | $puo\text{ŋ}^{242}$ | $\text{?}ia^{31}$ | $tsou\text{ŋ}^{213}$ |
| $\rightarrow si\epsilon\text{?}^{21}$ | $puo\text{ŋ}^{242}$ | $\rightarrow \text{?}ia^{44}$ | $tsou\text{ŋ}^{213}$ |
| to eat | rice | very | beautiful |
| ‘to eat food’ | | ‘very beautiful’ | |

By contrast, as it has been noticed by a number of scholars, some elements in the Fuzhou dialect never cause the tone of the preceding syllable to undergo TS (cf. Wright 1983, Chan 1985, Chen 1998, Li 2002, among others). Compare two examples in (35). The position where TS fails to apply is marked with “#”.

(35)a.	旧	书	b.	旧	其	书
	kou ²⁴²	tsy ⁴⁴		kou ²⁴²	ki ⁰	tsy ⁴⁴
	→ kou ⁴⁴	tsy ⁴⁴		→ kou ²⁴² # ki ⁰		tsy ⁴⁴
	old	book		old	MOD	book
	‘old book’			‘old book’		

We can find that (35a) and (35b) have different phonological behavior in terms of the application of TS. In (35a), TS applies between 旧 ‘old’ and 书 ‘book’ and changes the tone of 旧 ‘old’ to the *yinping* tone, while TS is blocked in (35b), although these two examples have similar morpho-syntactic structure, namely the modifier-head structure.

It has been suggested by some scholars that the blocking of TS in cases like (35b) can be ascribed to the neutral tone carried by elements like 其 (cf. Chan 1985, Li 2002, among others). According to these scholars, there is no applicable phonological environment for TS if the non-first tone is a neutral tone. Nevertheless, it has been noticed that even elements bearing a non-neutral tone may consistently cause the blocking of TS, as exemplified in (36). Sandhi tones in question are marked in bold.

- | | |
|---|---|
| <p>(36)a. 悬悬 势</p> <p>keiŋ⁵¹ keiŋ⁵¹ siɛ²¹³</p> <p>→ keiŋ³¹ keiŋ⁵¹ # siɛ²¹³</p> <p>*keiŋ³¹ keiŋ²¹ siɛ²¹³</p> <p>tall tall AdjR</p> <p>‘rather tall’</p> | <p>b. 白白 势</p> <p>paŋ⁵ paŋ⁵ siɛ²¹³</p> <p>→ paŋ³¹ paŋ⁵ # siɛ²¹³</p> <p>*paŋ³¹ paŋ²¹ siɛ²¹³</p> <p>white white AdjR</p> <p>‘rather white’</p> |
| <p>c. 坐 囉</p> <p>soy²⁴² la²⁴²</p> <p>→ soy²⁴² # la²⁴²</p> <p>*soy⁵¹ la²⁴²</p> <p>sit DLM</p> <p>‘to sit awhile’</p> | <p>d. 歇 囉</p> <p>xyoŋ²³ la²⁴²</p> <p>→ xyoŋ²³ # la²⁴²</p> <p>*xyoŋ⁴⁴ la²⁴²</p> <p>rest DLM</p> <p>‘to take a rest’</p> |

Hence the blocking of TS in cases like (35b) and (36) cannot be simply ascribed to the tone of these elements. Based on the discussion in Section 5.3 and examples in (35b) and (36), we can find that elements that can trigger the blocking of TS in the Fuzhou dialect are actually enclitics. Thus I assume that Type A clitic group composed of the host plus the enclitic in this dialect cannot form the domain of application for TS. Specifically, TS is blocked between the host and the enclitic that attaches to it. This assumption is well supported by data from the Fuzhou dialect, as illustrated as follows.

(37) Blocking of TS in “host+possessive/modificational/nominalization marker 其 [ki⁰]”

- a. [[依妹]_ω 其 C]CG 衣裳
 [[ʔi⁴⁴ mui²¹³] ki⁰] ʔi⁴⁴ suon⁵¹
 → [[ʔi⁵¹ mui²¹³] # ki⁰] ʔi⁴⁴ suon⁵¹
 younger sister POSS clothes
 ‘younger sister’s clothes’
- b. [[旧]_ω 其 C]CG 书
 [[kou²⁴²] ki⁰] tsy⁴⁴
 → [[kou²⁴²] # ki⁰] tsy⁴⁴
 old MOD book
 ‘old book’
- c. [[我]_ω 其 C]CG
 [[ŋuai³¹] ki⁰]
 → [[ŋuai³¹] # ki⁰]
 I NOM
 ‘mine’

(38) Blocking of TS in “host + adjective reduplication marker”

- a. [[悬悬]_ω 势 C]CG
 [[keiŋ⁵¹ keiŋ⁵¹] sie²¹³]
 → [[keiŋ³¹ keiŋ⁵¹] # sie²¹³]
 *[[keiŋ³¹ keiŋ²¹] sie²¹³]
 tall tall AdjR
 ‘rather tall’
- b. [[白白]_ω 式 C]CG
 [[paʔ⁵ paʔ⁵] seiʔ²³]
 → [[paʔ³¹ paʔ⁵] # seiʔ²³]
 *[[paʔ³¹ paʔ²¹] seiʔ²³]
 white white AdjR
 ‘rather white’
- c. [[闲闲落落]_ω 喏 C]CG
 [[ʔeiŋ⁵¹ ʔeiŋ⁵¹ loʔ⁵ loʔ⁵] luoʔ²³]
 → [[ʔeiŋ²¹ ʔeiŋ²¹ loʔ³¹ loʔ⁵] # luoʔ²³]
 *[[ʔeiŋ²¹ ʔeiŋ²¹ loʔ³¹ loʔ²¹] luoʔ²³]
 easy/relaxing AdjR ‘very easy’

(39) Blocking of TS in “host + aspect marker”

I. Host + durative aspect marker 咧 [lɛ⁰]

- a. 门 [[关]_ω 咧_C]CG b. [[坐]_ω 咧_C]CG 讲
 mouŋ⁵¹ [[kuoŋ⁴⁴] lɛ⁰] [[soy²⁴²] lɛ⁰] kouŋ³¹
 → mouŋ⁵¹ [[kuoŋ⁴⁴] # lɛ⁰] → [[soy²⁴²] # lɛ⁰] kouŋ³¹
 door close DUR sit DUR speak
 ‘The door is closed.’ ‘to speak sitting down’

- c. 汝 [[倚]_ω 咧_C]CG
 ny³¹ [[k^hiɛ²⁴²] lɛ⁰]
 → ny³¹ [[k^hiɛ²⁴²] # lɛ⁰]
 you stand DUR
 ‘You, stand there!’

II. Host + experiential aspect marker 过 [kuo²¹³] /着 [tuo⁵]

- a. [[去]_ω 过_C]CG 天津 b. [[食]_ω 着_C]CG 鳗鱼
 [[k^ho²¹³] kuo²¹³] t^hiɛŋ⁴⁴ kin⁴⁴ [[siɛ⁵] tuo⁵] muan⁵¹ ŋy⁵¹
 → [[k^ho²¹³] # kuo²¹³] t^hiɛŋ⁴⁴ kin⁴⁴ → [[siɛ⁵] # tuo⁵] muan³¹ ŋy⁵¹
 *[[k^ho⁵¹] kuo²¹³] t^hiɛŋ⁴⁴ kin⁴⁴ *[[siɛ³¹] tuo⁵] muan³¹ ŋy⁵¹
 go EXP Tianjin eat EXP eel
 ‘to have been to Tianjin before’ ‘to have eaten eels before.’

III. Host + perfective aspect marker 咧 [$l\epsilon^0$]

- a. [[食] ω 咧C]CG 喫 去 睏
 [[$si\epsilon^{\?5}$] $l\epsilon^0$] $maŋ^{51}$ k^ho^{213} $k^houŋ^{213}$
 → [[$si\epsilon^{\?5}$] # $l\epsilon^0$] $maŋ^{51}$ k^ho^{51} $k^houŋ^{213}$
 eat PERF dinner go sleep
 ‘to sleep after eating the dinner’

- b. [[睏] ω 咧C]CG 大 半 日
 [[$k^houŋ^{213}$] $l\epsilon^0$] $tuai^{242}$ $puan^{213}$ $ni^{\?5}$
 → [[$k^houŋ^{213}$] # $l\epsilon^0$] $tuai^{21}$ $puan^{44}$ $ni^{\?5}$
 sleep PERF big half day
 ‘slept more than half of the day’

IV. Host + perfective aspect marker 去 [k^ho^0]

- a. 老王 [[病] ω 去 C]CG
 lo^{242} $\?uonŋ^{51}$ [[$paŋ^{242}$] k^ho^0]
 → lo^{44} $\?uonŋ^{51}$ [[$paŋ^{242}$] # k^ho^0]
 old Wang sick PERF
 ‘Old Wang is sick.’
- b. 水缸 碰 [[必] ω 去 C]CG
 $tsui^{31}$ $kouŋ^{44}$ $p^houŋ^{242}$ [[$pei^{\?23}$] k^ho^0]
 → $tsui^{21}$ $kouŋ^{44}$ $p^houŋ^{242}$ [[$pei^{\?23}$] # k^ho^0]
 water jar hit crack PERF
 ‘The water jar was hit and developed a crack.’

V. Host + sentence final particle 了 [lau³¹]

- | | | | | | | |
|----|---------------------|---|-----|------------------------|--|-----|
| a. | 邊 | [[雨] _ω 了 c]CG | b. | 暝 | [[好] _ω 了 c]CG | |
| | touŋ ²⁴² | [[ʔy ²⁴²] lau ³¹] | | maŋ ⁵¹ | [[xo ³¹] lau ³¹] | |
| → | touŋ ⁵¹ | [[ʔy ²⁴²] # lau ³¹] | → | maŋ ⁵¹ | [[xo ³¹] # lau ³¹] | |
| | *touŋ ⁵¹ | [[ʔy ⁵¹] lau ³¹] | | *maŋ ⁵¹ | [[xo ²⁴] lau ³¹] | |
| | fall | rain | CRS | dinner | good | CRS |
| | 'It is raining.' | | | 'The dinner is ready.' | | |

VI. Host + delimitative aspect marker 囉 [la²⁴²]

- | | | | | | |
|----|--------------------------|---------------------|----|--------------------------|---------------------|
| a. | [[坐] _ω | 囉 c]CG | b. | [[歇] _ω | 囉 c]CG |
| | [[soy ²⁴²] | la ²⁴²] | | [[xyoʔ ²³] | la ²⁴²] |
| → | [[soy ²⁴²] # | la ²⁴²] | → | [[xyoʔ ²³] # | la ²⁴²] |
| | *[[soy ⁵¹] | la ²⁴²] | | *[[xyoʔ ⁴⁴] | la ²⁴²] |
| | sit | DLM | | rest | DLM |
| | 'to sit awhile' | | | 'to take a rest' | |

(40) Blocking of TS in "host + interrogative particle"

- | | | | | | | | |
|----|-------------------------------------|--|----|-------------------|--|----|----|
| a. | 伊 有 | [[去] _ω 无 c]CG? | b. | 伊 | [[去] _ω 未 c]CG? | | |
| | ʔi ⁴⁴ ʔou ²⁴² | [[k ^h o ²¹³] mo ⁵¹] | | ʔi ⁴⁴ | [[k ^h o ²¹³] mui ²⁴²] | | |
| → | ʔi ⁴⁴ ʔou ⁵¹ | [[k ^h o ²¹³] # mo ⁵¹] | → | ʔi ⁴⁴ | [[k ^h o ²¹³] # mui ²⁴²] | | |
| | *ʔi ⁴⁴ ʔou ²¹ | [[k ^h o ⁴⁴] mo ⁵¹] | | *ʔi ⁴⁴ | [[k ^h o ⁵¹] mui ²⁴²] | | |
| | he | have | go | Qu | he | go | Qu |
| | 'Is he going?' | | | | 'Has he gone?' | | |

- c. 伊 会 [[去]_ω 膾C]CG?
 ʔi⁴⁴ ʔa²⁴² [[k^ho²¹³] ma²⁴²]
 → ʔi⁴⁴ ʔa⁵¹ [[k^ho²¹³] # ma²⁴²]
 *ʔi⁴⁴ ʔa²¹ [[k^ho⁵¹] ma²⁴²]
 he will go Qu
 ‘Will he go?’

(41) Blocking of TS in “host + post-verbal particle”

I. Host + post-verbal article 敲 [kaʔ⁰]

- | | |
|---|---|
| a. [[定] _ω 敲 C]CG 今旦 | b. [[排] _ω 敲 C]CG 厅中 |
| [[tian ²⁴²]kaʔ ⁰] kin ⁴⁴ tan ²¹³ | [[pɛ ⁵¹] kaʔ ⁰] t ^h ian ⁴⁴ touŋ ⁴⁴ |
| → [[tian ²⁴²]#kaʔ ⁰] kin ⁵¹ tan ²¹³ | → [[pɛ ⁵¹] # kaʔ ⁰] t ^h ian ⁴⁴ touŋ ⁴⁴ |
| set PVP today | put PVP drawing room |
| ‘to be scheduled today’ | ‘to be put in the drawing room’ |

II. Host + post-verbal article 遘 [kau²¹³]

- a. [[收]_ω 遘 C]CG [[汝]_ω 其 C]CG 批
- [[siu⁴⁴] kau²¹³] [[ny³¹] ki⁰] p^hiɛ⁴⁴
- [[siu⁴⁴] #kau²¹³] [[ny³¹] # ki⁰] p^hiɛ⁴⁴
- *[[siu⁵¹] kau²¹³] [[ny³¹] ki⁰] p^hiɛ⁴⁴
- receive PVP you POSS letter
- ‘received your letter’

- b. [[等]_ω 遛 C]CG 十 点
 [[tiŋ³¹] kau²¹³] sei⁵ teiŋ³¹
 → [[tiŋ³¹] #kau²¹³] sei³¹ teiŋ³¹
 *[[tiŋ⁴⁴] kau²¹³] sei³¹ teiŋ³¹
 wait PVP ten o'clock
 ‘to wait until ten o'clock’

III. Host + post-verbal article 咧 [lɛ⁰]

- a. [[看]_ω 咧C]CG 野 清楚
 [[k^han²¹³] lɛ⁰] ʔia³¹ ts^hiŋ⁴⁴ ts^hu³¹
 → [[k^han²¹³] # lɛ⁰] ʔia²¹ ts^hiŋ⁵¹ ts^hu³¹
 look PVP very clear
 ‘saw (something) clearly’
- b. [[跳]_ω 咧C]CG 蜀 身 都 是 汗
 [[t^hiu²¹³] lɛ⁰] suo⁵ siŋ⁴⁴ tu⁴⁴ sei²⁴² kan²⁴²
 → [[t^hiu²¹³] # lɛ⁰] suo⁴⁴ siŋ⁴⁴ tu²¹ sei⁵¹ kan²⁴²
 jump PVP one body all be sweat
 ‘jump to be covered in sweat’

(42) Blocking of TS in “host + locative marker 咧 [lɛ⁰]”

- | | |
|---|--|
| a. [[面] _ω 咧C]CG | b. [[车] _ω 咧C]CG |
| [[meiŋ ²¹³] lɛ ⁰] | [[ts ^h ia ⁴⁴] lɛ ⁰] |
| → [[meiŋ ²¹³] # lɛ ⁰] | → [[ts ^h ia ⁴⁴] # lɛ ⁰] |
| face LOC | car LOC |
| ‘on the face’ | ‘in the car’ |

(43) Blocking of TS in recursive clitic group with enclitics

- a. 门 [[[开]_ω 咧_C]CG 了_C]CG
 mouŋ⁵¹ [[[k^hui⁴⁴] lɛ⁰] lau³¹]
 → mouŋ⁵¹ [[[k^hui⁴⁴] # lɛ⁰] # lau³¹]
 door open DUR CRS
 ‘The door is already open.’
- b. 我 [[[看]_ω 过_C]CG 了_C]CG
 ŋuai³¹ [[[k^haŋ²¹³] kuo²¹³] lau³¹]
 → ŋuai³¹ [[[kaŋ²¹³] # kuo²¹³]# lau³¹]
 *ŋuai³¹ [[[k^haŋ²¹] kuo⁵¹] lau³¹]
 I see EXP CRS
 ‘I have seen (that).’
- c. 只 本 书 是 [[[我]_ω 其_C]CG 了_C]CG
 tsi³¹ puoŋ³¹ tsy⁴⁴ sei²⁴² [[[ŋuai³¹] ki⁰] lau³¹]
 → tsi²⁴ puoŋ³¹ tsy⁴⁴ sei⁵¹ [[[ŋuai³¹] # ki⁰] # lau³¹]
 this Cl book be I NOM CRS
 ‘This book has become mine.’

From examples in (37-43), we can find that TS consistently fails to apply within the domain formed by Type A clitic group composed of the host plus the enclitic in the Fuzhou dialect. Thus, one of the most distinctive phonological properties of Type A clitic group in this dialect is the obligatory blocking of the TS rule between the host

and the enclitic CG-internally, which is distinct from the prosodic word and strings of sounds at the phrasal level.

5.4.2 Final change and Type A clitic group in the Fuzhou dialect

As discussed in Section 2.2.2.2, final change (FC) is a tonally-conditioned rule in the Fuzhou dialect, according to which all the Group B variants of alternating finals with underlying tones 213, 242, and 23 should be changed into their Group A counterparts in a sandhi context. In Chapter II and Chapter IV, we have seen that this rule obligatorily applies within the prosodic word domain, and can also apply with the domain formed by certain types of phrasal-level strings (to be discussed in more detail in Chapter VI), as exemplified in (44). Sandhi finals are marked in bold.

(44)I. Application of FC within the prosodic word domain

- a. 熨斗 $\text{ʔou}^{23} \text{tau}^{31} \rightarrow \text{ʔu}^{24} \text{tau}^{31}$ ‘iron (for clothes)’
 b. 裤头 $\text{k}^{\text{h}}\text{ou}^{213} \text{t}^{\text{h}}\text{au}^{51} \rightarrow \text{k}^{\text{h}}\mathbf{u}^{44} \text{t}^{\text{h}}\text{au}^{51}$ ‘trouser waist’

II. Application of FC at the phrasal level

- | | | | |
|--|---------------------|---|--------------------------|
| a. 旧 | 书 | b. 爱 | 食 |
| kou^{242} | tsy^{44} | ʔoy^{213} | $\text{si}\epsilon^{25}$ |
| $\rightarrow \mathbf{k}^{\text{u}^{44}}$ | $= \text{tsy}^{44}$ | $\rightarrow \text{ʔ}\mathbf{\text{oy}}^{44}$ | $\text{si}\epsilon^{25}$ |
| old | book | love | eat |
| ‘old book’ | | ‘to like to eat’ | |

Nevertheless, since FC is a tonally-conditioned rule that occurs along with tone sandhi rules, it must apply only within a domain where tone sandhi can occur. Since

Type A clitic group in the Fuzhou dialect cannot serve as the domain of application for TS (it is clearly not the domain of application for MTS either since MTS only applies to some prosodic words formed through morphological reduplication), as discussed in Section 5.4.1, it is reasonable to assume that Type A clitic group is not the domain of application for FC. This assumption is well supported by empirical evidence from Fuzhou, as shown in the following examples, where the blocking of TS and FC is denoted with “#”. Sandhi finals in question are marked in bold.

(45) Blocking of FC in “host+possessive/modificational/nominalization marker 其 [ki⁰]”

- | | |
|--|---|
| <p>a. [[店]_ω 其 C]CG 门</p> <p>[[taiŋ²¹³] ki⁰] muoŋ⁵¹</p> <p>→ [[taiŋ²¹³]# ki⁰] muoŋ⁵¹</p> <p>*[[teiŋ²¹³] ki⁰] muoŋ⁵¹</p> <p>store POSS door</p> <p>‘the door of the store’</p> | <p>b. [[旧]_ω 其 C]CG 书</p> <p>[[kou²⁴²] ki⁰] tsy⁴⁴</p> <p>→ [[kou²⁴²]# ki⁰] tsy⁴⁴</p> <p>*[[ku²⁴²] ki⁰] tsy⁴⁴</p> <p>old MOD book</p> <p>‘old book’</p> |
| <p>c. [[竹]_ω 其 C]CG</p> <p>[[tøy²³] ki⁰]</p> <p>→ [[tøy²³]# ki⁰]</p> <p>*[[ty²³] ki⁰]</p> <p>bamboo NOM</p> <p>‘what is made of bamboo’</p> | |

(46) Blocking of FC in “host + adjective reduplication marker”

- a. [[碎碎]_ω 势 C]CG b. [[慢慢]_ω 式 C]CG
- [[ts^hoy²¹³ ts^hoy²¹³] siɛ²¹³] [[main²⁴² main²⁴²] sei²³]
- [[ts^høy⁵¹ ts^hoy²¹³] # siɛ²¹³] → [[meiŋ⁵¹ main²⁴²] # sei²³]
- *[[ts^høy⁵¹ ts^høy⁵¹] siɛ²¹³] *[[meiŋ⁵¹ meiŋ⁵¹] sei²³]
- shattered shattered AdjR slow slow AdjR
- ‘very shattered’ ‘very slow’
- c. [[清清]_ω 喏 C]CG
- [[ts^heiŋ²¹³ ts^heiŋ²¹³] luo²³]
- [[ts^hiŋ⁵¹ ts^heiŋ²¹³] # luo²³]
- *[[ts^hiŋ⁵¹ ts^hiŋ⁵¹] luo²³]
- cold cold AdjR
- ‘very cold’

(47) Blocking of FC in “host + aspect marker”

- I. Host + durative aspect marker 咧 [lɛ⁰]
- a. [[坐]_ω 咧C]CG 讲
- [[soy²⁴²] lɛ⁰] kouŋ³¹
- [[soy²⁴²] # lɛ⁰] kouŋ³¹
- *[[søy²⁴²] # lɛ⁰] kouŋ³¹
- sit DUR speak
- ‘to speak sitting down’

II. Host + experiential aspect marker 过 [kuo²¹³] / 着 [tuo⁵]

- a. [[试]_ω 过 C]CG 只 块 衣裳
 [[ts^hei²¹³] kuo²¹³] tsi³¹ toy²¹³ ʔi⁴⁴ suon⁵¹
 → [[ts^hei²¹³] # kuo²¹³] tsi⁴⁴ toy²¹³ ʔi⁴⁴ suon⁵¹
 *[[ts^hi⁵¹] kuo²¹³] tsi⁴⁴ toy²¹³ ʔi⁴⁴ suon⁵¹
 try EXP this Cl clothes
 ‘to have tried this piece of clothes’

- b. [[办]_ω 着 C]CG 护照
 [[paiŋ²⁴²] tuo⁵] xou²⁴² tsiu²¹³
 → [[paiŋ²⁴²] # tuo⁵] xu⁵¹ tsiu²¹³
 *[[peiŋ⁴⁴] tuo⁵] xu⁵¹ tsiu²¹³
 do EXP passport
 ‘to have applied for a passport’

III. Host + perfective aspect marker 咧 [lɛ⁰]

- a. [[睏]_ω 咧C]CG 大 半 日
 [[k^houŋ²¹³] lɛ⁰] tuai²⁴² puan²¹³ ni⁵
 → [[k^houŋ²¹³] # lɛ⁰] tuai²¹ puan⁴⁴ ni⁵
 *[[k^huŋ²¹³] lɛ⁰] tuai²¹ puan⁴⁴ ni⁵
 sleep PERF big half day
 ‘slept for most of the day’

IV. Host + perfective aspect marker 去 [k^ho⁰]

- a. 水缸 碰 [[必]_ω 去 C]CG
 tsui³¹ kouŋ⁴⁴ p^houŋ²⁴² [[peiʔ²³] k^ho⁰]
 → tsui²¹ kouŋ⁴⁴ p^houŋ²⁴² [[peiʔ²³] # k^ho⁰]
 *tsui²¹ kouŋ⁴⁴ p^houŋ²⁴² [[piʔ²³] k^ho⁰]
 water jar hit crack PERF

‘The water jar was hit and developed a crack.’

V. Host + sentence final particle 了 [lau³¹]

- a. 伊 [[出]_ω 了 C]CG
 ʔi⁴⁴ [[ts^houʔ²³] lau³¹]
 → ʔi⁴⁴ [[ts^houʔ²³] # lau³¹]
 *ʔi⁴⁴ [[ts^huʔ⁵¹] lau³¹]
 he go out CRS

‘He has gone out.’

VI. Host + delimitative aspect marker 囉 [la²⁴²]

- a. [[坐]_ω 囉 C]CG
 [[soy²⁴²] la²⁴²]
 → [[soy²⁴²] # la²⁴²]
 *[[søy⁵¹] la²⁴²]
 sit DLM

‘to sit awhile’

(48) Blocking of FC in “host + interrogative particle”

a. 伊 有 [[出]_ω 无 C]CG?

ʔi⁴⁴ ʔou²⁴² [[ts^houʔ²³] mo⁵¹]

→ ʔi⁴⁴ ʔu⁵¹ [[ts^houʔ²³] # mo⁵¹]

*ʔi⁴⁴ ʔu²¹ [[ts^huʔ⁴⁴] mo⁵¹]

he have go out Qu

‘Is he going out?’

b. 伊 [[出]_ω 未 C]CG?

ʔi⁴⁴ [[ts^houʔ²³] mui²⁴²]

→ ʔi⁴⁴ [[ts^houʔ²³] # mui²⁴²]

*ʔi⁴⁴ [[ts^huʔ⁵¹] mui²⁴²]

he go out Qu

‘Did he go out?’

c. 伊 会 [[出]_ω 𠵼 C]CG?

ʔi⁴⁴ ʔa²⁴² [[ts^houʔ²³] ma²⁴²]

→ ʔi⁴⁴ ʔa⁵¹ [[ts^houʔ²³] # ma²⁴²]

*ʔi⁴⁴ ʔa²¹ [[ts^huʔ⁵¹] ma²⁴²]

he will go out Qu

‘Will he go out?’

(49) Blocking of FC in “host + post-verbal particle”

a. 通知 [[贴]_ω 𠵼 C]CG 外斗

t^huŋ⁴⁴ ti⁴⁴ [[t^haiʔ²³] kaʔ⁰] ŋje²⁴² tau³¹

→ t^huŋ⁴⁴ ti⁴⁴ [[t^haiʔ²³] # kaʔ⁰] ŋje⁵¹ tau³¹

*t^huŋ⁴⁴ ti⁴⁴ [[t^heiʔ²³] kaʔ⁰] ŋje⁵¹ tau³¹

notice paste PVP outside

‘The notice is posted outside.’

- b. [[睏]_ω 遵 C]CG 十 点
 [[k^houŋ²¹³] kau²¹³] seiʔ⁵ teiŋ³¹
 → [[k^houŋ²¹³] # kau²¹³] seiʔ³¹ teiŋ³¹
 *[[k^huŋ²¹³] kau²¹³] seiʔ³¹ teiŋ³¹
 sleep PVP ten o'clock
 ‘to sleep until ten o'clock’

- c. 衣裳 [[颂]_ω 咧C]CG [[破破]_ω 式 C]CG
 ʔi⁴⁴ suoŋ⁵¹ [[søyŋ²⁴²] lɛ⁰] [[p^huai²¹³ p^huai²¹³] seiʔ²³]
 → ʔi⁴⁴ suoŋ⁵¹ [[søyŋ²⁴²] # lɛ⁰] [[p^huai⁵¹ p^huai²¹³] # seiʔ²³]
 *ʔi⁴⁴ suoŋ⁵¹ [[syŋ²⁴²] lɛ⁰] [[p^huai⁵¹ p^huai⁵¹] seiʔ²³]
 clothes wear PVP ragged ragged AdjR
 ‘The clothes are worn out.’

(50) Blocking of FC in “host + locative marker 咧 [lɛ⁰]”

- a. [[面]_ω 咧C]CG
 [[meiŋ²¹³] lɛ⁰]
 → [[meiŋ²¹³] # lɛ⁰]
 *[[miŋ²¹³] lɛ⁰]
 face LOC
 ‘on the face’

(51) Blocking of FC in recursive clitic group with proclitics

- a. 伊 羊毛裤 [[[颂]_ω 吼C]CG 了 C]CG
 ʔi⁴⁴ yon⁵¹ mo⁵¹ k^hou²¹³ [[[søyŋ²⁴²] lɛ⁰] lau³¹]
 → ʔi⁴⁴ yon²¹ mo²¹ k^hou²¹³ [[[søyŋ²⁴²] # lɛ⁰] # lau³¹]
 *ʔi⁴⁴ yon²¹ mo²¹ k^hou²¹³ [[[syŋ²⁴²] lɛ⁰] lau³¹]
 he woolen pant wear DUR CRS
 ‘He has been wearing the woolen pants already.’

- b. 我 [[[办]_ω 过 C]CG 了 C]CG
 ŋuai³¹ [[[pain²⁴²] kuo²¹³] lau³¹]
 → ŋuai³¹ [[[pain²⁴²] # kuo²¹³] # lau³¹]
 *ŋuai³¹ [[[pein⁵¹] kuo⁵¹] lau³¹]
 I do EXP CRS
 ‘I have done (that).’

- c. 伊 [[[瞌]_ω 了 C]CG 未 C]CG ?
 ʔi⁴⁴ [[[k^houŋ²¹³] lau³¹] mui²⁴²]
 → ʔi⁴⁴ [[[k^houŋ²¹³] # lau³¹] # mui²⁴²]
 *ʔi⁴⁴ [[[k^huŋ⁵¹] lau⁴⁴] mui²⁴²]
 he sleep CRS Qu
 ‘Did he go to sleep?’

It can be seen from the examples in (45-51) that FC is blocked in the Type A clitic group domain in the Fuzhou dialect. On the basis of the empirical evidence from the Fuzhou dialect, we can find that the second distinctive phonological property of

Type A clitic group in this dialect is the obligatory blocking of the FC rule between the host and the enclitic inside the clitic group domain. Since the FC rule obligatorily applies within the prosodic word domain and can also apply to phrasal-level strings of sounds, the phenomenon of the obligatory blocking of FC is characteristic only of the domain formed by Type A clitic group.

5.4.3 Initial consonant lenition and Type A clitic group in the Fuzhou dialect

Initial consonant lenition (CL) does not apply within the domain of the prosodic word formed by all types of Fuzhou morpho-syntactic words, although it refers to the prosodic word as its domain of application, as discussed in Chapter IV. For example, it does not apply to “diminutive” nouns and reduplicated forms of monosyllabic adjectives, as exemplified in (52), where the sandhi initials in question are marked in bold.

- (52)a. 杯杯 $\text{pui}^{44} \text{pui}^{44} \rightarrow \text{pui}^{31} \text{pui}^{44}$ $*\text{pui}^{31} \text{βui}^{44}$ ‘cup’
- b. 桶桶 $\text{t}^{\text{h}}\text{øyŋ}^{31} \text{t}^{\text{h}}\text{øyŋ}^{31} \rightarrow \text{t}^{\text{h}}\text{øyŋ}^{31} \text{t}^{\text{h}}\text{øyŋ}^{31}$ $*\text{t}^{\text{h}}\text{øyŋ}^{31} \text{løyŋ}^{31}$ ‘bucket’
- c. 白白 $\text{pa}^{\text{ʔ}5} \text{pa}^{\text{ʔ}5} \rightarrow \text{pa}^{\text{ʔ}31} \text{pa}^{\text{ʔ}5}$ $*\text{pa}^{\text{ʔ}31} \text{βa}^{\text{ʔ}5}$ ‘(very) white’
- d. 清清 $\text{ts}^{\text{h}}\text{eiŋ}^{213} \text{ts}^{\text{h}}\text{eiŋ}^{213} \rightarrow \text{ts}^{\text{h}}\text{in}^{51} \text{ts}^{\text{h}}\text{eiŋ}^{213}$ $*\text{ts}^{\text{h}}\text{in}^{51} \text{ʒeiŋ}^{213}$ ‘(very) cold’

In addition, the CL rule, as noticed by some scholars (e.g., Chen & Norman 1965a, Chan 1985, Shih 1986, among others), also fails to apply within the domain formed by some phrasal-level groups, as in (53). The position where CL is blocked is denoted by “#”.

- | | | | |
|--------|--|----|--|
| (53)a. | 食 饭 | b. | 买 锅 |
| | siɛʔ ⁵ puoŋ ²⁴² | | mɛ ³¹ kuo ⁴⁴ |
| | → siɛʔ ²¹ # puoŋ ²⁴² | | → mɛ ²¹ # kuo ⁴⁴ |
| | *siɛʔ ²¹ βuoŋ ²⁴² | | *mɛ ²¹ ʔuo ⁴⁴ |
| | eat rice | | buy pan |
| | ‘to eat food’ | | ‘to buy a pan’ |

By contrast, it has been reported in the literature that some elements in the Fuzhou dialect always undergo the process of CL (cf. Chen 1998, Li & Liang 2001, Li 2002, among others). For example:

- | | | | |
|--------|---|----|---|
| (54)a. | 汝 看 嘞 | b. | 买 过 了 |
| | ny ³¹ k ^h aj ²¹³ lɛ ⁰ | | mɛ ³¹ kuo ²¹³ lau ³¹ |
| | → ny ³¹ k ^h aj ²¹³ nɛ ⁰ | | → mɛ ³¹ ʔuo ²¹³ lau ³¹ |
| | you look DUR | | buy EXP CRS |
| | ‘You, look!’ | | ‘to have bought (something)’ |

Compare (54b) with (53b). We can find that (53b) and (54b) share the same phonological environment, namely, an open syllable followed by the initial *k*-. However, CL does not apply in (53b), and thus the initial *k*- of 锅 ‘pan’ remains unchanged. In contrast, the experiential aspect marker 过 in (54b) undergoes the CL rule, and thus the initial *k*- of 过 [kuo²¹³] is changed to the glottal stop (or zero initial).

Elements like 吼 [$l\epsilon^0$] and 过 [kuo^{213}] are enclitics in the Fuzhou dialect, according to the discussion in Section 5.3. A thorough investigation of Fuzhou data reveals that Type A clitic group formed by the host plus the enclitic serves as a domain of application for the CL rule in this dialect, which can be illustrated as follows.⁴⁷ Sandhi forms of initials within the clitic group are marked in bold.

(55) Application of CL in “host + possessive/modificational/nominalization marker 其 [ki^0]”

- | | |
|---|---|
| <p>a. [[我]ω 其 C]CG 书</p> <p>[[ηuai^{31} ki^0] tsy⁴⁴</p> <p>→ [[ηuai^{31} ηi^0] tsy⁴⁴</p> <p>I POSS book</p> <p>‘my book’</p> | <p>b. [[红]ω 其 C]CG 花</p> <p>[[$\eta \partial y \eta^{51}$ ki^0] xua⁴⁴</p> <p>→ [[$\eta \partial y \eta^{51}$ ηi^0] xua⁴⁴</p> <p>red MOD flower</p> <p>‘red flower’</p> |
| <p>c. [[食]ω 其 C]CG</p> <p>[[$sie\eta^5$ ki^0]</p> <p>→ [[$sie\eta^5$ ηi^0]</p> <p>eat NOM ‘what is edible (food)’</p> | |

(56) Application of CL in “host + adjective reduplication marker”

- | | |
|---|---|
| <p>a. [[悬悬]ω 势 C]CG</p> <p>[[$kei\eta^{51}$ $kei\eta^{51}$] sie²¹³]</p> <p>→ [[$kei\eta^{31}$ $kei\eta^{51}$] nie²¹³]</p> <p>tall tall AdjR</p> <p>‘rather tall’</p> | <p>b. [[白白]ω 式 C]CG</p> <p>[[$pa\eta^5$ $pa\eta^5$] sei²³]</p> <p>→ [[$pa\eta^{31}$ $pa\eta^5$] lei²³]</p> <p>white white AdjR</p> <p>‘rather white’</p> |
|---|---|

⁴⁷ Examples of “host + interrogative particle” are not presented in this subsection since all the three interrogative particles have the initial *m-*, which, as mentioned in Chapter II, always remains unchanged in a CL context.

- c. [[舒舒畅畅]_ω 啱 C]CG
 [[ts^hy⁴⁴ ts^hy⁴⁴ t^huoŋ²¹³ t^huoŋ²¹³]luoʔ²³]
 → [[ts^hy²¹ ʒy²¹ luoŋ⁵¹ nuoŋ²¹³] **nuoʔ²³**]
 comfortable AdjR
 ‘very comfortable’

(57) Application of CL in “host + aspect marker”

- I. Host + durative aspect marker 咧 [lɛ⁰]
- a. 门 [[关]_ω 咧C]CG
 mouŋ⁵¹ [[kuoŋ⁴⁴] lɛ⁰]
 → mouŋ⁵¹ [[kuoŋ⁴⁴] **nɛ⁰**]
 door close DUR
 ‘The door is closed.’
- II. Host + experiential aspect marker 过 [kuo²¹³] / 着 [tuoʔ⁵]
- a. [[去]_ω 过 C]CG 天津
 [[k^ho²¹³] kuo²¹³] t^hieŋ⁴⁴ kiŋ⁴⁴
 → [[k^ho²¹³] **ʔuo²¹³**] t^hieŋ⁴⁴ ŋiŋ⁴⁴
 go EXP Tianjin
 ‘to have been to Tianjin before’
- b. [[办]_ω 着 C]CG 护照
 [[pain²⁴²] tuoʔ⁵] hou²⁴² tsiu²¹³
 → [[pain²⁴²] **nuoʔ⁵**] hu⁵¹ ʒiu²¹³
 do EXP passport
 ‘to have applied for a passport’

III. Host + perfective aspect marker 咧 [$l\epsilon^0$]

- a. [[睏] ω 咧C]CG 大 半 日
 [[$k^h\text{ou}\eta^{213}$] $l\epsilon^0$] $tuai^{242}$ $puan^{213}$ $ni^{?5}$
 → [[$k^h\text{ou}\eta^{213}$] $n\epsilon^0$] $tuai^{21}$ βuan^{44} $ni^{?5}$
 sleep PERF big half day
 ‘slept more than half of the day’

IV. Host + perfective aspect marker 去 [$k^h o^0$]

- a. 老王 [[病] ω 去C]CG
 lo^{242} $\eta uo\eta^{51}$ [[$pa\eta^{242}$] $k^h o^0$]
 → lo^{44} $\eta uo\eta^{51}$ [[$pa\eta^{242}$] ηo^0]
 old Wang sick PERF
 ‘Old Wang is sick.’
- b. 水缸 碰 [[必] ω 去C]CG
 $tsui^{31}$ $kou\eta^{44}$ $p^h\text{ou}\eta^{242}$ [[$pei^{?23}$] $k^h o^0$]
 → $tsui^{21}$ $\eta ou\eta^{44}$ $p^h\text{ou}\eta^{242}$ [[$pei^{?23}$] ηo^0]
 water jar hit crack PERF
 ‘The water jar was hit and developed a crack.’

V. Host + sentence final particle 了 [lau^{31}]

- a. 伊生 [[生] ω 了C]CG
 ηi^{44} $sa\eta^{44}$ [[$kian^{31}$] lau^{31}]
 → ηi^{44} $sa\eta^{51}$ [[$kian^{31}$] nau^{31}]
 she give birth child CRS
 ‘She has given birth to a child.’

VI. Host + delimitative aspect marker 囍 [la²⁴²]

- a. [[听]_ω 囍 C]CG
 [[t^hian⁴⁴] la²⁴²]
 → [[t^hian⁴⁴] na²⁴²]
 listen DLM ‘to listen awhile’

(58) Application of CL in “host + post-verbal particle”

I. Host + post-verbal article 𠵼 [kaʔ⁰]

- a. [[定]_ω 𠵼 C]CG 今旦
 [[tian²⁴²]kaʔ⁰] kin⁴⁴ tan²¹³
 → [[tian²⁴²]ŋaʔ⁰] kin⁵¹ nan²¹³
 set PVP today
 ‘to be scheduled today’
- b. [[排]_ω 𠵼 C]CG 厅中
 [[pɛ⁵¹] kaʔ⁰] t^hian⁴⁴ touŋ⁴⁴
 → [[pɛ⁵¹] ʔaʔ⁰] t^hian⁴⁴ nouŋ⁴⁴
 put PVP drawing room
 ‘to be put in the drawing room.’

II. Host + post-verbal article 𠵼 [kau²¹³]

- a. [[收]_ω 𠵼 C]CG [[汝]_ω 其 C]CG 批
 [[siu⁴⁴] kau²¹³] [[ny³¹] ki⁰] p^hiɛ⁴⁴
 → [[siu⁴⁴] ʔau²¹³] [[ny³¹] ʔi⁰] p^hiɛ⁴⁴
 receive PVP you POSS letter
 ‘received your letter’

- b. [[等]_ω 遵 C]CG 十 点
 [[tiŋ³¹] kau²¹³] sei[?]5 teiŋ³¹
 → [[tiŋ³¹] ŋau²¹³] sei[?]31 teiŋ³¹
 wait PVP ten o'clock
 ‘to wait until ten o'clock’

III. Host + post-verbal article 咧 [lɛ⁰]

- a. [[看]_ω 咧C]CG 野 清楚
 [[k^haŋ²¹³] lɛ⁰] ʔia³¹ ts^hiŋ⁴⁴ ts^hu³¹
 → [[k^haŋ²¹³] nɛ⁰] ʔia²¹ ts^hiŋ⁵¹ ʒu³¹
 look PVP very clear
 ‘saw (something) clearly’

(59) Application of CL in “host + locative marker 咧 [lɛ⁰]”

- a. [[面]_ω 咧C]CG
 [[meiŋ²¹³] lɛ⁰]
 → [[meiŋ²¹³] nɛ⁰]
 face LOC
 ‘on the face’

(60) Application of CL in recursive clitic group with enclitics

- a. 骹 [[[断]_ω 了 C]CG 其 C]CG 许 隻 依
 k^ha⁴⁴ [[[toun³¹] lau³¹] ki⁰] xi³¹ tsie[?]23 nøyŋ⁵¹
 → k^ha⁴⁴ [[[toun³¹] nau³¹] ʔi⁰] xi⁴⁴ ʒie[?]23 nøyŋ⁵¹
 leg break CRS MOD that Cl people
 ‘that person whose leg was broken’

- b. [[[收]_ω 邁 C]CG 其 C]CG 批 野 宝贵
- [[[siu⁴⁴] kau²¹³] ki⁰] p^{hi}ie⁴⁴ ʔia³¹ po³¹ kui²¹³
- [[[siu⁴⁴] ʔau²¹³] ʔi⁰] p^{hi}ie⁴⁴ ʔia²¹ po⁴⁴ ʔui²¹³
- receive PVP POSS letter very valuable
- ‘The letter received is very valuable.’

Empirical evidence presented in (55-60) suggests that the CL rule consistently applies between the host and the enclitic within the Type A clitic group domain in the Fuzhou dialect, as long as there is an appropriate phonological environment. If we compare the application of CL within the Type A clitic group domain with its application within the prosodic word domain and the domain formed by groups of sounds at the phrasal level, we can find that the CL rule exhibits different degrees of application within these domains. In the prosodic word domain and the domain formed by phrasal-level groups, CL is not an obligatory rule, as shown in (52) and (53). By contrast, within the Type A clitic group domain, the application of CL is mandatory, which is another important phonological property of the Type A clitic group domain in Fuzhou. Since CL is a mandatory rule between the host and the enclitic, the syllable initial of an enclitic is always decided by the final of the preceding syllable, showing that enclitics in the Fuzhou dialect are also phonologically dependent.

5.4.4 Summary

On the basis of the discussion in Section 5.4, the application/blocking of TS, FC, and CL rules within the Type A clitic group domain in the Fuzhou dialect can be summarized as in Table 13.

Table 13. Phonological phenomena and Type A clitic group in the Fuzhou dialect

Application \ Phenomena	TS	FC	CL
Clitic group			
Host + possessive/modificational/nominalization marker 其 [ki ⁰]	×	×	√
Host + adjective reduplication marker	×	×	√
Host + aspect marker	×	×	√
Host + interrogative particle	×	×	√
Host + post-verbal particle	×	×	√
Host + locative marker 咧 [le ⁰]	×	×	√
Recursive clitic group with enclitics	×	×	√

Comparing Table 13 with Table 12 in Chapter IV, we can find that Type A clitic group formed by the group of “host + enclitic” in the Fuzhou dialect is different from the prosodic word in terms of the application of phonological phenomena. On the one hand, TS and FC can both apply within the prosodic word domain, but are obligatorily blocked within the Type A clitic group domain. This is an issue of whether a particular phonological rule applies within a given domain. On the other hand, although CL can apply within the prosodic word domain formed by most morpho-syntactic words, it is consistently blocked in the prosodic word domain

formed by “diminutive” nouns and reduplicated forms of monosyllabic adjectives. In contrast, CL can apply within the Type A clitic group domain with no exceptions. This is an issue of the degree of application of a particular phonological rule in different prosodic domains.

Type A clitic group formed by “host + enclitic” in the Fuzhou dialect is also different from phrasal-level constructions regarding the application of phonological phenomena. Major phonological rules in the Fuzhou dialect, namely, TS, FC, and CL, all have mixed behavior within phrasal-level constructions—they are triggered within some constructions while blocked in others (to be discussed in detail in Chapter VI). Unlike phrasal-level constructions, the Type A clitic group domain exhibits a very clear-cut behavior in terms of the application of phonological phenomena, namely, TS and FC are obligatorily blocked within the Type A clitic group domain, while CL can consistently apply.

5.5 Discussion and conclusions

In this chapter, I have introduced the definitions of clitics and the clitic group, and shown that clitics in languages share some common properties that can be used to distinguish clitics from both affixes and independent words. In addition, I have shown that a number of phonological phenomena are characteristic only of the clitic group in the world’s languages, which should be considered as solid evidence for the existence of the clitic group within the prosodic hierarchy.

Based on the discussion of clitics and the clitic group across languages, Sections 5.3 and 5.4 present a thorough investigation of enclitics and the clitic group composed

of the host plus the enclitic (Type A clitic group) in the Fuzhou dialect, from the perspectives of morpho-syntactic functions and phonological behavior respectively. From the discussion in Sections 5.3 and 5.4, I have identified the following properties of enclitics and Type A clitic group in the Fuzhou dialect:

(61) Properties of enclitics in the Fuzhou dialect

- a. Fuzhou enclitics all belong to functional categories;
- b. Fuzhou enclitics never occur as the only element of an utterance and must attach to the adjacent prosodic unit on the left as the host;
- c. The meaning of the string of the host plus the enclitic is predictable from the meaning of the host and that of the enclitic;
- d. Fuzhou enclitics can attach to material already containing the affix or the enclitic;
- e. Fuzhou enclitics are phonologically dependent—the initial of an enclitic is always decided by the final of the preceding syllable.

(62) Properties of Type A clitic group in the Fuzhou dialect

- a. TS and FC are obligatorily blocked within the Type A clitic group domain; specifically, they are blocked between the host and the enclitic;
- b. CL obligatorily applies within the Type A clitic group domain; specifically, it applies between the host and the enclitic.

Thus we can find that, on the one hand, enclitic-like elements reported in the literature of the Fuzhou dialect are indeed clitics, since they share some common morpho-syntactic and phonological properties with clitics in other languages. On the

other hand, the group of “host + enclitic” in this dialect does have a peculiar phonological behavior as compared to morpho-syntactic words (i.e., prosodic words in this dialect) and phrasal-level constructions.

By establishing a prosodic constituent that contains the host plus the enclitic, I distinguish the “host + enclitic” group from the prosodic word and phrasal-level constructions. I have thus accounted for the phonological behavior of the group of “host + enclitic” in Fuzhou, such as the consistent blocking of phonological tone sandhi and final change on the last syllable of the host, as well as the mandatory changes of the initial of the enclitic. The distinctive phonological behavior of the “host + enclitic” group in the Fuzhou dialect, in turn, provides evidence and motivation for the existence of the clitic group within the prosodic hierarchy.

It is noteworthy is that all the phonological phenomena we have observed in the Type A clitic group domain in the Fuzhou dialect only apply between the host and the enclitic, as we have seen in Section 5.4. In other words, if the host is a prosodic word, these phonological phenomena that make crucial reference to the Type A clitic group domain do not have any impact on the internal phonological behavior of the prosodic word host. To be more specific, although TS and FC are blocked between the host and the enclitic, these two rules can still apply within the embedded prosodic word, as exemplified in (63). Likewise, although CL is triggered between the host and the enclitic, it is blocked in the embedded prosodic word host formed by “diminutive” nouns and reduplicated monosyllabic adjectives, as exemplified in (64). ‘=’ indicates the application of rules while ‘#’ indicates the blocking. Sandhi forms in question are marked in bold.

(63) TS and FC within the Type A clitic group domain in the Fuzhou dialect

a.	[[对面] _ω	其 C]CG	b.	[[慢慢] _ω	势 C]CG
	[[toy ²¹³ meij ²¹³]	ki ⁰		[[main ²⁴² main ²⁴²]	siε ²¹³
→	[[tɔy ⁵¹ = meij ²¹³] #	ŋi ⁰	→	[[meij ⁵¹ = main ²⁴²] #	niε ²¹³
	*[[toy ²¹³ # meij ²¹³] #	ŋi ⁰		*[[main ²⁴² # main ²⁴²] #	niε ²¹³
	opposite side	NOM		slow slow	AdjR
	‘the one on the opposite side’			‘very slow’	

(64) CL within the Type A clitic group domain in the Fuzhou dialect

a.	[[瓶瓶] _ω	嘢 C]CG	b.	[[白白] _ω	式 C]CG
	[[piŋ ⁵¹ piŋ ⁵¹]	lε ⁰		[[paʔ ⁵ paʔ ⁵]	seiʔ ²³
→	[[piŋ ³¹ # piŋ ⁵¹] =	nε ⁰	→	[[paʔ ³¹ # paʔ ⁵] =	leiʔ ²³
	*[[piŋ ³¹ = miŋ ⁵¹] =	nε ⁰		*[[paʔ ³¹ = βaʔ ⁵] =	leiʔ ²³
	bottle	LOC		white white	AdjR
	‘in the bottle’			‘rather white’	

Based on such an observation, a restriction on rule application within the clitic group domain can be proposed in the Fuzhou dialect, as in (65).

(65) Restriction on Rule Application within the Type A Clitic Group Domain in Fuzhou (1st approximation)

Within the Type A clitic group domain, the application or blocking of a particular phonological rule that is specific to the Type A clitic group domain cannot be triggered on any constituent contained in the embedded prosodic word.

Notice that the restriction in (65) is not satisfactory. It fails to cover the cases of the Type A clitic group containing a prosodic word domain formed by a monosyllabic monomorphemic word. This problem can be solved if we assume that the application or blocking of a particular phonological rule should be first triggered in the embedded domain and then the external domain, and refine the restriction as in (66).

(66) Restriction on Rule Application within the Type A Clitic Group Domain in Fuzhou (2nd approximation)

Within the Type A clitic group domain, the application or blocking of a particular phonological rule that is specific to the Type A clitic group domain cannot be triggered on any constituent contained in the embedded prosodic word, iff the application or blocking of the same type of rule specific to the embedded prosodic word domain has been triggered.⁴⁸

Let us first consider two examples in which the embedded prosodic word is polysyllabic. In (63a), the application of TS and FC is first triggered within the embedded prosodic word domain and changes the tone and the final of the first syllable 对 [toy²¹³ → tɔy⁵¹], and then the blocking of TS and FC is triggered within the Type A clitic group. Since the application of TS and FC have been triggered within the prosodic word domain, the blocking of these two rules within the Type A clitic group fails to be triggered on the first syllable in the prosodic word. In (64a), the blocking of CL is first triggered within the prosodic word domain formed by the “diminutive” noun, and then the application of CL is triggered within the Type A

⁴⁸ TS and CTS are considered as belonging to the same type since they both have an impact on the tones.

clitic group. Since the blocking of CL has been triggered within the embedded prosodic word, the initial of the second syllable in the prosodic word is no longer the target of the application of CL within the Type A clitic group and thus remains unchanged.

Let us now consider examples in which the embedded prosodic word is monosyllabic. When the embedded prosodic word contains only one syllable, it is clear that this single syllable is not involved in the application or blocking of TS, MTS, FC, and CL due to the lack of phonological environment. Thus, when the prosodic word domain formed by a monosyllabic morpho-syntactic word is contained in a Type A clitic group, no application or blocking of any phonological rule that is specific to the prosodic word domain is triggered. Hence, all the phonological phenomena that are specific to the Type A clitic group domain, namely, the blocking of TS and FC and the application of CL can be triggered and involve this single syllable within the embedded prosodic word. This can be illustrated by many examples presented in Section 5.4. The restriction on rule application presented in (66), together with the properties of enclitics and Type A clitic group in the Fuzhou dialect in (61-62) as well as the clitic group domain formation in (10), thus successfully account for the phonological behavior of Fuzhou enclitics and Type A clitic group we have seen in examples like (63-64) and all the other examples in this chapter.

In the following chapters, we will first move on to the discussion of the phonological phrase in the Fuzhou dialect and phonological phenomena at the phrasal

level in Chapter VI. Then in Chapter VII we will proceed to the investigation of another group of clitics, namely proclitics in the Fuzhou dialect, as well as the phonological behavior of Type B clitic group formed by the group of “proclitic + host”, based on the discussion in Chapter V and Chapter VI. The restriction on rule application in the Fuzhou dialect will also be further explored in the following chapters.

Chapter VI. The Phonological Phrase in the Fuzhou Dialect

6.1 Introduction

In this chapter, I will investigate the constituent above the clitic group in the prosodic hierarchy, namely, the phonological phrase, in the Fuzhou dialect. The main goal in this chapter is two-fold: (a) to identify the phonological phrase domain in this dialect; and (b) to account for the relevant phonological phenomena by adopting the definition of the phonological phrase domain in Fuzhou.

On the one hand, as discussed in Section 2.1.4.3, controversy exists in terms of the formation of the phonological phrase domain. Two major approaches within the prosodic phonology framework have been proposed to account for the phonological phrasing across languages, namely the Relation-Based Approach (RBA; cf. Nepsor & Vogel 1986, among others) and the Edge/End-Based Approach (EBA; cf. Selkirk 1986, among others). The latter has also been translated into a set of violable constraints within the framework of Optimality Theory (cf. Selkirk 1996, 2000, Truckenbrodt 1995, 1999, among others). As we have seen in Chapter II, it has been shown that both the RBA and the EBA can account for a number of phonological phenomena at the phrasal level in the world's languages. Since the definition of a particular prosodic constituent in a given language is actually an empirical issue, the definition of the phonological phrase in the Fuzhou dialect should be arrived at on the basis of the investigation of relevant Fuzhou phonological phenomena.

On the other hand, some Fuzhou phonological phenomena have been reported as applying at the phrasal level. As mentioned in Section 2.1.3, each prosodic constituent

within the prosodic hierarchy serves as the domain of application for specific phonological phenomena, and this has been demonstrated with evidence from the Fuzhou dialect in previous chapters. Therefore, in order to account for relevant Fuzhou phonological phenomena, a feasible definition of the phonological phrase in this dialect should be formulated.

In order to decide which of the two approaches developed within the framework of prosodic phonology holds in the formation of the phonological phrase in Fuzhou and whether an alternative approach should be adopted to account for relevant phenomena, I will first review the most well-studied Fuzhou phenomenon, namely, the application/blocking of phonological tone sandhi (TS) at the phrasal level. In Section 6.2, a detailed review of previous analyses of this issue and a thorough investigation of the application of TS in a number of phrasal-level constructions will be provided. On the basis of previous analyses, an alternative analysis combining the EBA and the RBA is proposed to define the phonological phrase domain in the Fuzhou dialect, which accounts for the application of TS at the phrasal level. It will be shown that not only the formation of the phonological phrase, but also its internal prosodic structure, plays an important role in the application of the TS rule at the phrasal level. This will lead to a refinement of the Restriction on Rule Application in the Fuzhou dialect we have seen in Chapter V. Based on the definition of the phonological phrase and the refined Restriction on Rule Application, the application of other relevant Fuzhou phonological phenomena at the phrasal level are analyzed in Section 6.3. Conclusions are provided in Section 6.4.

6.2 Fuzhou phonological tone sandhi at the phrasal level

6.2.1 Introduction

As discussed in Chapter IV and Chapter V, the phonological tone sandhi rule (TS) in the Fuzhou dialect obligatorily applies within the domain of the prosodic word formed by most types of morpho-syntactic words (with the exception of those affected by MTS), as in (1), where sandhi tones are marked in bold, while it is consistently blocked between the host and the enclitic in the domain of Type A clitic group, as in (2), in which the position where TS is blocked is denoted by “#”. For the sake of brevity, only sandhi forms of tones are presented in examples in Section 6.2.

(1) Application of TS within the prosodic word domain

- a. 沙发 $sa^{44} xua\text{?}^{23} \rightarrow sa^{51} xua\text{?}^{23}$ ‘sofa’
 b. 老鼠 $lo^{31} ts^h y^{31} \rightarrow lo^{24} ts^h y^{31}$ ‘mouse’
 c. 暝晡 $maŋ^{51} puo^{44} \rightarrow maŋ^{44} puo^{44}$ ‘evening’

(2) Blocking of TS within the Type A clitic group domain

- a. [[依妹]_ω 其 C]CG 衣裳 b. 暝 [[好]_ω 了 C]CG
 $[[\text{?i}^{44} \text{mui}^{213}] \quad ki^0] \quad \text{?i}^{44} \text{suon}^{51} \quad maŋ^{51} \quad [[xo^{31}] \quad lau^{31}]$
 $\rightarrow [[\text{?i}^{51} \text{mui}^{213}] \# \quad ki^0] \quad \text{?i}^{44} \text{suon}^{51} \quad \rightarrow maŋ^{51} \quad [[xo^{31}] \# lau^{31}]$
 younger sister POSS clothes dinner good CRS
 ‘younger sister’s clothes’ ‘The dinner is ready.’
- c. 伊 [[去]_ω 未 C]CG?
 $\text{?i}^{44} [[k^h o^{213}] \quad \text{mui}^{242}]$
 $\rightarrow \text{?i}^{44} [[k^h o^{213}] \# \quad \text{mui}^{242}]$
 he go Qu ‘Has he gone?’

By contrast, it has long been noticed that the application of tone sandhi at the phrasal level is more elusive than it is within morpho-syntactic words and “host+enclitic” groups. As mentioned in Section 2.2.2.1 and also reported in relevant literature (e.g., Chen & Norman 1965a, Chan 1980, Wright 1983, Shih 1986, Hung 1987, 1990, Zhang 1992, Chan 1998, among others), TS can apply within some phrasal-level constructions, as in (3), while it is blocked in some other constructions at the phrasal level, as in (4). Sandhi tones in question are marked in bold.

- | | | | | | | | |
|--------|------------------------------------|---------------------------------------|--------------------|---------------------|------------------------------------|----------------------|----------------------------------|
| (3) a. | 好 | 队员 | b. | 煎 | 鱼尾 | | |
| | xo ³¹ | tui ²⁴² ʔuoŋ ⁵¹ | | tsieŋ ⁴⁴ | ŋy ⁵¹ mui ³¹ | | |
| → | xo ²¹ | tui ⁴⁴ ʔuoŋ ⁵¹ | → | tsieŋ ⁵¹ | ŋy ³¹ mui ³¹ | | |
| | good | team member | | to fry | fish tail | | |
| | ‘good team member’ | | | ‘to fry fish tails’ | | | |
| | | | | | | | |
| (4) a. | 跳 | 野 | 悬 | b. | 研究 | 虫 | |
| | t ^h iu ²¹³ | ʔia ³¹ | keiŋ ⁵¹ | | ŋieŋ ³¹ | kiu ²¹³ | t ^h øyn ⁵¹ |
| → | t ^h iu ²¹³ # | ʔia ²¹ | keiŋ ⁵¹ | → | ŋieŋ ⁴⁴ | kiu ²¹³ # | t ^h øyn ⁵¹ |
| | *t ^h iu ²¹ | ʔia ²¹ | keiŋ ⁵¹ | | *ŋieŋ ²¹ | kiu ⁵¹ | t ^h øyn ⁵¹ |
| | to jump | very | high | | to study | | insect |
| | ‘(somebody) jumps very high’ | | | | ‘to study insects’ | | |

Examples in (3) and (4) show that the TS rule does not apply in all phrasal-level constructions. Since the “asymmetry” in the application of TS within phrasal-level constructions was first observed in Chen & Norman (1965a), a considerable amount of literature has been published on this issue. In Section 6.2.2, I will briefly review the

most important previous analyses and discuss their advantages as well as their shortcomings. Section 6.2.3 provides an alternative analysis of this issue on the basis of a thorough investigation of relevant Fuzhou data. Some long-standing problems related to this issue reported in the literature are also discussed. A brief summary is presented in Section 6.2.4.

6.2.2 Previous analyses

6.2.2.1 Chen & Norman (1965a)

Chen & Norman's (1965a) textbook presents the first comprehensive study on the issue of Fuzhou phrasal-level TS. Four types of "junctures" are distinguished in Chen & Norman (1965a), namely terminal juncture, plus juncture, intermediate juncture, and close juncture. According to Chen & Norman, tone sandhi is blocked before terminal juncture and plus juncture, while applies before intermediate juncture and close juncture. Chen & Norman assume that these four types of junctures are correlated with grammatical features, which can be summarized in (5), in which the application of TS is marked by "=" while the blocking is marked by "#".

(5) TS and Chen & Norman's junctures

I. Terminal Juncture (Blocking of TS)

End of sentence/clause

II. Plus Juncture (Blocking of TS)

a. Subject # Predicate

b. Determiner-Classifier # Noun

c. Verb # Resultative complement

- d. Reduplicated Adjective # adjective reduplication marker
- e. Some marked words (e.g., 共 [koyŋ²⁴²] ‘and, with’; 乞 [k^høyŋ²³] ‘to give’; 着 [tuoŋ⁵] ‘to be in or at’) #

III. Intermediate Juncture (Application of TS)

- a. Verb = Object (both monosyllabic)
- b. 会 [ʔa²⁴²] (‘can’) = Verb
- c. 咧 [le³¹] (progressive action) = Verb
- d. Adj. = Adj.

IV. Close Juncture (Application of TS)

- a. Determiner = Classifier
- b. Adj. = Noun (both monosyllabic)
- c. Adverb = Verb (both monosyllabic)
- d. 𠵹 [ma²⁴²] (‘cannot’) = Verb

Chen & Norman’s observation admirably summarizes a wide variety of syntactic contexts in which TS is triggered or blocked, which has inspired many subsequent analyses. However, a closer examination reveals that there are several problems regarding their analysis. First of all, we can find a number of lexically marked contexts in (5), such as 共 [koyŋ²⁴²] ‘and, with’, 乞 [k^høyŋ²³] ‘to give’, and 着 [tuoŋ⁵] ‘to be in or at’. These junctures may share some common characteristics and an adequate linguistic account should be able to capture the common nature of these lexically marked contexts rather than simply supply a list of them. Chen & Norman’s

analysis, which allows such kind of lexical idiosyncrasy, can hardly serve as an adequate linguistic analysis of the issue of Fuzhou TS at the phrasal level.

The second problem of Chen & Norman (1965a) is they mix up contexts at different levels and involves some contexts that should not be considered as at the phrasal level. For example, terminal juncture, which is associated with intonation according to Chen & Norman (1965a), should be treated as a notion related to the intonational phrase domain (to be discussed in detail in Chapter VIII). In addition, a string containing a reduplicated adjective and the adjective reduplication marker as well as the plus juncture in between should be treated as a Type A clitic group domain, as discussed in Chapter V, and thus the blocking of TS at such a juncture could be well accounted for. The application of TS at an intermediate juncture between the members of a reduplicated adjective can also be dealt with since a reduplicated adjective actually forms a prosodic word domain, as shown in Chapter IV.

Moreover, Chen & Norman's analysis fails to cover some other syntactic contexts. Note that in Chen & Norman's analysis, some junctures allowing the application of TS only occur between two monosyllabic components, such as "Verb = Object", "Adj. = Noun", and "Adverb = Noun". However, as we can find from (4b), when the verb in a verb-object construction is disyllabic, TS may be blocked, which is not covered in Chen & Norman's analysis. Hence, in order to account for Fuzhou TS at the phrasal level, more syntactic constructions need to be taken into consideration.

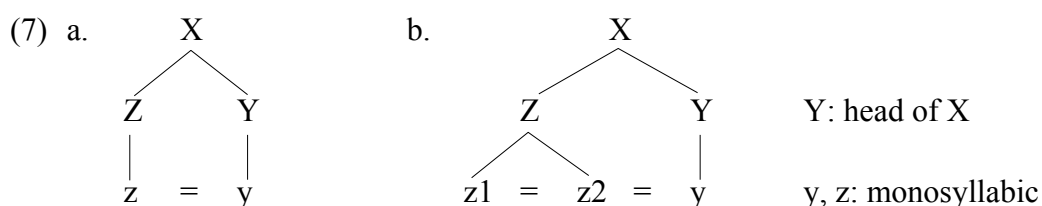
6.2.2.2 Chan (1980)

Chan (1980) is the first attempt which directly relates the issue of Fuzhou tone sandhi at the phrasal level to syntactic structure. She points out that in the Fuzhou dialect the head of a major syntactic category coincides with the last and dominant syllable of the sandhi domain at the phrasal level. Based on this observation, she proposes the Head Dominance Condition to account for the phrasal tone sandhi in the Fuzhou dialect, as presented below in (6).

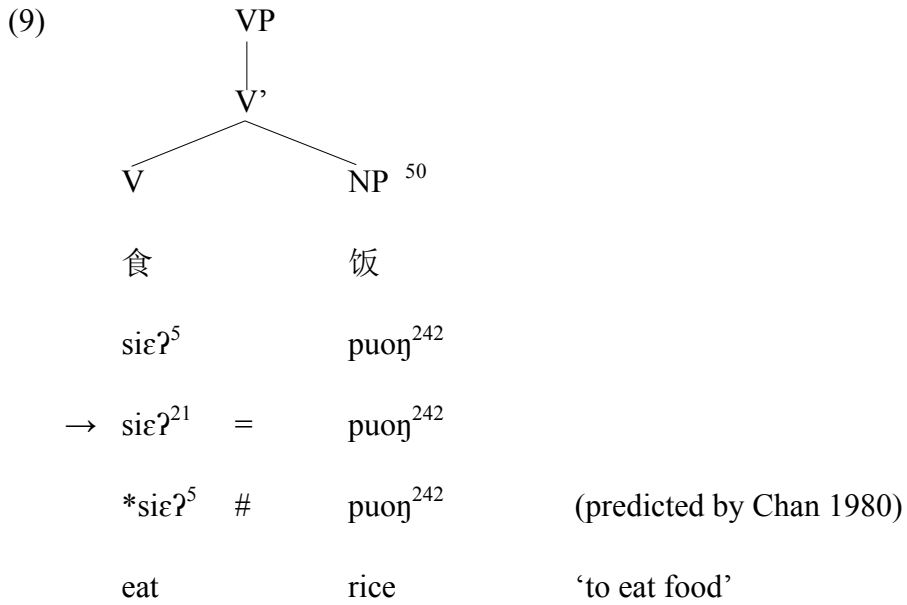
(6) Head Dominance Condition (Chan 1980)

Let y be a monosyllabic word immediately dominated by a preterminal category symbol Y , and Y be the head of X . Daughters of Z are within the tone sandhi domain of y if and only if Z is the first node to the left of Y , and the daughters of Z are monosyllabic words.

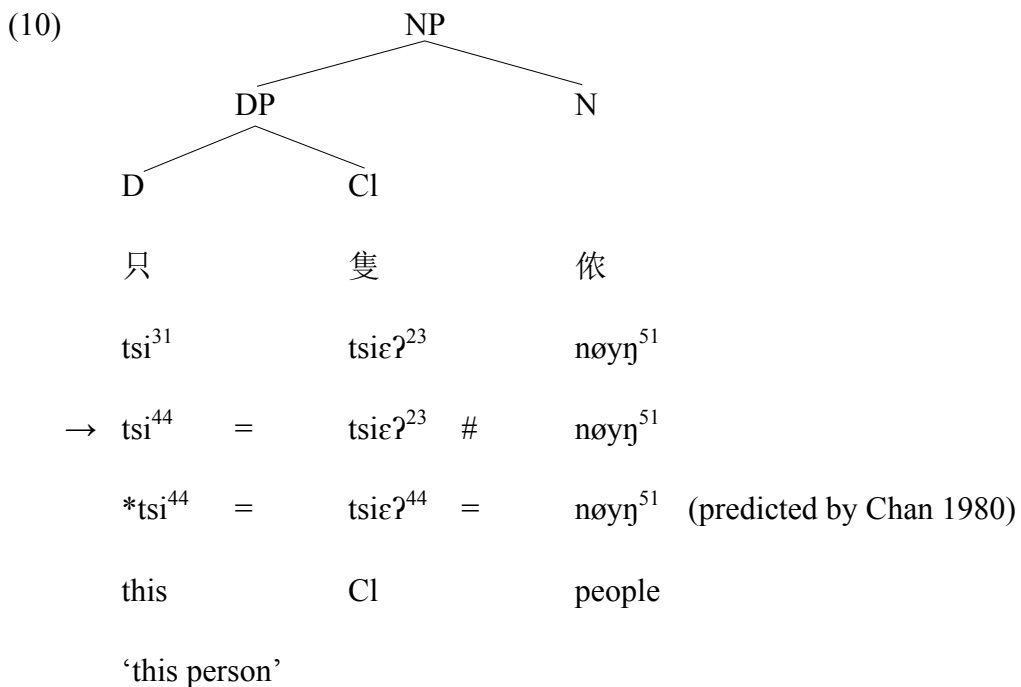
Thus basic Fuzhou tone sandhi domains at the phrasal level can be represented as in (7).



The following example (with minor changes to Chan's example) illustrates how the Head Dominance Condition works:



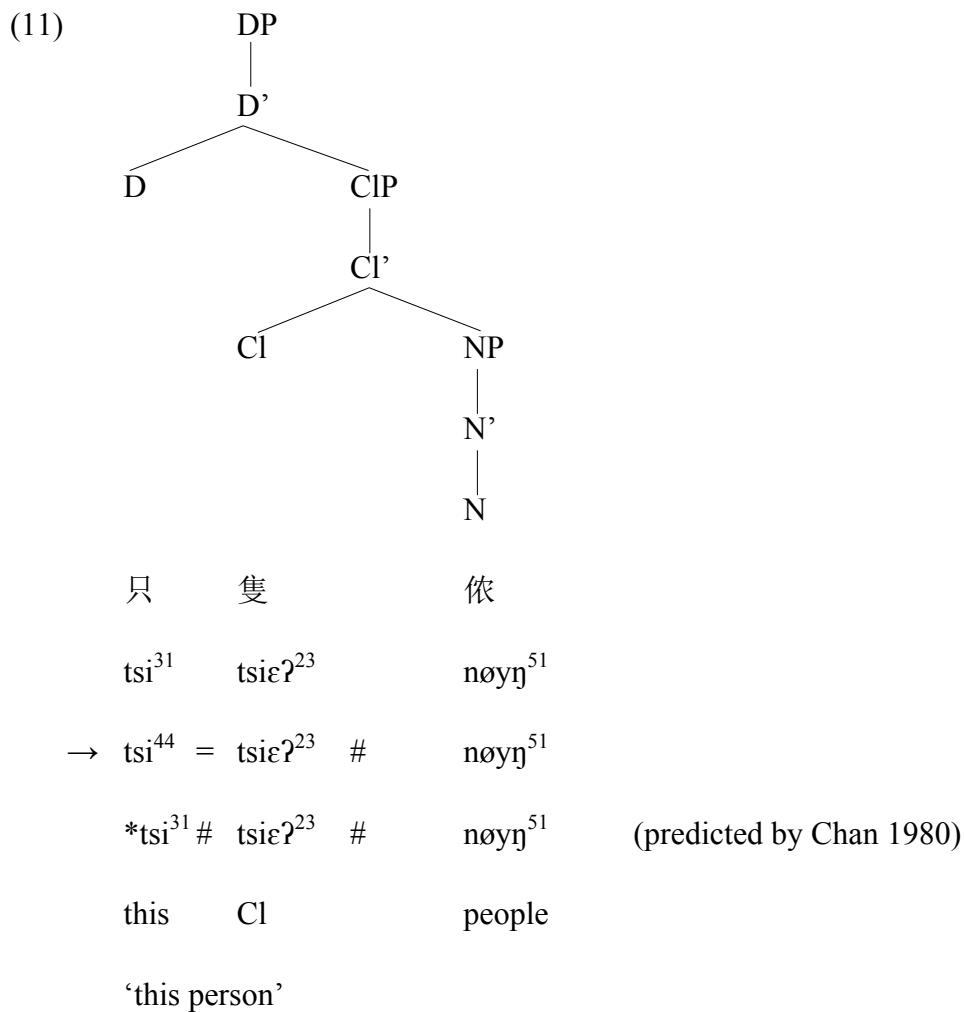
Another problem of Chan's analysis, as noticed by some subsequent studies (e.g., Hung 1987), is its failure to account for the behavior of TS in the construction of determiner-classifier-noun. The example in (10) is adapted from Hung (1987).



⁵⁰ For the sake of brevity, intermediate constituents between VP and NP, e.g., DP, are not presented in the tree in this chapter if they are not phonetically overt.

In (10), according to the NP structure assumed by Hung (1987), 依 ‘person’ is the head of NP, and daughters of the first node to the left of the head N are both monosyllabic. Hence Chan’s Head Dominance Condition fails to predict the blocking of TS between the classifier and the noun. Instead, Chan’s analysis will wrongly predict that TS should apply to both the first two syllables in (10).

According to the theory of DP that determiners are not inside the NP but rather the NP is the complement to the determiner head D (cf. Abney 1987, among others), the current tree of a determiner-classifier-noun construction is different from that in (10), as shown in (11).



We can find that even when the Fuzhou determiner-classifier-noun construction is updated to accommodate the DP hypothesis, incorrect predictions still persist. In (11), Chan's analysis fails not because it cannot account for the blocking between the classifier and the noun, but because it has difficulty explaining the application of phonological tone sandhi between the head of DP and the head of its complement CIP, namely, between the determiner and the classifier.

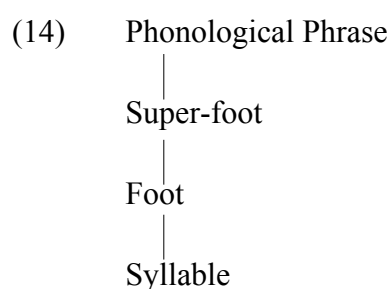
In addition to the problems discussed above, Chan's (1980) analysis also fails to account for the contrast presented in (12) and (13)—Chan's Head Dominance Condition works perfectly for cases in (13) while fails to account for those in (12).

(12)a.	趁	钱		b.	食	葡萄
	t ^h eiŋ ²¹³	tsieŋ ⁵¹			siɛʔ ⁵	pu ⁵¹ to ⁵¹
	→ t ^h eiŋ ⁴⁴	= tsieŋ ⁵¹			→ siɛʔ ³¹	= pu ³¹ to ⁵¹
	earn	money			eat	grape
	'to earn money'				'to eat grapes'	
(13)a.	浪费	钱		b.	讨厌	葡萄
	louŋ ²⁴²	hiɛ ²¹³	tsieŋ ⁵¹		t ^h o ³¹	ʔieŋ ²¹³ pu ⁵¹ to ⁵¹
	→ louŋ ⁵¹	hiɛ ²¹³	# tsieŋ ⁵¹		→ t ^h o ⁴⁴	ʔieŋ ²¹³ #pu ³¹ to ⁵¹
	waste	money			hate	grape
	'to waste money'				'to hate grapes'	

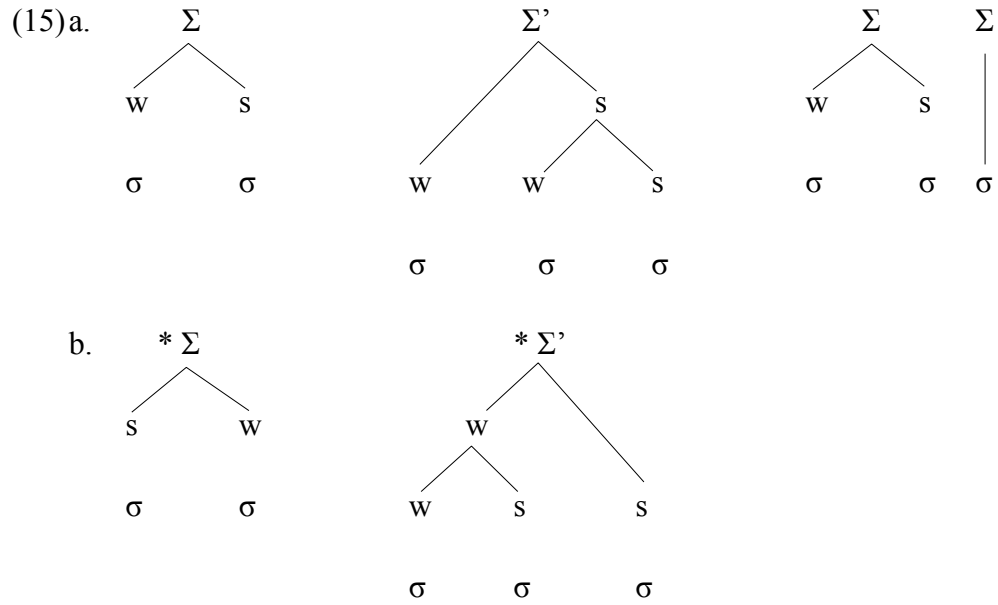
6.2.2.3 Wright (1983)

The contrast between (3b) and (4b) as well as the contrast between (12) and (13) shows that Fuzhou phrasal-level TS seems to be blocked between a disyllabic verb

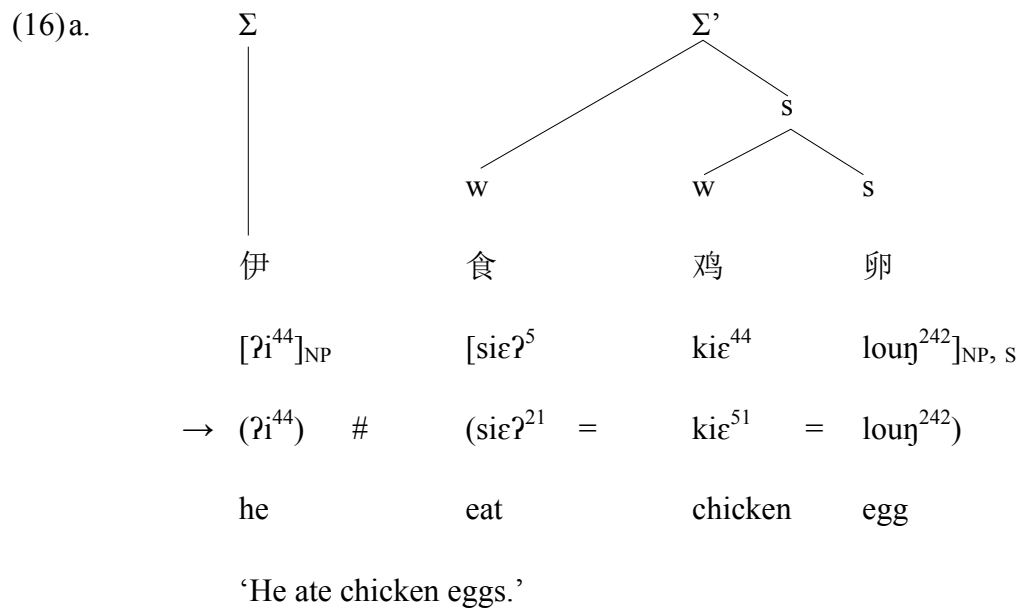
and the following object, but triggered between a monosyllabic verb and the object. This cannot be handled by Chan's (1980) Head Dominance Condition. Based on this observation, Wright (1983) proposes a prosodic analysis in which the prosodic structure is heavily relied on while the syntactic information is only a minor factor. She claims that the asymmetry exhibited by monosyllabic verbs and disyllabic verbs can be explained with regard to different prosodic structures involved in the formation of a tone sandhi domain. Based on the theory developed in Liberman & Prince (1977), Prince (1983), Hayes (1980), and Selkirk (1980, 1981), she divides a Fuzhou sentence into four levels of prosodic domains, as in (14):

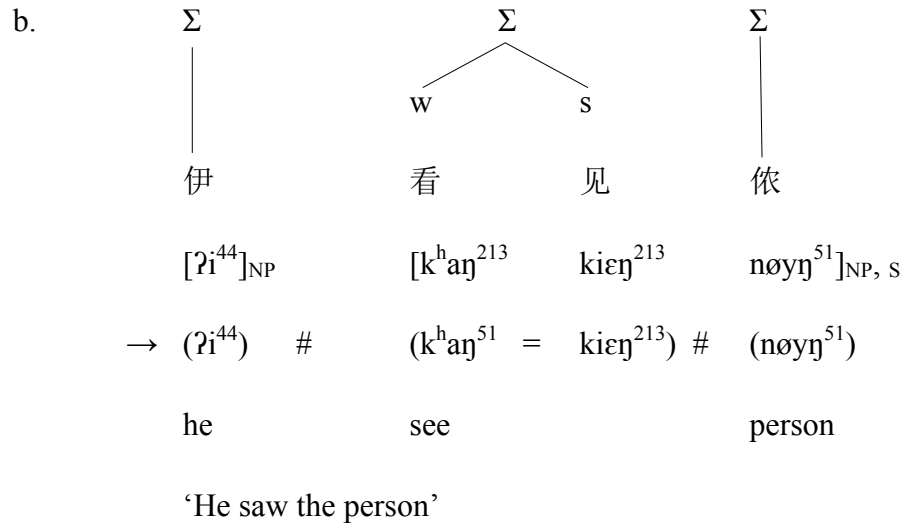


In Wright's analysis, a phonological phrase is defined in such a way that the end of a phonological phrase coincides with the end of a noun phrase (NP) or a clause (S). She argues that a weak-strong (w-s) binary foot must be constructed within a phonological phrase and must be built above syllable strings from right to left at the lexical level first and then the phrasal level. A remaining unfooted syllable to the left of a binary foot will be marked 'w' and form a super-foot with the binary foot, while an unfooted syllable to the right of a binary foot will form an independent foot by itself. Thus, given a string of syllables, examples in (15a) are well-formed, while those in (15b) are not (Σ = foot, Σ' = super-foot, σ = syllable, w = weak, s = strong).



A foot Σ or a super-foot Σ' is argued to form a tone sandhi domain in Wright's analysis. The following examples illustrate how Wright's analysis works ([...] = boundaries of phonological phrase, (...) = a tone sandhi domain):

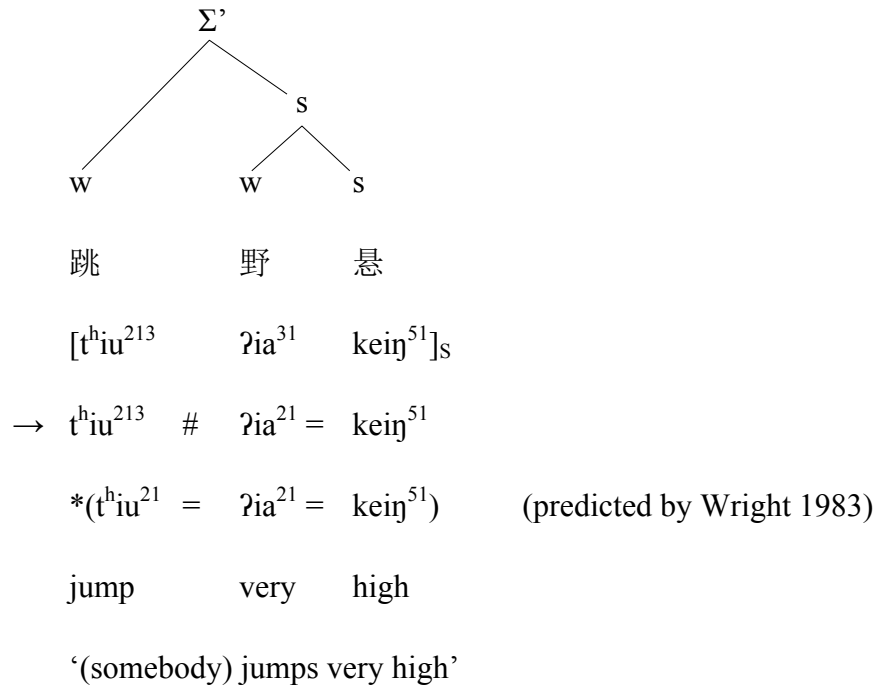




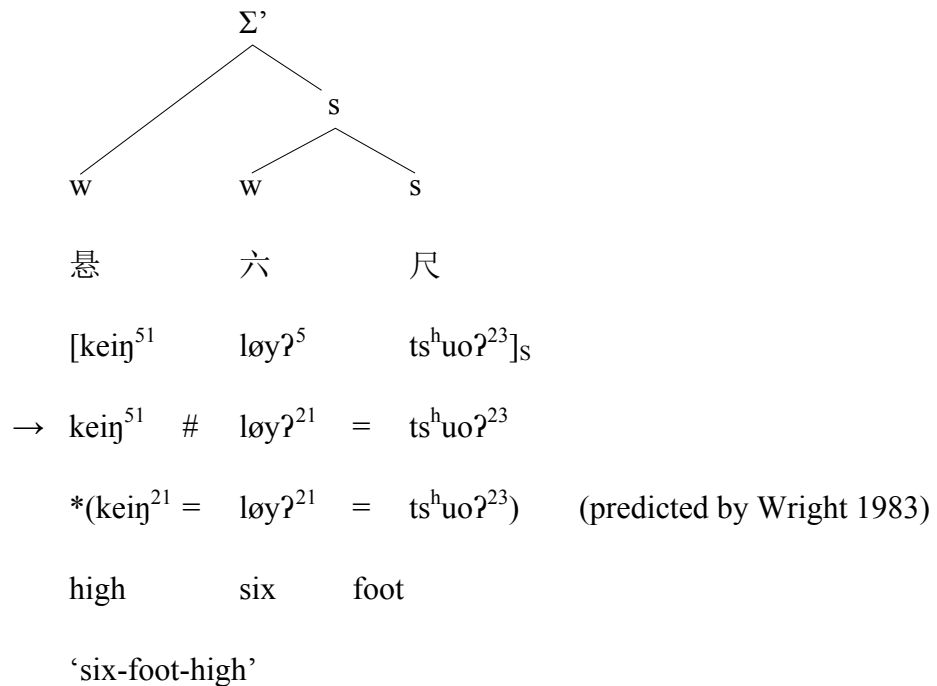
From above examples, we can find that Wright’s analysis has two advantages. First, by defining the phonological phrase by marking the end of an NP or S, her analysis avoids the problem of joining the subject and its predicate into one foot, and thus accounts for the blocking of tone sandhi between the subject and its predicate. Second, her analysis nicely captures the contrast between “disyllabic verb-monosyllabic noun” construction and “monosyllabic verb-disyllabic noun” construction.

Nevertheless, Wright’s analysis of Fuzhou tone sandhi still has some outstanding problems. Notice that in Chan (1980) syntactic information is heavily relied on while in Wright’s analysis only a little syntactic information is used for the construction of the phonological phrase. This simplicity in the use of syntactic information makes Wright’s analysis run into difficulty when dealing with constructions other than subject-predicate constructions and verb-object constructions. For example:

(17)a.



b.



We can find that Wright’s analysis fails to account for the blocking of TS in the examples above, both of which involve a verb and a following constituent. In order to handle such constructions, Wright (1983) is forced to argue that a verb will undergo tone sandhi only if it is followed by an argument with <Theme> theta-role (θ -role),

but not with other theta-roles such as <Goal>, <Benefactive>, or <Locative>. This explanation is claimed to help solve the problem posed by (17). However, it actually does not solve the problem since constituents like 野悬 ‘very high’ in (17a) and 六尺 ‘six-foot’ in (17b) are adjuncts instead of arguments to their respective heads. Moreover, this explanation is ad hoc and makes Wright’s whole analysis suspicious since the rest of her analysis is syntax-blind while only a sub-part of it is forced to rely on syntactic and semantic information.

Moreover, Wright’s analysis has a theoretical drawback from the perspective of the prosodic phonology theory. In the four-level prosodic hierarchy assumed by Wright, there are two levels of the foot domain (i.e., regular foot and super-foot) while the prosodic word domain is not found between the foot and the phonological phrase. From (16a) and (16b), we can find that both 食鸡卵 ‘to eat chicken eggs’ and 看见 ‘to see’ are treated as only one TS domain according to Wright’s analysis since the super-foot and the foot are both considered as the domain of TS. According to the discussion in Chapter IV, 看见 ‘to see’ forms a prosodic word domain while 食鸡卵 ‘to eat chicken eggs’ must form a prosodic domain larger than the prosodic word since it contains two prosodic words 食 ‘to eat’ and 鸡卵 ‘chicken egg’. Wright’s analysis thus actually mixes up the difference between the prosodic word domain and the phonological phrase domain with the difference between the foot and the super-foot. Also, as argued in Chapter III, Wright’s theory that argues for the existence of the foot domain in the Fuzhou dialect is problematic, which makes her analysis of the Fuzhou data at the phrasal level even less convincing.

6.2.2.4 Shih (1986)

Being convinced that neither syntactic nor prosodic properties alone can solve the issue of Fuzhou phrasal tone sandhi domain, Shih (1986) takes an approach that combines both syntactic and prosodic information. Based on Chan's (1980) Head Dominance Condition, Shih proposes a revised Head Dominance Condition which defines where TS is blocked, rather than applied, in the Fuzhou dialect, as presented in (18).

(18) Revised Head Dominance Condition (HDC) (Shih 1986):

Mark the right edge of every X^0 , except where XP is an adjunct.

Shih argues that after the Revised Head Dominance Condition inserts a tone group boundary to the right of the head of every XP, Foot Formation Rule, as presented in (19), operates within each tone group to construct prosodic feet and super-feet.

(19) Foot Formation Rule (FFR) (Shih 1986):

Foot Construction

- a. Immediate Constituency (IC): Link immediate constituents into disyllabic feet.
- b. Duple Meter (DM): Scanning from left to right, string together unpaired syllables into binary feet, unless they branch to the opposite direction.

Super-foot Construction

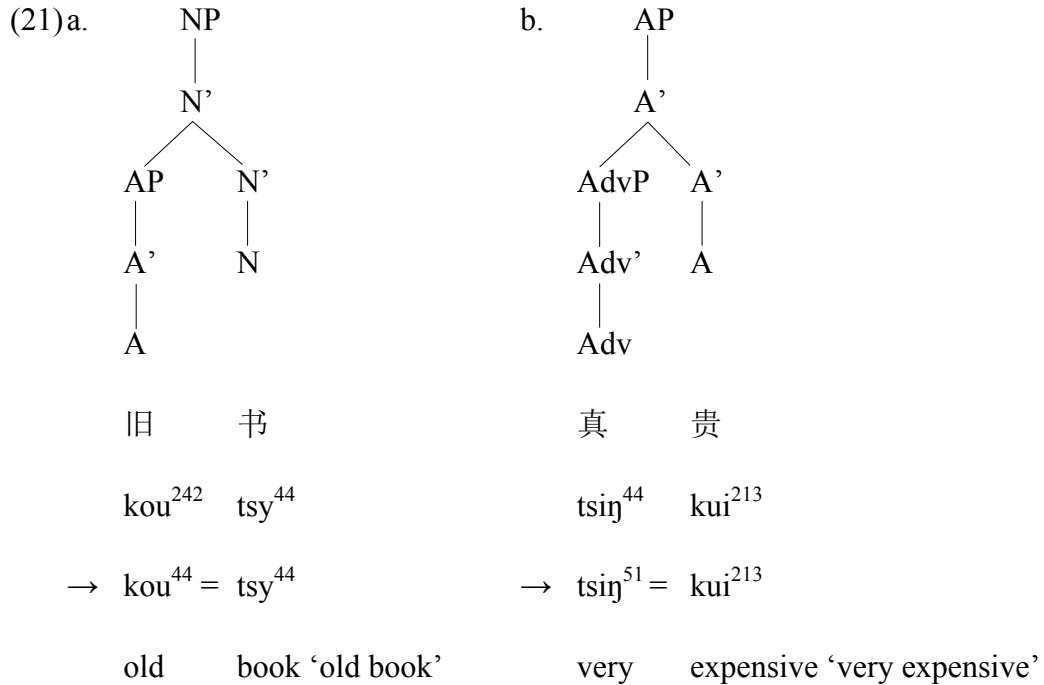
Join any leftover monosyllable to a neighboring binary foot according to the direction of syntactic branching.

Similar to Wright (1983), Shih (1986) also assumes that the foot and the super-foot form the domain of TS. The following examples adapted from Shih (1986) illustrate how Shih's analysis works (“...]” = right boundary of a tone group, (...) = a tone sandhi domain):

- (20)a. 丁 先生 住 福州 路
- $tiŋ^{44}$ $siŋ^{44}$ $saŋ^{44}$ tiu^{242} $xuʔ^{23}$ $tsiu^{44}$ tuo^{242}
- HDC: $tiŋ^{44}$ $siŋ^{44}$ $saŋ^{44}]$ $tiu^{242}]$ $xuʔ^{23}$ $tsiu^{44}$ $tuo^{242}]$
- FFR: $(tiŋ^{44}$ $siŋ^{44}$ $saŋ^{44})]$ $tiu^{242}]$ $(xuʔ^{23}$ $tsiu^{44}$ $tuo^{242})]$
- $(tiŋ^{21} = siŋ^{44}$ $saŋ^{44})]$ # $tiu^{242}]$ # $(xuʔ^{21}$ $tsiu^{51} = tuo^{242})]$
- Ding Mr. live Fuzhou road
- ‘Mr. Ding lives on Fuzhou Road.’
- b. 丁 先生 住 福州 东 路
- $tiŋ^{44}$ $siŋ^{44}$ $saŋ^{44}$ tiu^{242} $xuʔ^{23}$ $tsiu^{44}$ $tøyŋ^{44}$ tuo^{242}
- HDC: $tiŋ^{44}$ $siŋ^{44}$ $saŋ^{44}]$ $tiu^{242}]$ $xuʔ^{23}$ $tsiu^{44}$ $tøyŋ^{44}$ $tuo^{242}]$
- FFR: $(tiŋ^{44}$ $siŋ^{44}$ $saŋ^{44})]$ $tiu^{242}]$ $(xuʔ^{23}$ $tsiu^{44})(tøyŋ^{44}$ $tuo^{242})]$
- $(tiŋ^{21} = siŋ^{44}$ $saŋ^{44})]$ # $tiu^{242}]$ # $(xuʔ^{21}$ $tsiu^{44})(tøyŋ^{51}$ $tuo^{242})]$
- Ding Mr. live Fuzhou east road
- ‘Mr. Ding lives on Fuzhou East Road.’

According to Shih's Revised Head Dominance Condition, a pre-head adjective and a pre-head adverb, which are heads of AP and AdvP respectively, are not marked off by a tone group boundary since both AP and AdvP function as adjuncts. Thus

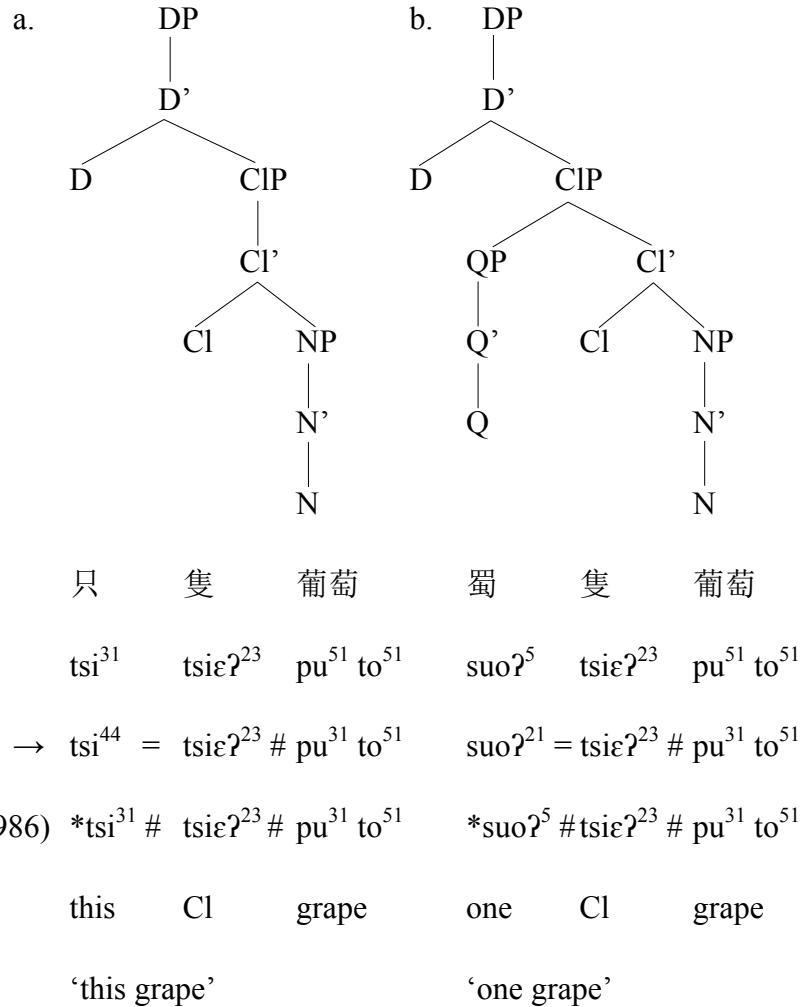
Shih's analysis can nicely account for the application of TS in the following examples.



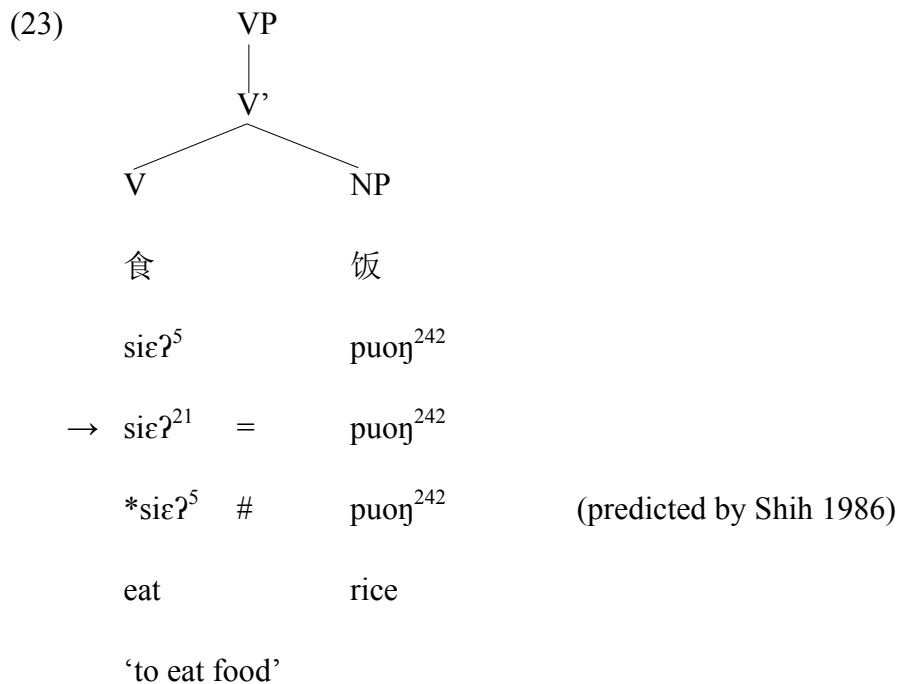
Shih's analysis can also correctly predict the blocking of TS between the head and the post-head adjunct as in the examples of (17). The right edge of the head is marked by the tone group boundary and thus cannot trigger the TS rule.

However, Shih's analysis wrongly predicts that TS is blocked between the determiner/quantifier and the classifier, since the right edge of the determiner or quantifier is marked as a tone sandhi domain boundary, as shown in (22).

(22)



Moreover, like Chan's (1980) analysis, Shih's analysis fails to account for the application of Fuzhou TS between a monosyllabic verb and its object as well, if no additional stipulation is proposed, which is illustrated in (23).



In order to deal with examples like (23), Shih (1986) has to propose an expansion rule to expand the domain of tone group to include verb and its object, as shown in (24).

(24) Tone Group Expansion (Shih 1986):

$$V \# O \rightarrow V = O$$

The expansion rule makes Shih’s analysis self-contradictory in terms of the explanation of TS within VP constructions—without the expansion rule, Shih is not able to account for the application of TS in cases like (23) while the existence of this additional rule indicates that rule (18) always has exceptions. Also, Shih (1986) leaves the issue of when the expansion rule applies unexplained, which makes this additional rule more arbitrary. Furthermore, in Shih’s analysis, feet and super-feet are constructed by making reference to syntactic information such as immediate

constituents and the direction of syntactic branching, which is on the wrong track as argued in Chapter III.

Nonetheless, Shih (1986) relates the distinction between adjunct constituents and non-adjunct constituents to the application of Fuzhou TS at the phrasal level, which has been assumed in a number of subsequent works (e.g., Hung 1987, Zhang 1992, among others). The distinction between adjunct constituents and non-adjunct constituents will be demonstrated to be a key factor in defining the domain of application for Fuzhou TS at the phrasal level.

6.2.2.5 Hung (1987)

Based on Shih's (1986) attempt to distinguish adjunct XP and non-adjunct XP, in Hung's (1987) dissertation, he observes that there is an asymmetrical status of adjuncts (modifiers) and arguments. Hung points out that a pre-head modifier in the Fuzhou dialect is always incorporated into a tone group with the head while a pre-head argument is not. By contrast, in post-head environments, there is a reverse situation—a post-head modifier never undergoes TS with its head while a post-head argument does. Hung's observation is schematized by Chen (1990: 42), as provided below.

(25) Hung's (1987) observation (also cf. Chen 1990)

- a. adjunct = head
- b. argument # head
- c. head = argument
- d. head # adjunct

Hung (1987) argues that tone sandhi domain in the Fuzhou dialect must satisfy the Sense Unit Condition proposed by Selkirk (1984):

(26) Sense Unit Condition (Selkirk 1984)

Two constituents C_i , C_j form a sense unit if (a) or (b) is true of the semantic interpretation of the sentence:

- (a) C_i modifies C_j (a head);
- (b) C_i is an argument of C_j (a head).

Based on the observation in (25) and the Sense Unit Condition, Hung proposes a tone sandhi context for Fuzhou, shown in (27), to account for the asymmetry presented in (25).

(27) Fuzhou Tone Sandhi Domain (Hung 1987)

$$XP[...tg[(M^*) X (A)]tg (M)]_{XP}$$

(where M = Modifier, XP = maximal projection of X (a lexical head), tg = tone group, () = optional, * = any arbitrary number, A = Argument)

In addition to this syntactic-semantic condition, Hung also points out that there should be a prosodic constraint in Fuzhou tone sandhi, as in (28). Furthermore, in agreement with Wright (1983) and Shih (1986), Hung proposes a similar Foot Formation Rule, as in (29).

(28) Prosodic constraint on Fuzhou external tone sandhi (Hung 1987)

The constituent(s) of a tone group to the left of a determinant is/are monosyllabic.

(29) Fuzhou Foot Formation Rules (Hung 1987)

- a. Link the syllables in polysyllabic lexical items into freely structured feet;
- b. Scanning from left to right, link heads to their arguments to form disyllabic or right-branching feet;
- c. Scanning from left to right, link modifiers to their heads to form disyllabic or right-branching feet.

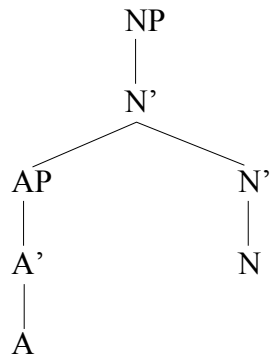
A lexical integrity principle is adopted by Hung (1987) to make the TS rule to apply within lexical items before they operate at phrasal level, as presented in (30).

(30) Lexical Integrity Principle (Hung 1987)

Lexical Integrity takes precedence over other syntactic relationships.

Hung's analysis, especially his distinction between adjuncts (modifiers) and arguments can cover a number of Fuzhou tone sandhi cases at the phrasal level, some of which are illustrated as follows in (31).

(31)a.



大 葡萄

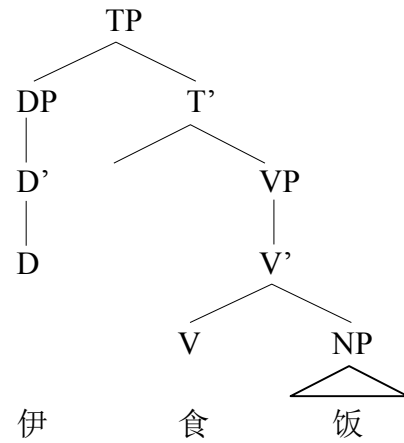
[adjunct] = [head]

tuai²⁴² pu⁵¹ to⁵¹→ tuai⁵¹ = pu³¹ to⁵¹

big grape

'big grape'

b.



伊 食 饭

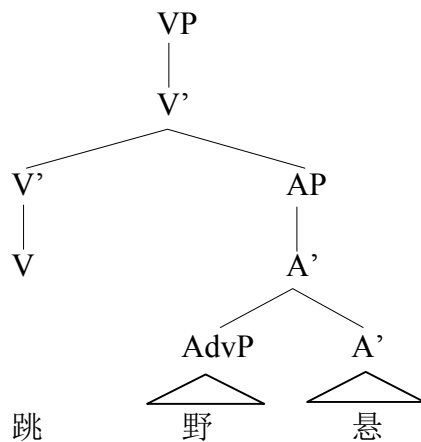
[argument] # [head] = [argument]

ʔi⁴⁴ siεʔ⁵ puoŋ²⁴²→ ʔi⁴⁴ # siεʔ²¹ = puoŋ²⁴²

he eat rice

'He ate food.'

c.



跳 野 悬

[adjunct] = [head]

[head] # [adjunct]

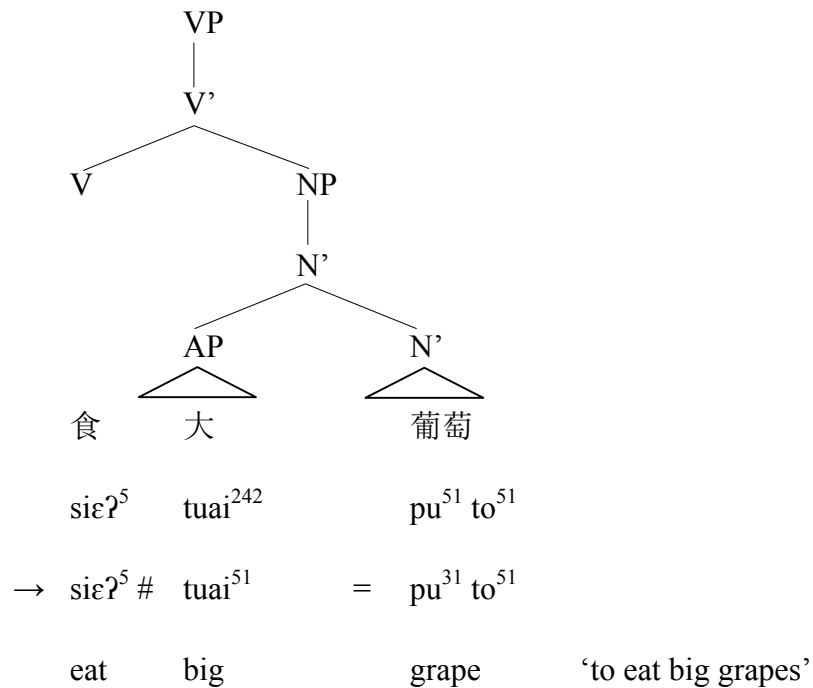
t^hiu²¹³ ʔia³¹ keiŋ⁵¹→ t^hiu²¹³ # ʔia²¹ = keiŋ⁵¹

jump very high

'(somebody) jumps very high'

However, notice that it is unclear whether the modifier and argument in the Fuzhou Tone Sandhi Domain definition in (27) refer to maximal projection or zero projection, which makes Hung's analysis run into some empirical obstacles. Let's take a look at the following example where the NP is modified by an AP:

(32)



Prediction 1

[adjunct] = [head]

[head] = [argument]

*siεʔ²¹ = tuai²¹ = pu³¹ to⁵¹

Prediction 2

[head] # [adjunct] = [head]

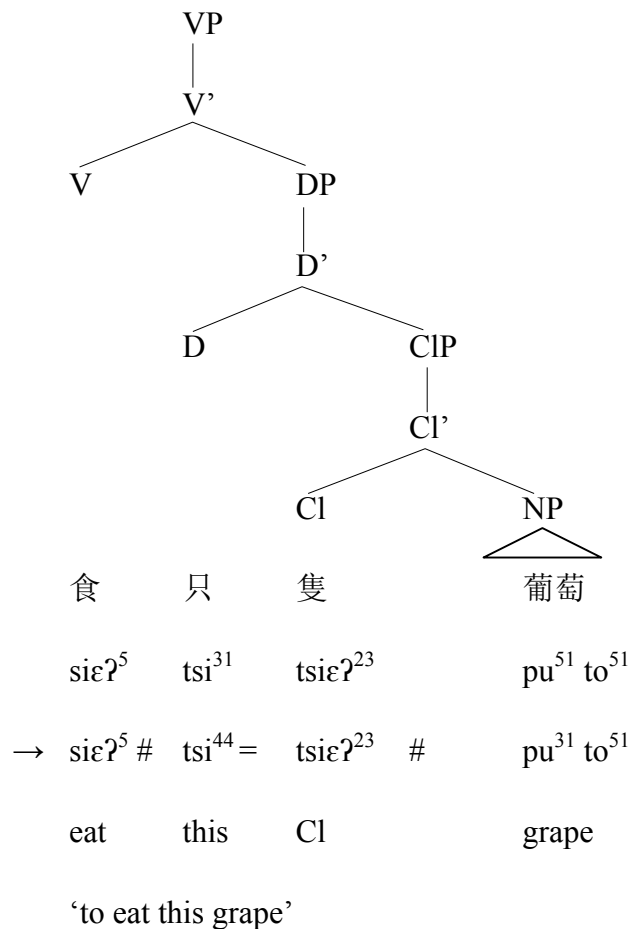
siεʔ⁵ # tuai²¹ = pu³¹ to⁵¹

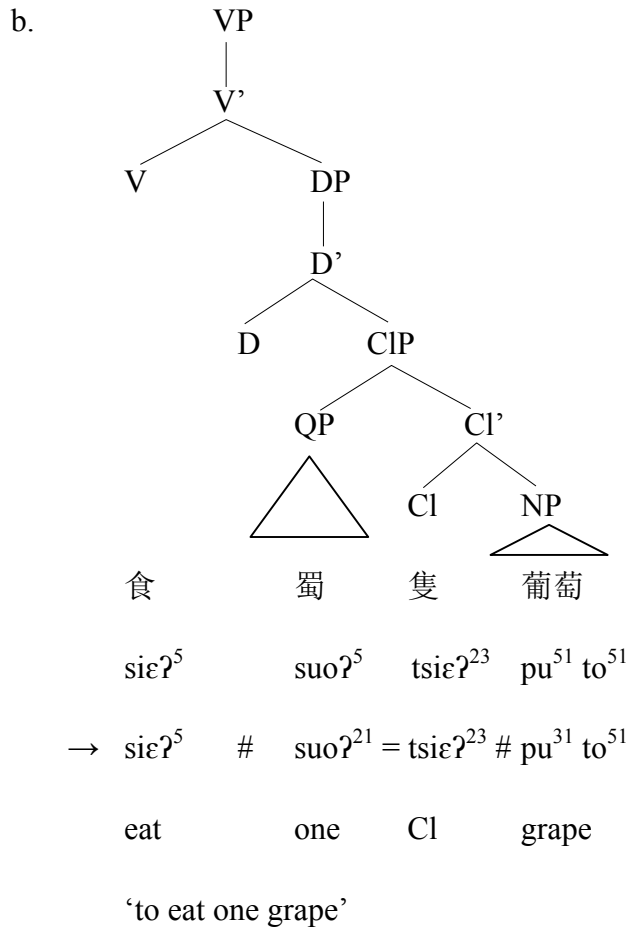
As we can see from (32), Hung's analysis could have two predictions for this example. If the modifier and argument are interpreted at the maximal projection level, then TS is predicted to apply between the V 食 'eat' and the NP 大葡萄 'big grapes' since they stand in the relationship of "head = argument", as shown in Prediction 1, which

is an incorrect prediction. We could give Hung the benefit of the doubt and assume that the modifier and argument are interpreted at the zero projection level, as shown in Prediction 2, which is a correct prediction. However, one can find that Prediction 2 can hardly serve as a convincing example to support Hung's theory since the AP 大 'big' in this case is the adjunct to the head of NP, namely 葡萄 'grape', rather than the adjunct to the head of VP, namely 食 'eat'. Thus Prediction 2 runs against the spirit of syntax since one is forced to allow the function of part of a constituent to supersede the function of the entire constituent.

By the same token, Hung's analysis fails to account for the blocking of TS between the V and the DP in (33a). The blocking of TS between the V and the ClP in (33b) also poses an empirical problem for Hung's analysis.

(33)a.





Since the term “argument” in syntax usually refers to the constituent that functions as the subject or the object and completes the meaning of a predicate, the distinction between adjuncts and arguments in Hung’s (1987) analysis is not able to deal with the relationship among determiner/quantifier, classifier, and head noun. Thus Hung’s analysis fails to account for the blocking of TS between the classifier and the NP as well as the application of TS between the determiner/quantifier and the classifier in the examples in (33).

6.2.2.6 Zhang (1992)

In Zhang's (1992) dissertation, he argues that both functional categories and syntactic conditions should be taken into consideration in defining the domain of application of Fuzhou TS at the phrasal level. In terms of the position between functional relations, Zhang follows Hung's observation mentioned in (25). Then he argues that in addition to the position between functional categories, Fuzhou TS at the phrasal level is also sensitive to syntactic branching structure. To be specific, only a right-branching structure which bears functional relation "adjunct = head" or "head = argument" will form a tone sandhi domain, while a left-branching structure will turn out to have two domains. Different from Hung, who takes the difference between right/left-branching structures as a prosodic constraint as in (28), Zhang argues that it is a syntactic condition, namely, the c-command condition (defined by Reinhart 1981), as presented in (34).

(34) C-Command (Reinhart 1981)

Node A c(onstituent)-commands node B iff the branching node most immediately dominating A also dominates B.

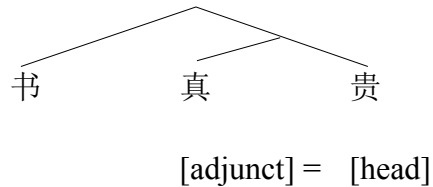
Based on the assumption that functional categories are affected by c-command relation with respect to the application of TS at the phrasal level in the Fuzhou dialect, Zhang proposes the domain formation rule of phrasal TS in Fuzhou as in (35).

(35) Phrasal TS Domain Formation (Zhang 1992)

The phrasal tone sandhi rule is applied iteratively right-to-left to the syllable which is either the adjunct or the head of an argument when the syllable c-commands a following syllable.

Unlike Hung's (1987) analysis which involves a number of principles as presented in (26-30), Zhang's analysis nicely captures most facts with only one simpler rule, as illustrated with the following examples adapted from Zhang (1992).

(36)a.



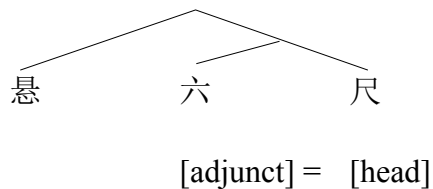
[argument] # [head]

tsy⁴⁴ tsij⁴⁴ kui²¹³→ tsy⁴⁴ # tsij⁵¹ = kui²¹³

book very expensive

'Books are very expensive.'

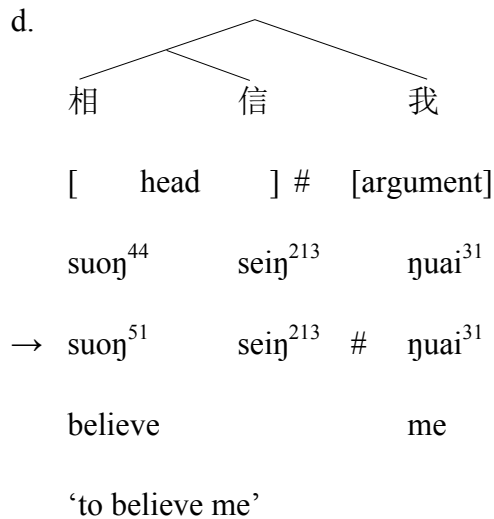
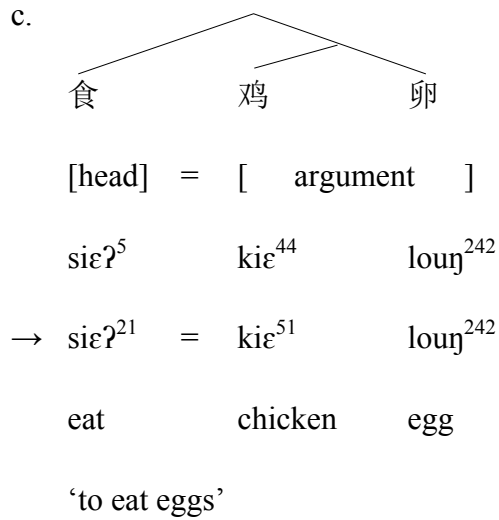
b.



[head] # [adjunct]

keiŋ⁵¹ løy?⁵ ts^huo?²³→ keiŋ⁵¹ # løy?²¹ = ts^huo?²³

high six foot 'six-foot-high'



In (36a), 真 ‘very’ is the adjunct which c-commands the head 贵 ‘expensive’, and hence obtains a sandhi tone. 书 ‘book’ is the argument of the head and therefore cannot undergo TS. In (36b), 六 ‘six’ obtains a sandhi tone since it is the adjunct and c-commands the head 尺 ‘foot’. In contrast, although 悬 ‘high’ c-commands the following constituent, the relationship between 悬 ‘high’ and the following constituent is head-adjunct. Therefore, 悬 ‘high’ maintains its citation tone.

(36c) and (36d) illustrate how Zhang’s analysis deals with the contrast between monosyllabic verbs and disyllabic verbs. In (36c), 食 ‘eat’ c-commands the

following constituent. In addition, 食 ‘eat’ and its object 鸡卵 ‘chicken-eggs’ stand in a head-argument relationship. Therefore, the head 食 ‘eat’ obtains a sandhi tone. In contrast, in (36d), according to Zhang (1992), the object 我 ‘me’ is not c-commanded by the preceding syllable 信 ‘to believe’, and thus TS is blocked between the last two syllables, although the verb 相信 ‘to believe’ and the object 我 ‘me’ stands in a head-argument relationship.

Despite its strengths, Zhang’s analysis is not perfect. First, the definition in (35) needs refinements. Stating that “when the syllable c-commands a following syllable”, the definition in (35) seems to take the concept of c-command as a relationship between syllables but not between nodes of a syntax tree. Also, if a syntactic constituent is composed of more than one syllable, it is the entire polysyllabic constituent instead of one of these syllables that serves as either the adjunct or the head of an argument. By stating that “the syllable which is either the adjunct or the head of an argument”, the definition in (35) has already implied that only monosyllabic constituent can undergo phrasal-level TS.

Second, like Hung’s (1987) analysis, Zhang’s (1992) analysis also has difficulty in dealing with complex verb-object constructions like (32) and (33). On the one hand, since it is the “syllable” that plays an important role in Zhang’s analysis, we assume that the adjunct and the argument in his analysis refer to zero projection. Thus Zhang’s analysis can account for cases like (32) in which TS is blocked between the head verb and the following adjunct of the NP. Nonetheless, as discussed in Section 6.2.2.5, this implies that the function of part of a constituent supersedes the function of the entire constituent. On the other hand, like Hung’s analysis, the

adjunct-argument distinction that is relied heavily on in Zhang's analysis also fails to deal with the relationship among determiner/quantifier, classifier, and head noun in cases like (33).

6.2.2.7 Chan (1998)

As mentioned in Chapter III, Chan (1998) claims that the Fuzhou tone sandhi domain corresponds with the foot. She argues that at the phrasal level, a phonological phrase must be constructed first by making use of syntactic information, and then feet which are defined with respect to the length of the syntactic word and/or the position of the syntactic word are built within the phonological phrase. Chan's construction of the phonological phrase is based on the idea of lexical government advanced by Hale & Selkirk (1987) and Lin (1994). Government is defined as follows (cf. Chomsky 1981, 1982, 1986, Hale & Selkirk 1987, among others):

(37) Government

A governs B iff A m-commands B and every barrier for B dominates A.⁵¹

Based on the concept of government, Lin (1994) proposes the algorithm of tone group formation in the Xiamen dialect of Chinese, as presented in (38).

(38) Xiamen Chinese Phrasing Parameter (Lin 1994)

$]_{X_{\max}}, X^{\max}$ not lexically governed.

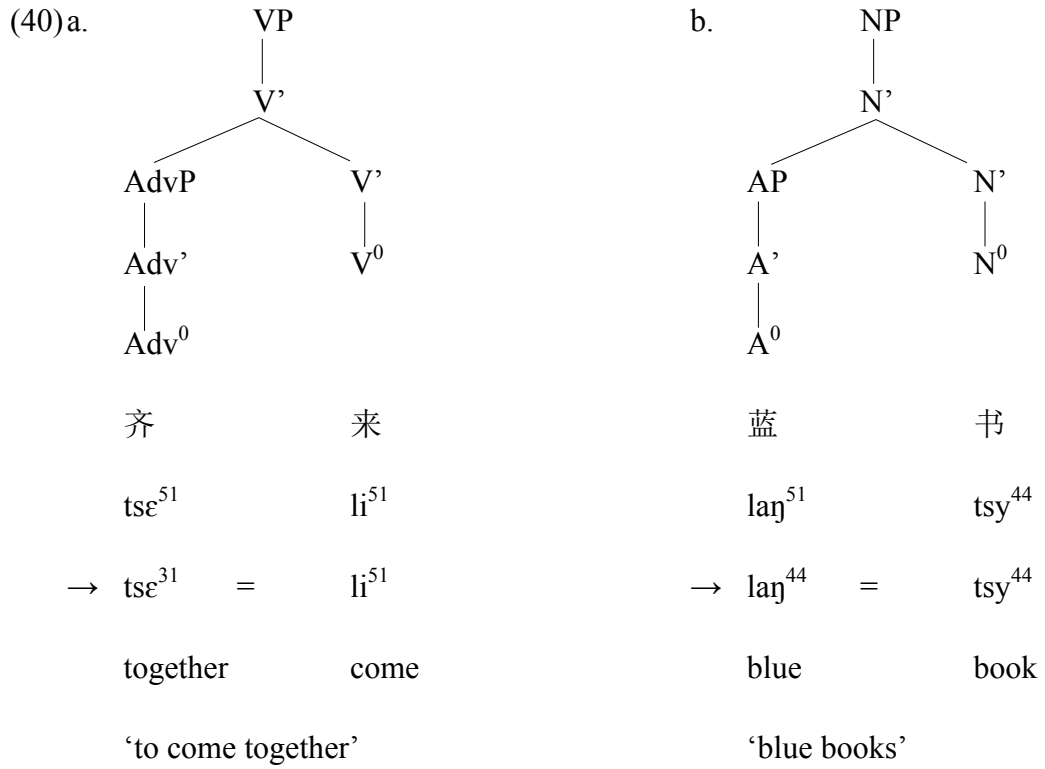
⁵¹ Chomsky (1986) defines m-command as follows: A m-commands B iff A does not dominate B and every maximal projection C that dominates A dominates B. A barrier is defined in Chomsky (ibid.) as follows: G is a barrier for B iff (a) or (b): (a) G immediately dominates D, D a BC (blocking category) for B; (b) G is a BC for B, and G is not IP (inflectional phrase).

Inspired by the approach advanced by Lin (1994), Chan (1998) argues for a lexical-government-based analysis for the issue of Fuzhou phrasal TS domain. She proposes a Fuzhou Phonological Phrase rule which inserts a boundary at the right edge of any X^0 if its maximal projection XP is not lexically governed, as presented in (39).

(39) Fuzhou Phonological Phrase (Chan 1998)

{right, X^0 }, where XP is not lexically governed.

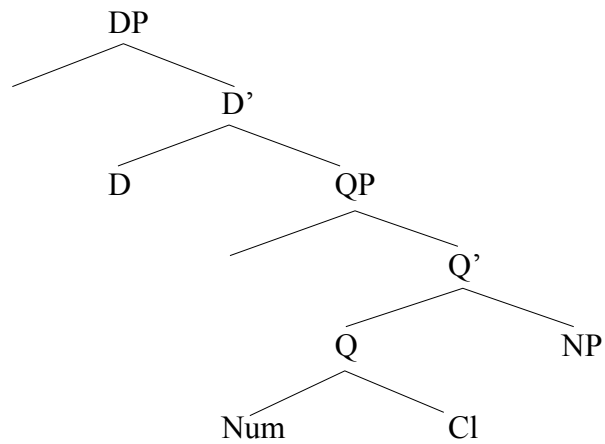
The adverbial modifier and the adjectival modifier are assumed to be adjoined to V' and N' respectively and thus are located inside the domain of V^0 and N^0 . Therefore, the adverbial modifier and the adjectival modifier are lexically governed by the verb and the noun respectively and thus no phonological phrase boundary is inserted at the right edge of Adv^0 and A^0 according to (39). Hence, the TS rule is correctly predicted to apply between the adverbial modifier and the verb, as well as between the adjectival modifier and the noun, namely, between the pre-head adjunct and the head. The following examples in (40) are adapted from Chan (1998):



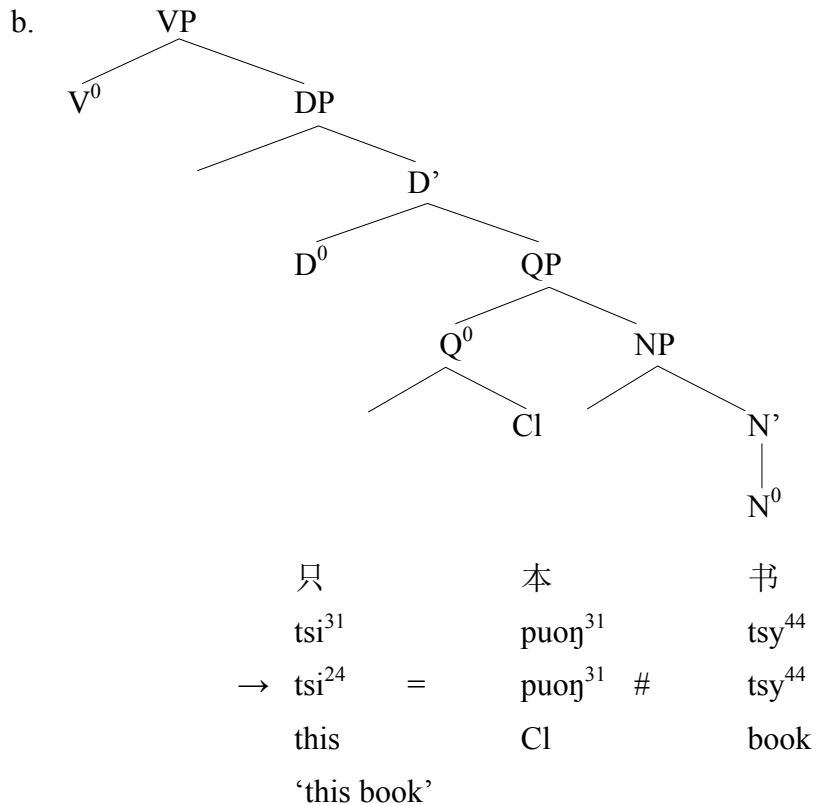
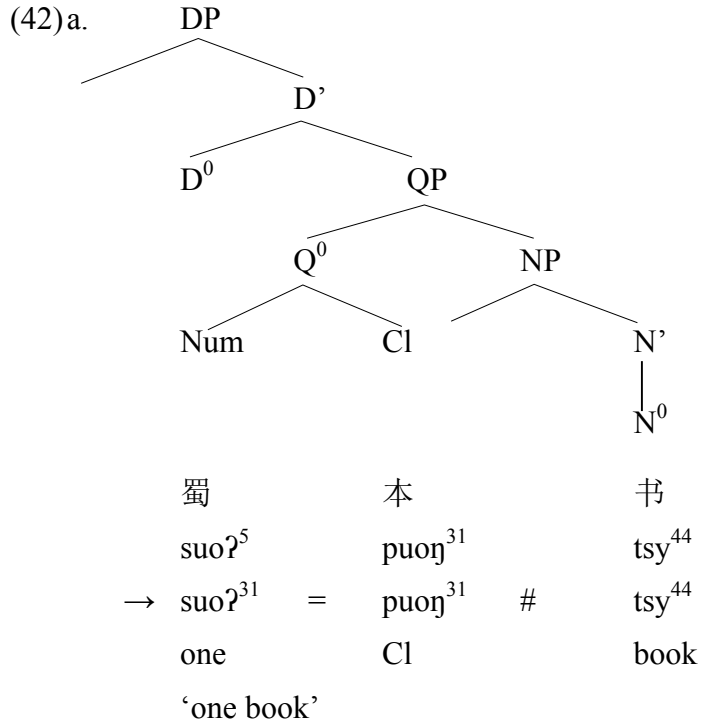
In order to account for the tone sandhi behavior of classifier-noun constructions,

Chan adopts Lin's (1994) assumption of DP structure, presented in (41).

(41) DP structure in Lin (1994)



With the DP structure in (41), Chan claims that the rule in (39) can account for classifier-noun constructions, which pose difficulties for Hung (1987) and Zhang (1992). Two examples given by Chan (1998) are listed as follows:

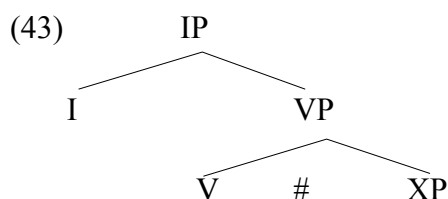


Chan argues that in both examples, the QPs are non-lexically governed by the D^0 and therefore the right margin of their head Q^0 is marked with a tonal domain boundary according to (39). In (42b), the DP is lexically governed by the V^0 and thus the right margin of D^0 is not marked with a TS domain boundary.

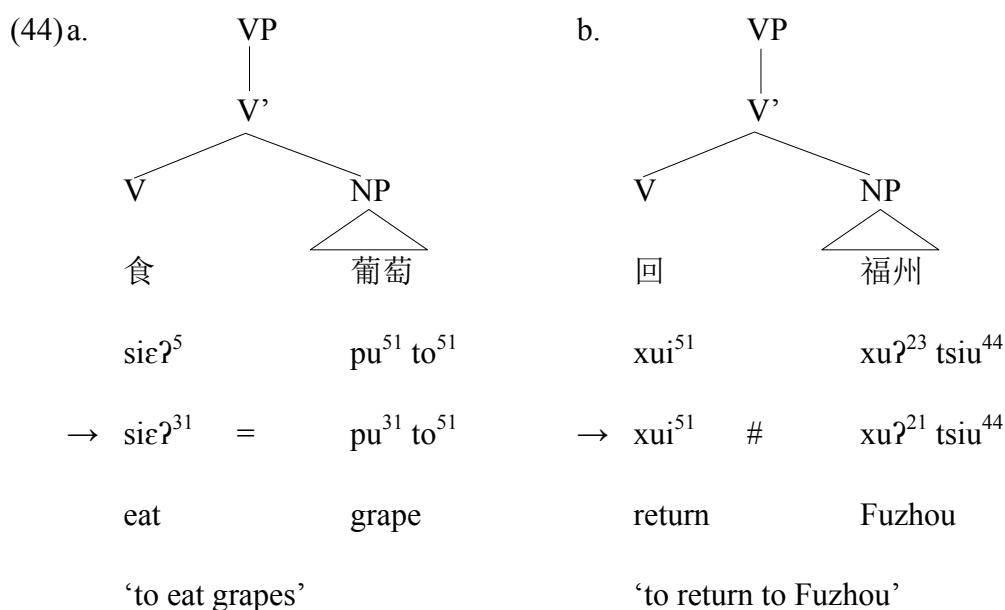
This analysis, at first sight, perfectly solves the problems posed by classifier-noun constructions. A closer examination, however, reveals that there are at least three problems in Chan's analysis. First, it is not clear why in both examples provided by Chan, Q^0 appears in the specifier position of QP and Q' is deleted from the tree. Second, the DP structure in (41) adopted by Lin (1994) and Chan (1998) is quite debatable since two terminal nodes Num and Cl are located directly under Q/Q^0 that is another terminal node. This appears that Num and Cl form a compound that is located under Q^0 . The last and the most important problem is, Chan does not discuss whether Num and Cl have their own maximal projection and whether their maximal projection, namely NumP and ClP, are lexically governed or not. If they are both non-lexically governed by D^0 , then the right margin of Num and Cl should be marked with a tonal domain boundary. In that case, Chan's analysis fails to account for the application of TS between Num and Cl. If they are both lexically governed by some nodes in the tree, then the right margin of both Num and Cl would not be marked with a tonal domain boundary. In that case, Chan's analysis fails to account for the blocking of TS between the classifier and the noun.

In terms of VP constructions, Chan points out that the rule in (39) requires that the right edge of the head V^0 of the VP must be marked with a tonal domain boundary

since the VP is non-lexically governed by INFL which is a functional category, as illustrated in (43).



According to this analysis, the head V^0 of the VP must be marked with a tonal domain boundary no matter what the post-verbal XP is. This nicely predicts the blocking of TS between the verb and the post-verbal adjunct. Nevertheless, when the verb is followed by a complement, two types of TS behavior of the verb are observed in Chan (1998). Compare the examples in (44).



The blocking of TS in (44b) can be predicted by (43) while the application of TS in (44a) cannot. Thus Chan is forced to introduce a distinction between two types of argument NPs, namely [+theme] NP and [-theme] NP. She claims that when the

argument NP bears a [+theme] theta-role, the verb and the argument NP form one incorporated noun through the process of Noun Incorporation (cf. Mithun 1984, Baker 1988). Thus both the verb and the argument NP are dominated by the V^0 node, and hence the tonal domain boundary is inserted at the right edge of V^0 that coincides with the right edge of the NP, but not inserted between the verb and the argument NP. In contrast, if the argument NP is marked as [-theme], it forms a syntactic phrase with the verb and thus a tonal domain boundary is inserted between the verb and the NP according to (43), which causes TS to be blocked. Chan's schematization of these two types of V-NP constructions is presented in (45).



This analysis, which treats the $V\text{-}NP_{[+\text{theme}]}$ as an incorporated noun constructed through Noun Incorporation while $V\text{-}NP_{[-\text{theme}]}$ as a syntactic phrase, seems to account for the contrast between the two types of tone sandhi behavior of the verb in (44). However, such an analysis is somewhat ad hoc and counter-intuitive. The Fuzhou dialect, like many other Chinese dialects, has almost no overt morphology, and hence is very different from polysynthetic languages such as Mohawk and Southern Tiwa (cf. Baker 1988) in which unique affixation patterns can be used to distinguish an incorporated noun from its corresponding syntactic phrase. Therefore, it is very difficult to figure out whether a direct object in the Fuzhou dialect participates in the process of Noun Incorporation or not.

Moreover, according to Chan's analysis, the structural position of nouns in the syntactic tree is actually determined by the theta-roles assigned to the nouns. Chan's analysis recalls us to Baker's (1988) Uniformity of Theta Assignment Hypothesis (UTAH), which states that identical thematic relationships between items are represented by identical structural relationships between these items at the level of D-structure and thus associates each theta-role with a constant structural position. The UTAH, however, has been argued to be at odds with evidence across languages (see Li 2005 and Borer 2005 for problems with and arguments against the UTAH; also cf. Hale & Keyser 1993, 2002, among others, for a different approach to the correspondence between theta-role assignment of arguments and the syntactic positions of arguments). Therefore, the analysis in (45) is a theoretical pitfall in Chan's theory although it seems to nicely capture the distinction of TS behavior exhibited by different types of argument NPs.

Also worth noting is that the notion of "lexical government", as a key concept in Chan's analysis, is rooted in the assumptions of the Government and Binding Theory (Chomsky 1981, 1982). The notion of "government", nonetheless, has been eliminated from the syntactic theory in the Minimalist Program (Chomsky 1993, 1995, 2000), which somewhat undermines the validity of Chan's analysis.

6.2.2.8 Summary

In Section 6.2.2, I have reviewed the most representative previous studies concerning the issue of Fuzhou TS at the phrasal level. Starting from Chen & Norman (1965a), several different analyses have been proposed to deal with this issue. Some

of them heavily rely on syntactic notions, e.g., Chan (1980) and Zhang (1992); some of them mainly employ prosodic notions, e.g., Wright (1983); and some of them combine both syntactic and prosodic notions, e.g., Shih (1986), Hung (1987), and Chan (1998). Semantic notions such as theta roles are also involved in some analyses, e.g., Wright (1983) and Chan (1998). All these analyses successfully account for some and even most of the Fuzhou data but all of them run into some empirical and/or theoretical obstacles. In order to deal with all these empirical or theoretical problems, an alternative analysis is needed based on a thorough investigation of relevant data, which is discussed in detail in Section 6.2.3.

6.2.3 An alternative analysis of Fuzhou phonological tone sandhi at the phrasal level

From previous studies discussed in Section 6.2.2, we can find that the key to dealing with the issue of Fuzhou TS at the phrasal level is to define its domain of application. As we can see from all relevant examples presented in Section 6.2.2, the phrasal-level domain within which TS applies is always composed of more than one prosodic word. Thus we can assume that the phrasal-level domain of Fuzhou TS must be a prosodic domain located higher than the prosodic word in the prosodic hierarchy, as also argued in Chapter III. Since relevant examples in Section 6.2.2 do not contain any clitic elements, the domain of application for Fuzhou TS at the phrasal level is not the clitic group. Moreover, these examples at the phrasal level, such as 食葡萄 ‘to eat grapes’ and 齐来 ‘to come together’, are not related to intonation contours. Hence the domain formed by such constructions is not the intonational phrase either. Therefore, the prosodic constituent that can serve as the domain of application for

phrasal-level Fuzhou TS must be the phonological phrase (PPh). Thus, the ultimate key to solving the notorious problem raised by Fuzhou TS at the phrasal level is to define the phonological phrase domain in this dialect.

In Section 6.2.3, I will first adopt the two major approaches to phonological phrasing, namely RBA and EBA, to see whether they can correctly define the phonological phrase in the Fuzhou dialect. I will show that neither of these two main approaches alone can define the phonological phrase in Fuzhou (Section 6.2.3.1). In Section 6.2.3.2, an alternative approach to phonological phrasing in the Fuzhou dialect, which combines RBA and EBA, will be proposed. Relevant data will be re-analyzed to provide support to this hybrid approach. In Section 6.2.3.3, some residual issues of Fuzhou TS at the phrasal level are discussed, which will provide further support to the alternative approach proposed in Section 6.2.3.2.

6.2.3.1 EBA and RBA to phonological phrasing in the Fuzhou dialect

As mentioned in Section 2.1.4.3, two major approaches, namely, the Edge/End-Based Approach (EBA) and the Relation-Based Approach (RBA) have been developed within the framework of prosodic phonology. These two approaches differ from each other with respect to the definition of the phonological phrase, since they employ different types and amount of syntactic information in the formation of the phonological phrase domain. Both approaches have been adopted by many linguists and have successfully accounted for a number of phonological phenomena related to the phonological phrase across languages, as pointed out in Section 2.1.4.3.

In this subsection, we will see whether EBA and/or RBA can account for the issue of the phonological tone sandhi domain at the phrasal level in the Fuzhou dialect.

6.2.3.1.1 EBA to phonological phrasing in the Fuzhou dialect

Let us start with the Edge/End-Based Approach. As we have seen in Section 2.1.4.3.2, end parameter settings of phonological phrasing have been proposed within the EBA, as reproduced in (46).

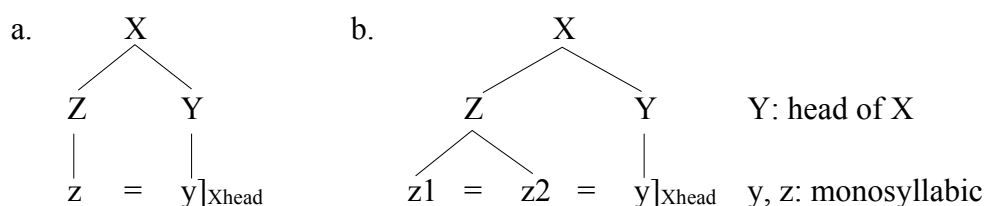
(46) End parameter settings for the phonological phrase (Selkirk 1986)

(I) a. $]_{X_{max}}$ b. $_{X_{max}}[$ (II) a. $]_{X_{head}}$ b. $_{X_{head}}[$

Thus the phonological phrase is defined in the way that the right or left edge of any phonological phrase coincides with the corresponding edge of a head or a maximal projection. The major phonological phrase is defined corresponding to $]_{X_{max}}$ or $_{X_{max}}[$, and the minor phonological phrase/small phonological phrase is defined corresponding to $]_{X_{head}}$ or $_{X_{head}}[$.

We can find that there are several EBA-like analyses in the literature on the issue of Fuzhou TS at the phrasal level, e.g., Chan (1980), Shih (1986) and Chan (1998). According to Chan's (1980) Head Dominance Condition (HDC), the head Y (in Chan's terminology) of a maximal projection X and the first preceding constituent Z dominated by X are included in the same tone sandhi domain. It seems that Chan's analysis can be interpreted as employing the end-setting $]_{X_{head}}$ in the definition of the phrasal TS domain in the Fuzhou dialect, as presented in (7) and reproduced in (47).

(47) Chan's (1980) analysis



Section 6.2.2.2 has shown that Chan's (1980) analysis has some problems in dealing with the Fuzhou phrasal tone sandhi: (a) it wrongly excludes the possibility of the application of TS within the verb-object construction since the right edge of the head V is always marked with a TS domain boundary according to Chan's (1980) HDC; (b) it fails to account for the application of TS between the head D of DP and the following classifier; and (c) it is not able to account for the contrast exhibited by monosyllabic verbs and disyllabic verbs.

Like Chan (1980), Shih's (1986) Revised Head Dominance Condition (HDC) also inserts a tone sandhi domain boundary on the right edge of every head X. Shih's (1986) analysis is different from Chan (1980) in that Shih's analysis requires that when XP is an adjunct, the right edge of the head X is not marked with a boundary. Thus, in Shih's analysis, the right edge of a tone sandhi domain coincides with the right edge of a head X, namely $]_{X_{\text{head}}}$, except when XP is an adjunct. I have demonstrated in Section 6.2.2.4 that Shih's (1986) analysis fails to deal with the mixed TS behavior of verb-object constructions without the expansion rule—similar to Chan (1980), Shih's analysis cannot account for the application of TS in some verb-object constructions since the Revised Head Dominance Condition marks the right edge of every head V.

In Chan's (1998) definition of the phonological phrase in the Fuzhou dialect, the right edge of every head X , whose maximal projection XP is not lexically governed, coincides with the right edge of a phonological phrase. In other words, in Chan (1998), it is the end-setting $]_{X_{\text{head}}}$ that marks the right edge of the phonological phrase, similar to what we have seen in Chan's (1980) and Shih's (1986) analyses. Since Chan's (1998) definition of the phonological phrase in the Fuzhou dialect also marks the right edge of the head X , her analysis has difficulty in dealing with the application of TS between the monosyllabic verb and some post-verbal arguments as well. As discussed in Section 6.2.2.7, Chan (1998) has to propose an additional stipulation, namely, Noun Incorporation, to account for the contrast caused by different types of post-verbal arguments.

Thus, we can find that the end-setting $]_{X_{\text{head}}}$ seems not enough to identify the right edge of the phonological phrase in Fuzhou, since it always marks the right edge of the head V which does not necessarily coincides with the right edge of a tone sandhi domain. To define the phonological phrase in Fuzhou with the end-setting $]_{X_{\text{head}}}$, one has to propose an additional condition or stipulation that can deal with the mixed tone sandhi behavior exhibited by verb-object constructions, such as Shih's (1986) expansion rule in (24) and Chan's (1998) Noun Incorporation analysis in (45).

In contrast, the end-setting $_{X_{\text{head}}}$ requires that the left edge of a head should be labeled as the left edge of a phonological phrase. Since a pre-head adjunct constituent (e.g., the attributive adjective before the head noun and the adverbial before the head verb/adjective) is usually included in the same tone sandhi domain with the head, as discussed in Section 6.2.2, the left edge of the head should not be marked with a

boundary. In other words, the left edge of a head in the Fuzhou dialect does not coincide with the left edge of a phonological phrase. Hence, the phonological phrase in this dialect cannot be defined with the end-setting $_{X_{head}}$.

If the phonological phrase in the Fuzhou dialect is defined with the end-setting $]_{X_{max}}$, similar to the domain of tone sandhi in Xiamen and the domain of stress assignment in Chi Mwi:ni (cf. Selkirk 1986), the problem raised by the possibility of application of TS in some verb-object constructions will be resolved. However, other problems arise. The first problem is caused by the fact that TS is not allowed in all verb-object constructions. As we have seen in Section 6.2.2.2, TS is blocked between a verb and an object composed of a complex DP, and also blocked between a disyllabic verb and its object. Thus if we mark the right edge of a VP as the right edge of the phonological phrase, we still need to propose additional stipulations to account for the possibility of blocking of TS in some verb-object constructions. The second problem is how to deal with the application of TS in modifier-head constructions (namely attributive-noun and adverbial-verb/adjective constructions). The end-setting $]_{X_{max}}$ inserts a phonological phrase boundary on the right edge of an AP or an AdvP, and thus we are not able to explain the application of TS between the adjunct AP/AdvP and the head. Unless these two problems can be well resolved, the right edge of the maximal projection XP in the Fuzhou dialect must not be marked as the right edge of the phonological phrase.

The last end-setting of the phonological phrasing in EBA, namely $_{X_{max}}$, is not effective in dealing with the definition of the phonological phrase in Fuzhou either. By assuming $_{X_{max}}$, we mark the left edge of every XP as the left edge of a

phonological phrase. Thus the left edge of an object NP will coincide with the left edge of a phonological phrase and is never incorporated into a phrasal TS domain with the preceding verb. By doing so, the possibility of application of TS in some verb-object constructions is again wrongly excluded.

So far, we can find that no matter which of the four end parameter settings for phonological phrasing proposed in EBA is assumed in the definition of Fuzhou phonological phrase, there are always some cases of Fuzhou phrasal TS that cannot be covered. It has been mentioned in Section 2.1.4.3.3 that EBA has been translated into a group of violable constraints within the framework of Optimality Theory, and several constraints have been proposed with respect to phonological phrasing, e.g., $A_{LIGN-XP}$, L/R (Selkirk 1996, Truckenbrodt 1995, 1999), W_{RAP-XP} (Truckenbrodt 1995, 1999), and N_{ONREC} (Selkirk 1996). A constraint-based analysis, however, is not superior to analyses based on end parameter settings regarding phonological phrasing in the Fuzhou dialect.

On the one hand, if recursivity is banned, namely, if the constraints W_{RAP-XP} and N_{ONREC} outrank $A_{LIGN-XP}$ in the grammar of the Fuzhou dialect, the entire VP will be treated as one single phonological phrase with no inner phonological phrases. In that case, nothing in the OT-based EBA can account for the blocking of TS in some verb-object constructions. On the other hand, if recursivity is allowed, namely, if N_{ONREC} is ranked lower than W_{RAP-XP} and $A_{LIGN-XP}$, a VP will be treated as a phonological phrase that contains an inner phonological phrase formed by the embedded NP. In that case, we have difficulty in accounting for the application of TS in some verb-object constructions. To put it simply, the analysis based on EBA within

the framework of OT is not able to resolve the problem caused by the mixed behavior of phrasal-level TS in verb-object constructions.

6.2.3.1.2 RBA to phonological phrasing in the Fuzhou dialect

In contrast to EBA, the definition of the phonological phrase within the RBA does not refer to the ends of heads or maximal projections. Instead, it makes reference to the recursive and the non-recursive side of a head, as in (48), in which the non-recursive side is defined as the side where specifiers are located and only V, N, and A are considered lexical heads according to Nespor & Vogel (1986).

(48) Phonological phrase (φ) formation (Nespor & Vogel 1986)

The domain of φ consists of a clitic group⁵² which contains a lexical head (X) and all clitic groups on its non-recursive side up to the clitic group that contains another head outside of the maximal projection of X.

Branching also plays a role in the definition of the phonological phrase within RBA. Thus an optional rule for restructuring φ is proposed in Nespor & Vogel (1986), given in (49), which has the effect of eliminating non-branching φ s.

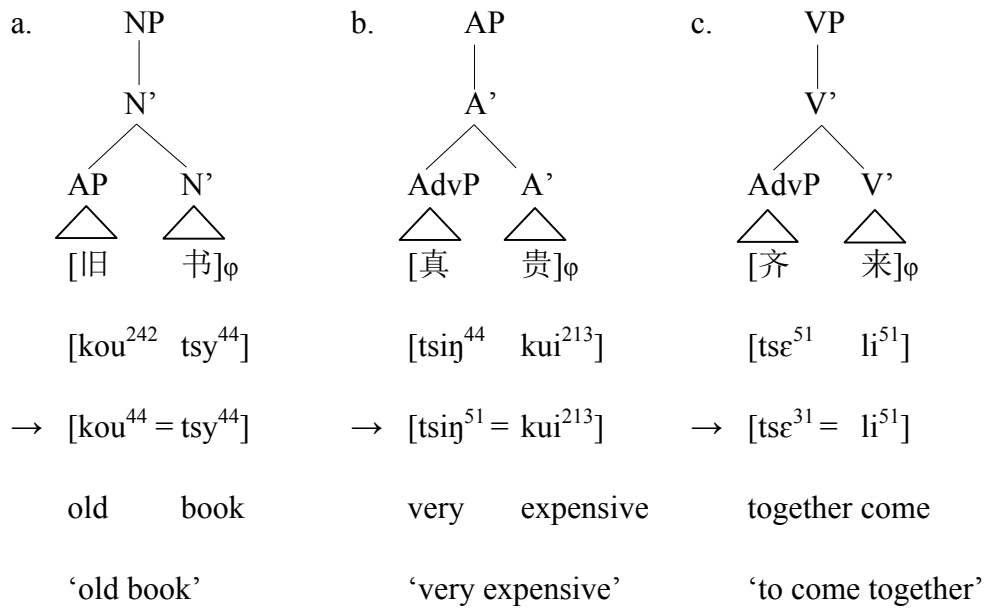
(49) φ restructuring (optional)

A non-branching φ , which is the first complement of X on its recursive side, is joined into the φ that contains X.

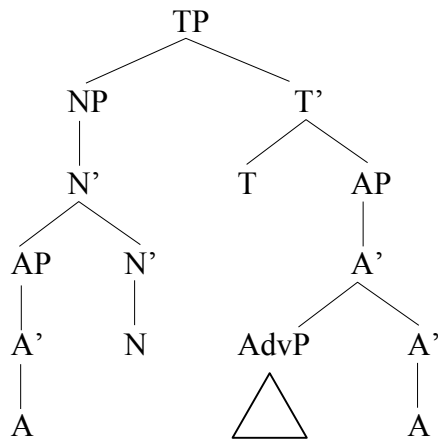
⁵² In accordance to the original Strict Layer Hypothesis, Nespor & Vogel (1986) have to assign the clitic group status to every prosodic word in the definition of the phonological phrase, since the clitic group, rather than the prosodic word, is immediately dominated by the phonological phrase in the prosodic hierarchy. Since I assume that the violation of Exhaustivity is allowed, the ‘clitic group’ in (48) is actually better to be understood as ‘clitic group or prosodic word’.

Although some notions mentioned in (48) and (49), e.g., head, complement, branching, and maximal projection, have been employed in some previous studies I have reviewed, we have not seen any previous studies dealing with the issue of the Fuzhou phrasal TS strictly on the basis of the definition of the phonological phrase in (48) and the optional rule in (49). The following discussion in this subsection presents an exploration of Fuzhou TS examples at the phrasal level following the RBA. We can find that a number of Fuzhou data mentioned in Section 6.2.2 can be accounted for by adopting (48) and assuming (49) to be obligatory in the Fuzhou dialect, as illustrated in (50-53).

(50) Modifier-head (attributive-noun and adverbial-adjective/verb)



(51) Subject-predicate



[旧 书]_φ [真 贵]_φ

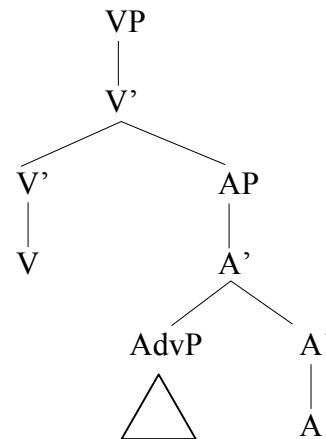
[kou²⁴² tsy⁴⁴] [tsiŋ⁴⁴ kui²¹³]

→ [kou⁴⁴ = tsy⁴⁴] # [tsiŋ⁵¹ = kui²¹³]

old book very expensive

‘Old books are very expensive.’

(52) Verb-resultative complement



[跳]_φ [野 悬]_φ

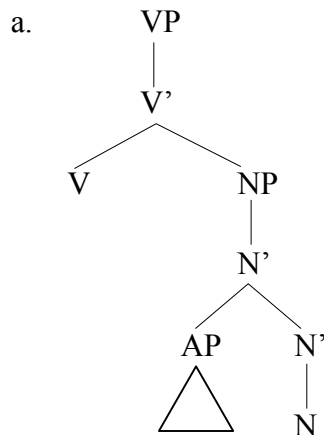
[t^hiu²¹³] [ʔia³¹ keiŋ⁵¹]

→ [t^hiu²¹³]# [ʔia²¹ = keiŋ⁵¹]

jump very high

‘(somebody) jumps very high’

(53) Verb-object



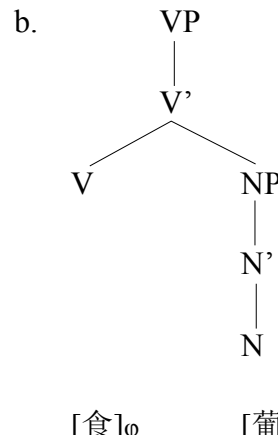
[食]_φ [大 葡萄]_φ

[siεʔ⁵] [tuai²⁴² po⁵¹ to⁵¹]

→ [siεʔ⁵] # [tuai⁵¹ = po³¹ to⁵¹]

eat big grape

‘to eat big grapes’



[食]_φ [葡萄]_φ

[食 葡萄]_φ (φ restructuring)

[siεʔ⁵ pu⁵¹ to⁵¹]

→ [siεʔ³¹ = pu³¹ to⁵¹]

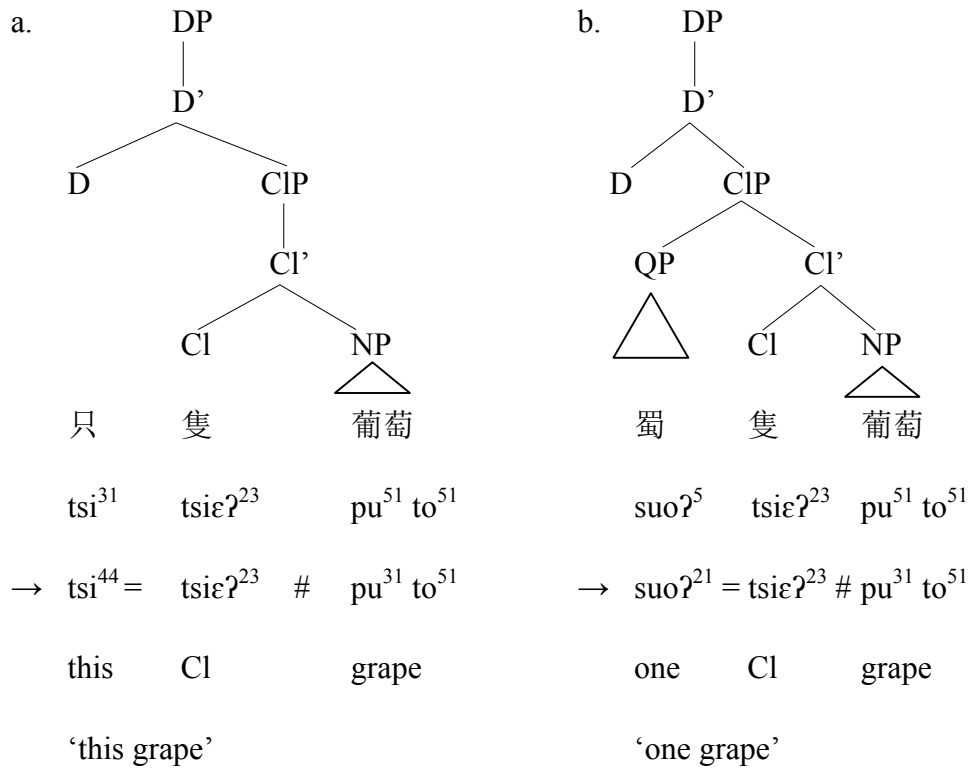
eat grape

‘to eat grapes’

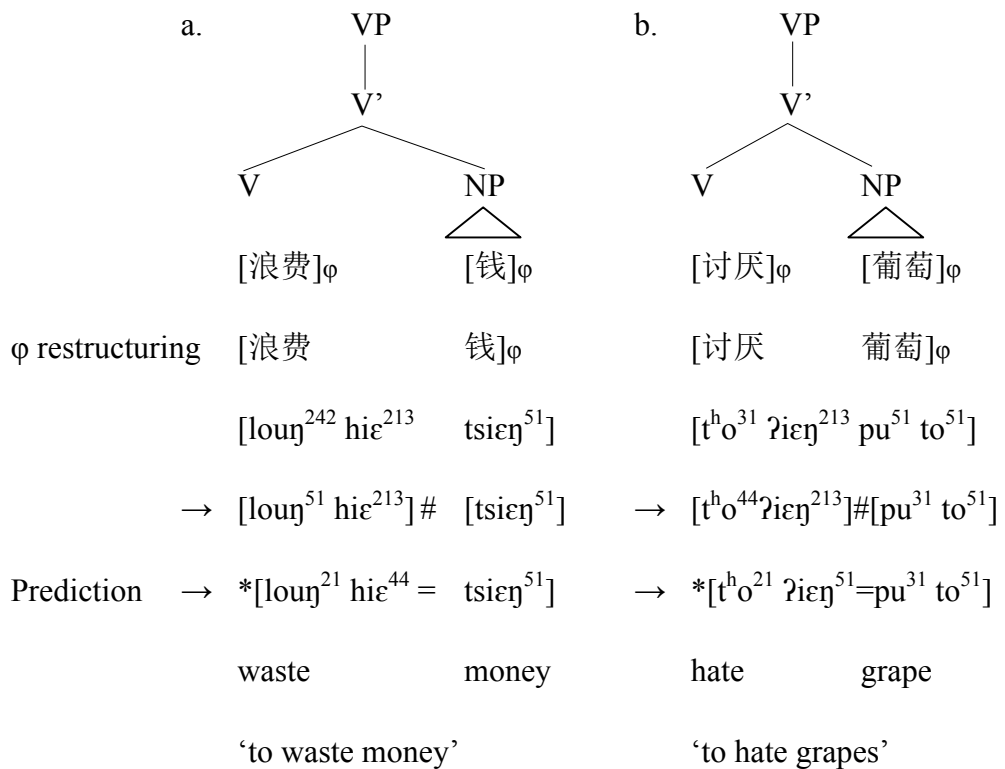
From (50-53), we can find that by defining the phonological phrase domain with the rule in (48), we actually group the pre-head adjunct and the head into one phonological phrase since they are both inside the maximal projection of the head, as exemplified in (50). This rule also separates the pre-head argument from the head since the pre-head argument usually belongs to a maximal projection that is outside of the maximal projection of the head, as exemplified in (51). Furthermore, this rule separates the post-head adjunct from the head since the post-head adjunct is always on the head's recursive side in Fuzhou, as exemplified in (52). As for the post-head argument, we separate the head and a branching complement while link the head and a non-branching complement by adopting the ϕ restructuring rule in (49), as exemplified in (53).

However, the analysis based on RBA is not perfect. Since only V, N, and A are considered as lexical heads in (48), nothing in the RBA-based analysis can account for the application of TS between the determiner/quantifier and the classifier, as exemplified in (54). In addition, the RBA-based analysis fails to deal with the blocking of TS between a disyllabic verb and its object NP, as exemplified in (55). Furthermore, the blocking of TS between a verb and a [-theme] argument seems not to be covered by the RBA-based analysis either, as exemplified in (56).

(54) Determiner/quantifier-classifier-noun



(55) Disyllabic verb-object



(56) Verb-[-theme] argument

	a.	VP V' / \ V NP [回] _φ [福州] _φ	b.	VP V' / \ V NP [住] _φ [福州] _φ
φ restructuring		[回 福州] _φ		[住 福州] _φ
		[xui ⁵¹ xuʔ ²³ tsiu ⁴⁴]		[tiu ²⁴² xuʔ ²³ tsiu ⁴⁴]
		→ [xui ⁵¹]# [xuʔ ²¹ tsiu ⁴⁴]		→ [tiu ²⁴²]# [xuʔ ²¹ tsiu ⁴⁴]
Prediction		→ *[xui ²¹ =xuʔ ²¹ tsiu ⁴⁴]		→ *[tiu ²¹ =xuʔ ²¹ tsiu ⁴⁴]
		return Fuzhou		live Fuzhou
		‘to return to Fuzhou’		‘to live in Fuzhou’

6.2.3.1.3 Summary

In Section 6.2.3.1, I have presented a discussion of EBA-based and RBA-based analyses of the definition of the phonological phrase, namely, the domain of TS at the phrasal level, in the Fuzhou dialect. We can find that neither of these two approaches can provide a completely satisfactory account for the issue of Fuzhou phrasal TS—an analysis based on EBA or RBA alone may be able to account for the phonological phrase formed by some phrasal-level constructions, while it may also make incorrect predictions about the phonological phrasing of some constructions. Thus, an alternative analysis, which is based on both RBA and EBA, may turn out to be a better solution.

6.2.3.2 An alternative approach to phonological phrasing in the Fuzhou dialect

In Section 6.2.3.1.1, we have seen that a number of relevant data of Fuzhou phrasal TS can be covered if the end-setting $]_{X_{\text{head}}}$ is assumed in defining the phonological phrase in this dialect, as we can see in Chan's (1980), Shih's (1986), and Chan's (1998) analyses. In order not to insert a boundary at the right edge of pre-head adjuncts, we only need to assume that only the right edge of the head of a non-adjunct XP will be marked, as Shih (1986) suggests. The most outstanding problem with such an analysis is it wrongly excludes the possibility of the application of TS within all verb-object constructions, since the right edge of the head V is always marked with a boundary according to the end-setting $]_{X_{\text{head}}}$. The ϕ restructuring rule presented in (49), nonetheless, can resolve this problem by joining a non-branching complement of the head V, namely a simple object, into the phonological phrase containing the V. Thus, the combination of the EBA end-setting $]_{X_{\text{head}}}$ and the RBA ϕ restructuring rule seems to cover a broader data than an analysis that is solely based on RBA or EBA. Thus the phonological phrase in the Fuzhou dialect can be tentatively defined as follows:

(57) Phonological Phrase (ϕ) domain in the Fuzhou dialect (1st approximation)

- a. Mark the right edge of every head X, except where XP is an adjunct;
- b. ϕ restructuring: a non-branching ϕ , which is the first complement of X on its recursive side, is joined into the ϕ that contains X.

However, we can find that this analysis fails to account for the application of TS between the determiner/quantifier and the classifier since the right edge of the head D or Q would be marked with a boundary according to (57a). Since both D and Q

belong to functional categories, the definition of the phonological phrase domain in (57) can be refined by stating that only the right edge of the lexical head⁵³ is marked. Thus we can have the following definition of the phonological phrase in the Fuzhou dialect.

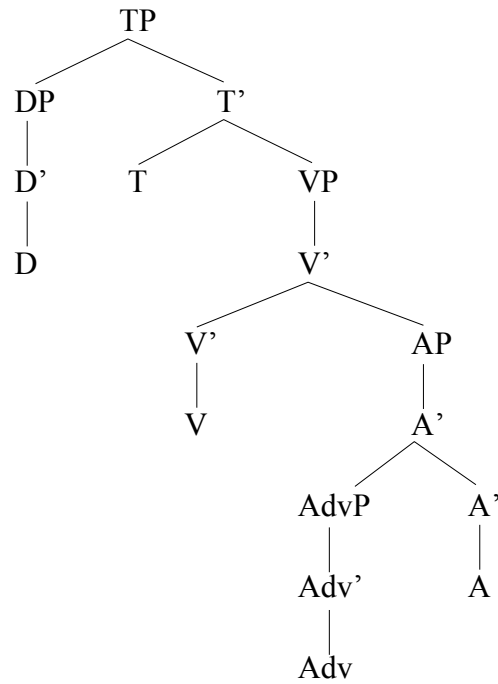
(58) Phonological Phrase (φ) domain in the Fuzhou dialect (2nd approximation)

- a. Mark the right edge of every lexical head X, except where XP is an adjunct;
- b. φ restructuring: a non-branching φ , which is the first complement of X on its recursive side, is joined into the φ that contains X.

By not marking the right edge of the functional head, however, the definition in (58) fails to prevent the head D of a subject DP from being grouped into a phonological phrase with a following V, as illustrated in (59).

⁵³ In this dissertation, I follow Huang, Li, & Li's (2009) categorization and assume that verbs (V), nouns (N), adjectives (A), and prepositions (P) are lexical heads. Adverbs (Adv) are also taken to be lexical heads, following the discussions in Cowper (1992), Culicover (1997), Falk (2001), Carnie (2007), among others.

(59)



[伊 跳]_φ [野 悬]_φ (predicted by (58))

[ʔi⁴⁴ t^{hiu}213] [ʔia³¹ keiŋ⁵¹]

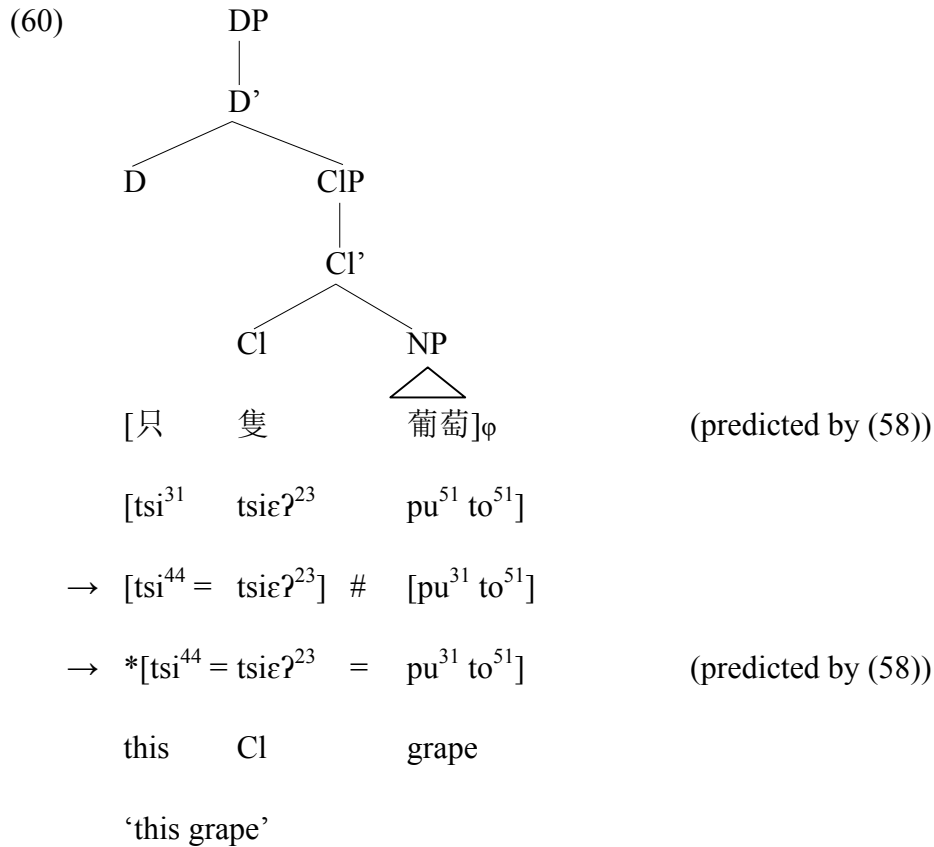
→ [ʔi⁴⁴] # [t^{hiu}213]#[ʔia²¹ = keiŋ⁵¹]

→ *[ʔi⁵¹ = t^{hiu}213]#[ʔia²¹ = keiŋ⁵¹] (predicted by (58))

he jump very high

'He jumps very high.'

Since no boundary is inserted at the right edge of the functional head and classifiers (Cl) are also considered as functional heads, the definition in (58) also fails to predict the blocking of TS between the classifier and the noun, as exemplified in (60).



To deal with the problems posed by (59) and (60), a stipulation is needed to insert a phonological phrase boundary at the right edge of the head D in (59) and the right edge of the head Cl in (60). We can find that the head D and the head Cl are both the first non-empty head outside of the maximal projection of the following lexical head V and N respectively. Recall that in the RBA definition of the phonological phrase proposed by Nespor & Vogel (1986), a phonological phrase domain starts from a lexical head X and extends until it reaches another head outside of the XP, which can nicely capture the blocking of TS in (59) and (60). Hence, we incorporate the RBA definition into (58) and thus arrive at the “3-step” definition of the phonological phrase in the Fuzhou dialect, as presented in (61).

(61) Phonological Phrase (φ) domain in the Fuzhou dialect

- a. Mark the right edge of every lexical head X, except where XP is an adjunct;
- b. On the non-recursive side of the lexical head X, mark the right edge of the first phonetically overt head Y (if any; either lexical or functional) outside of XP; ω s/CGs that are separated by the right edge of X or Y belong to different φ s;
- c. φ restructuring: a non-branching φ , which is the first complement of X on its recursive side, is joined into the φ that contains X.

Examples in (62) illustrate how the definition of the phonological phrase in (61) works in the Fuzhou dialect. Boundaries on sides of a phonological phrase are signified by square brackets.

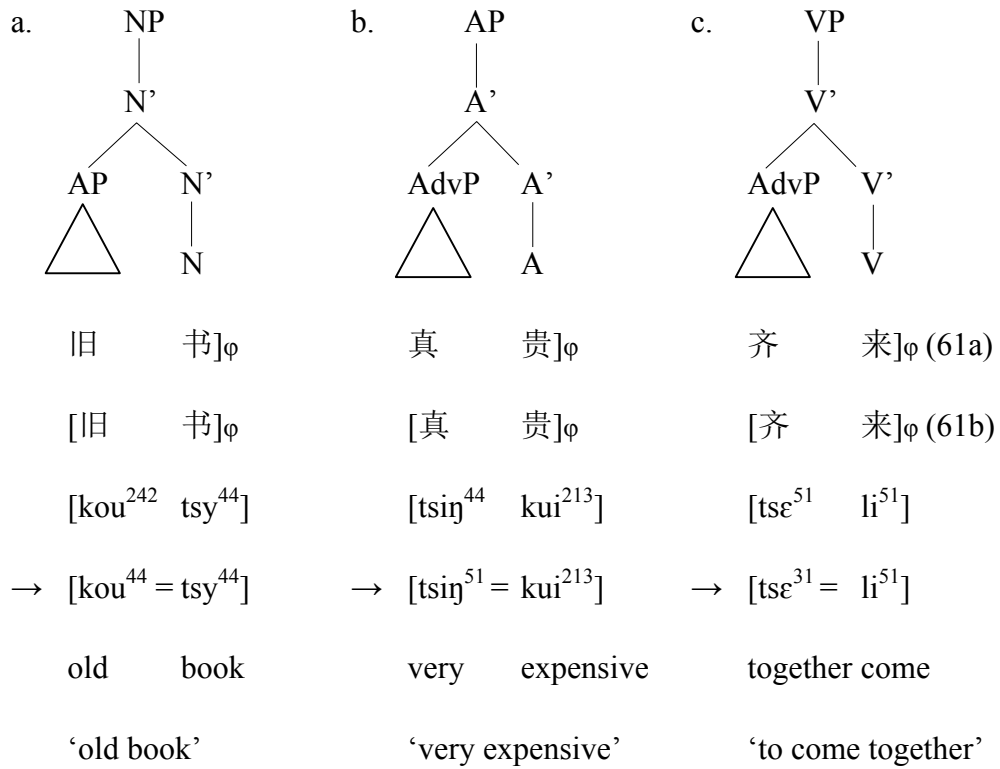
- (62)a.
-
- 食] 大 葡萄] (61a)
 [食] φ [大 葡萄] φ (61b)
 [siɛʔ⁵] [tuai²⁴² pu⁵¹ to⁵¹]
 → [siɛʔ⁵] # [tuai⁵¹ = pu³¹ to⁵¹]
 eat big grape
 ‘to eat big grapes’
- b.
-
- 食] 葡萄] (61a)
 [食] φ [葡萄] φ (61b)
 [食 葡萄] φ (61c)
 [siɛʔ⁵ pu⁵¹ to⁵¹]
 → [siɛʔ³¹ = pu³¹ to⁵¹]
 eat grape
 ‘to eat grapes’

In (62a), (61a) first marks the right edge of the lexical head V 食 ‘to eat’ and the lexical head N 葡萄 ‘grape’. The right edge of the head A 大 ‘big’ is not marked since its maximal projection AP functions as the adjunct of the head N. Then (61b) again marks the right edge of the head V 食 ‘to eat’ since it is the first head that is on the non-recursive side of the lexical head N and outside of NP. Hence, prosodic words 大 ‘big’ and 葡萄 ‘grape’ are grouped into one phonological phrase, while the leftover prosodic word 食 ‘to eat’ forms another phonological phrase on its own. Thus the application of TS between 大 ‘big’ and 葡萄 ‘grape’ and the blocking of TS between the head V 食 ‘to eat’ and its complement are both accounted for. Since there is no non-branching complement in (62a), (61c) does not play a role in this case.

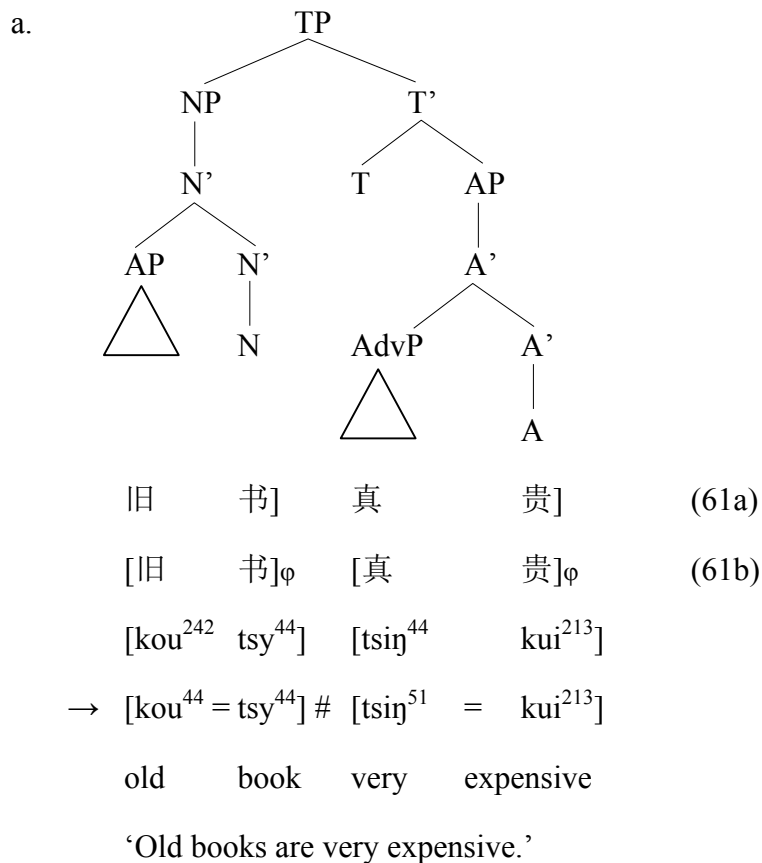
By contrast, (61c) applies in the phonological phrasing in (62b). After (61a) and (61b) establish two phonological phrases in (62b), the ϕ restructuring rule (61c) groups these two phonological phrases into one single ϕ , since the NP 葡萄 ‘grape’, which forms a non-branching ϕ , is the only (and hence the first) complement of the head V 食 ‘to eat’ in (62b). By restructuring (62b) into a single phonological phrase, the application of TS between 食 ‘to eat’ and 葡萄 ‘grape’ receives explanation.

Besides examples in (62), the definition of the phonological phrase domain in the Fuzhou dialect can also be well supported by most of the other data discussed in previous sections, as illustrated in (63-66).

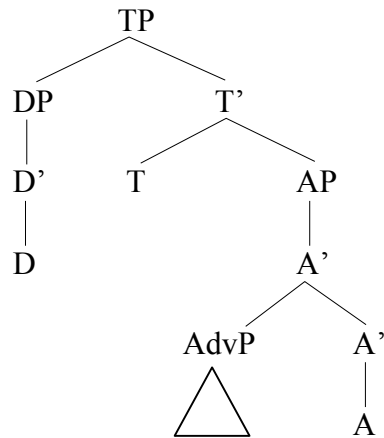
(63) Modifier-head (attributive-noun and adverbial-adjective/verb)



(64) Subject-predicate



b.



伊 真 聪明 (61a)

[伊]_φ [真 聪明]_φ (61b)

[ʔi⁴⁴] [tsiŋ⁴⁴ ts^huŋ⁴⁴ miŋ⁵¹]

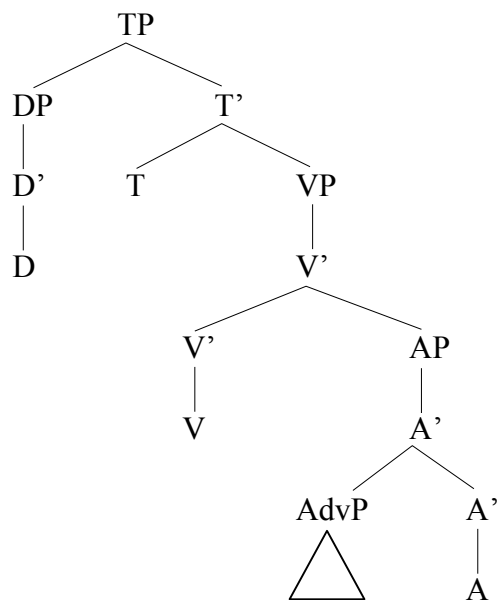
→ [ʔi⁴⁴] # [tsiŋ²¹] = ts^huŋ⁴⁴ miŋ⁵¹

he very smart

‘He is very smart.’

(65) Verb-resultative complement

a.



伊 跳] 野 悬 (61a)

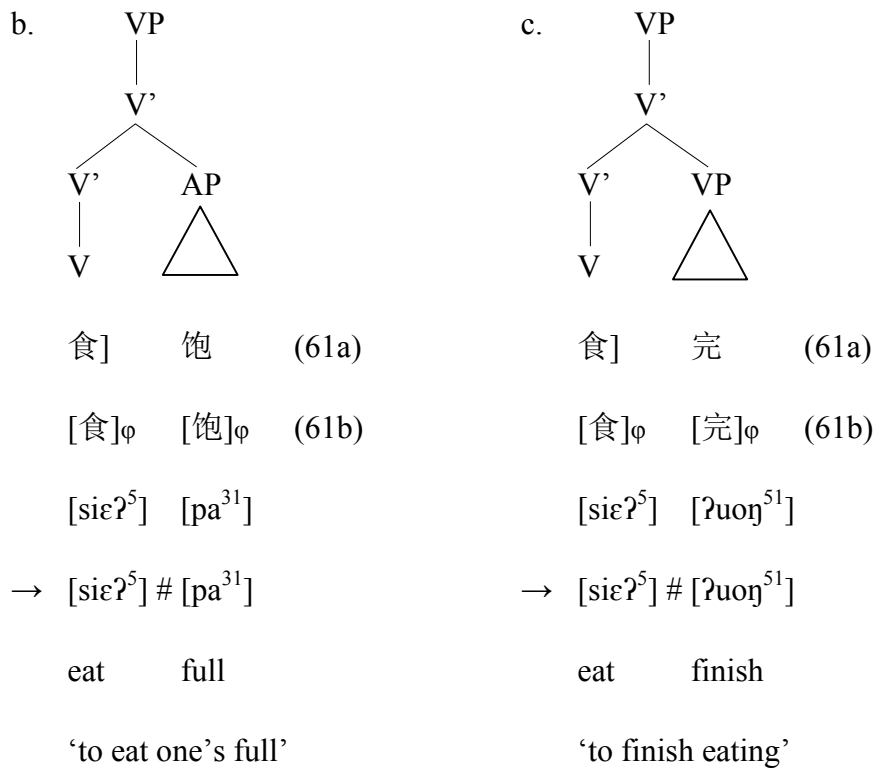
[伊]_φ [跳]_φ [野 悬]_φ (61b)

[ʔi⁴⁴] [t^hiu²¹³] [ʔia³¹ keiŋ⁵¹]

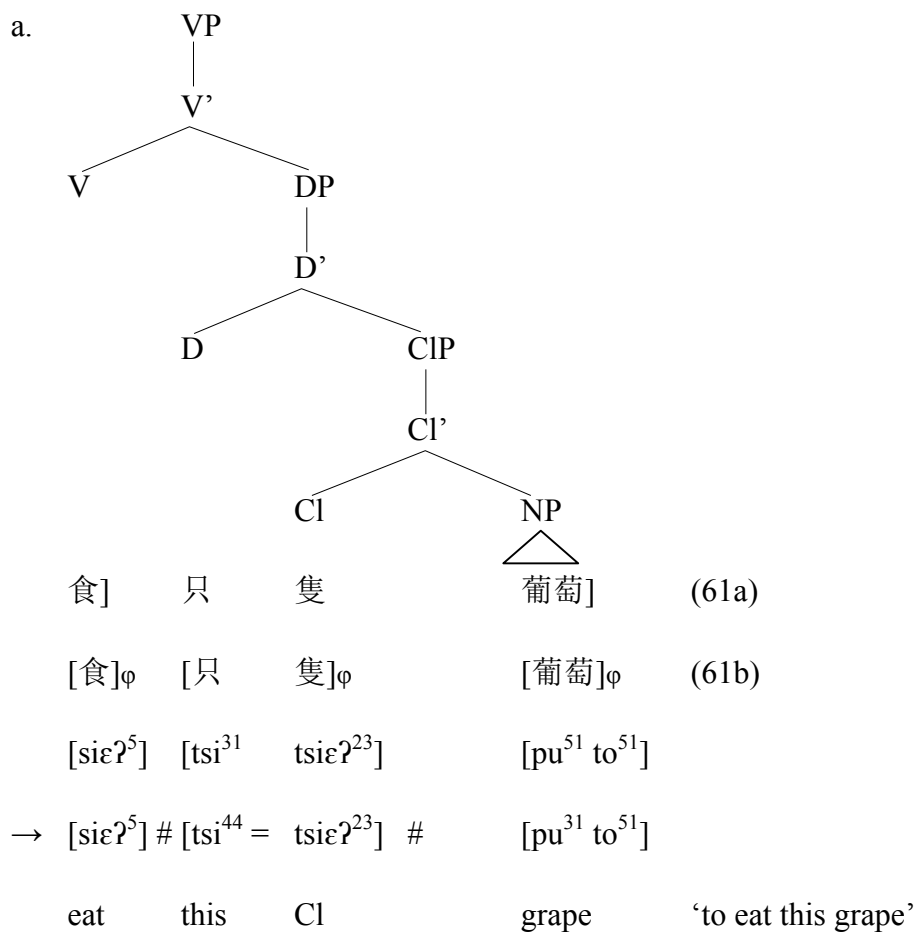
→ [ʔi⁴⁴] # [t^hiu²¹³]#[ʔia²¹] = keiŋ⁵¹

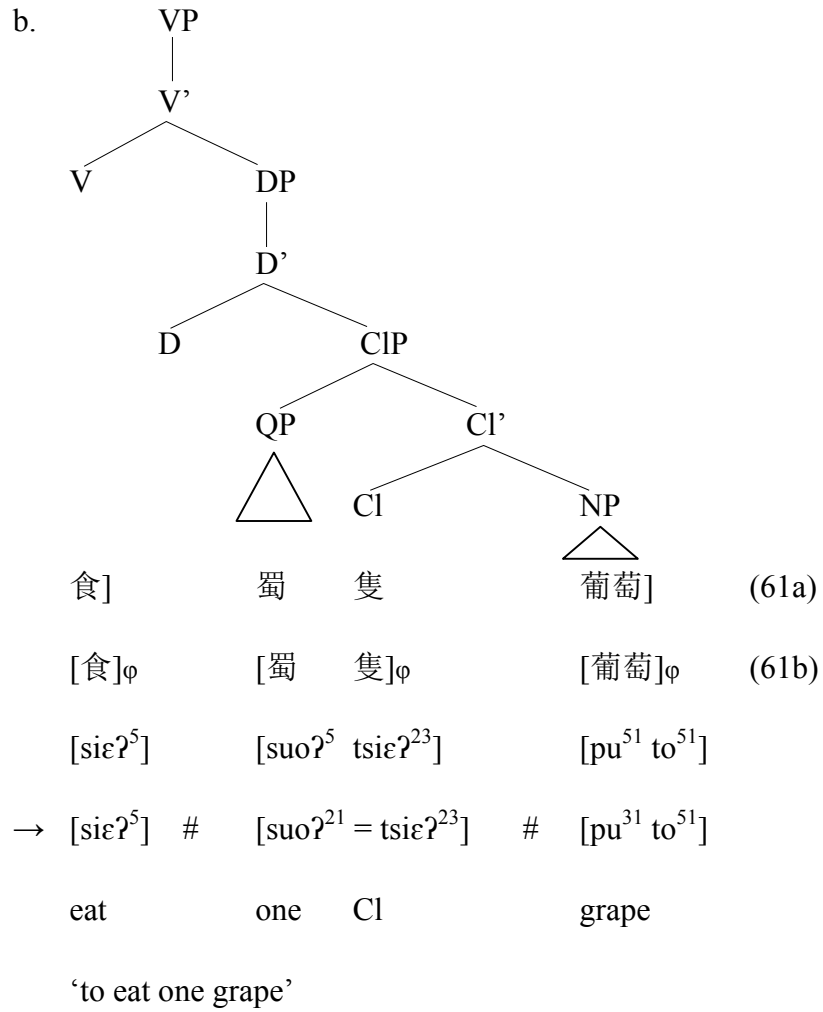
he jump very high

‘He jumps very high.’



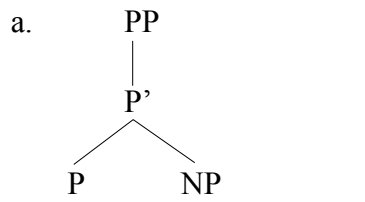
(66) Determiner/quantifier-classifier-noun





In addition to examples in (62-66), the definition in (61) can also account for the application or blocking of TS in other phrasal-level constructions mentioned in previous studies, as exemplified in (67-69).

(67) Prepositional phrases



向] 北] (61a)

[向]_φ [北]_φ (61b)

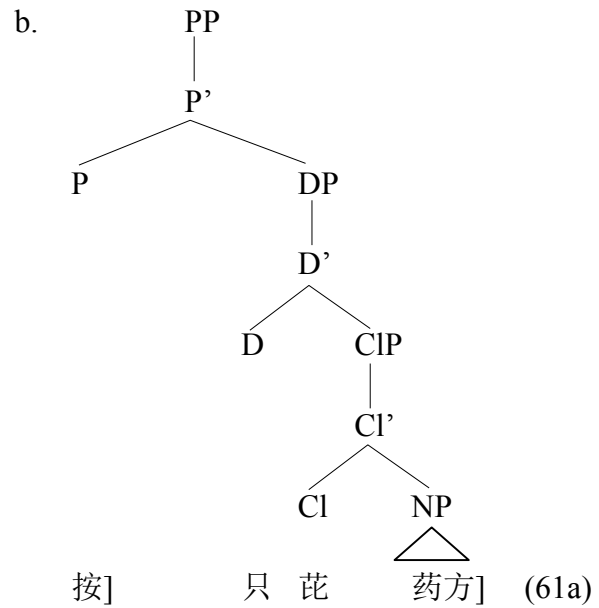
[向 北]_φ (61c)

[xyoŋ²¹³ pøyʔ²³]

→ [xyoŋ⁵¹ = pøyʔ²³]

towards north

‘towards the north’



按] 只 茈 药方] (61a)

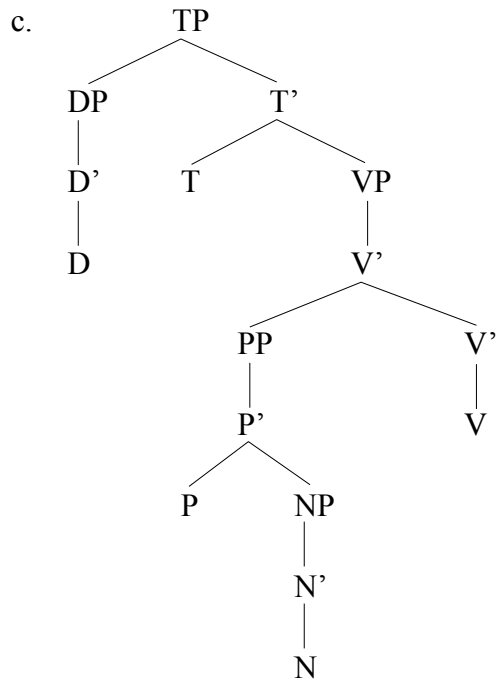
[按]_φ [只 茈]_φ [药方]_φ (61b)

[ʔaŋ⁵¹] [tsi³¹ piʔ⁵] [yoʔ⁵ xuoŋ⁴⁴]

→ [ʔaŋ⁵¹] # [tsi²¹ = piʔ⁵]# [yoʔ⁴⁴ xuoŋ⁴⁴]

according to this Cl prescription

‘according to this prescription’



伊 朝 西] 行] (61a)⁵⁴

[伊]_φ [朝]_φ [西]_φ [行]_φ (61b)

[伊]_φ [朝 西]_φ [行]_φ (61c)

[ʔi⁴⁴] [tiu⁵¹ se⁴⁴] [kian⁵¹]

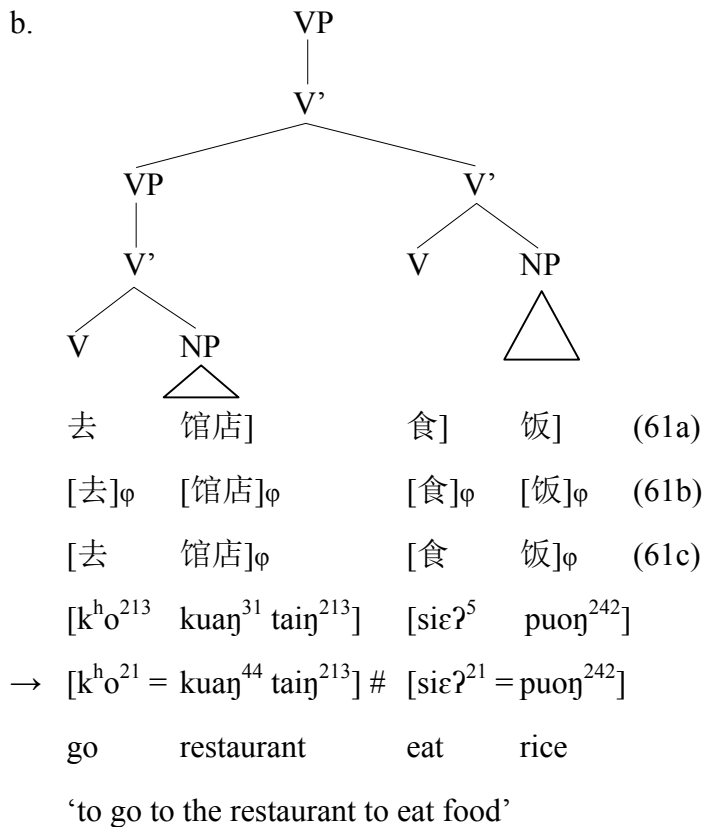
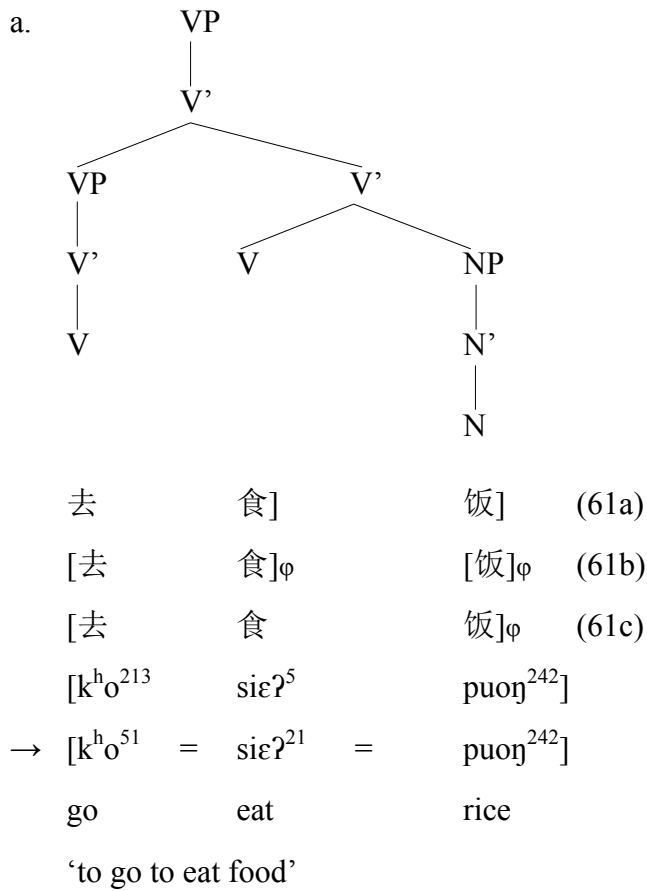
→ [ʔi⁴⁴] # [tiu⁴⁴ = se⁴⁴] # [kian⁵¹]

he towards west walk

‘He walked towards the west.’

⁵⁴ Notice that in (67a) and (67b), the right edge of the head P is marked according to (61a), while the head P in (67c) is not marked by (61a) since the entire PP in (67c) serves as the adjunct of the head V.

(68) Serial verb constructions



(69) Coordination constructions⁵⁵

- a. (61a)
 [饭]_φ [共]_φ [汤]_φ (61b)
 [puoŋ²⁴²][koyŋ²⁴²][t^houŋ⁴⁴]
 → [puoŋ²⁴²][koyŋ²⁴²][t^houŋ⁴⁴]
 rice and soup
 ‘rice and soup’
- b. (61a)
 [煮]_φ [共]_φ [食]_φ (61b)
 [tsy³¹][koyŋ²⁴²][sieŋ⁵]
 → [tsy³¹][koyŋ²⁴²][sieŋ⁵]
 cook and eat
 ‘cooking and eating’
- c. (61a)
 [饭]_φ ∅ [汤]_φ (61b)
 [puoŋ²⁴²][t^houŋ⁴⁴]
 → [puoŋ²⁴²][t^houŋ⁴⁴]
 rice soup
 ‘rice and soup’
- d. (61a)
 [煮]_φ ∅ [食]_φ (61b)
 [tsy³¹][sieŋ⁵]
 → [tsy³¹][sieŋ⁵]
 cook eat
 ‘cooking and eating’

By assuming the phonological phrase to be the domain of application of Fuzhou

TS at the phrasal level and defining the formation of the phonological phrase domain

⁵⁵ Notice that the ϕ -restructuring rule (61c) is not triggered in (69a) and (69b) since the conjunction 共 ‘and’ is a functional head instead of a lexical head. Since the conjunction 共 ‘and’ is sometimes omitted in the speech, (69a) and (69b) can be uttered as (69c) and (69d) respectively.

as in (61), the contrast exhibited by pairs in (70), which have been reported in the literature (e.g., Liang 1983b), can also be nicely captured. For the sake of brevity, only phonological tone sandhi is presented. Contrastive tones in each pair are marked in bold.

- (70)a. 饭汤 $puoŋ^{242} t^h ouŋ^{44} \rightarrow puoŋ^{242} t^h ouŋ^{44}$ ‘rice and soup’
 饭汤 $puoŋ^{242} t^h ouŋ^{44} \rightarrow puoŋ^{44} t^h ouŋ^{44}$ ‘rice in soup’
- b. 煮食 $tsy^{31} siɛʔ^5 \rightarrow tsy^{31} siɛʔ^5$ ‘cooking and eating’
 煮食 $tsy^{31} siɛʔ^5 \rightarrow tsy^{21} siɛʔ^5$ ‘to cook’
- c. 抱倒 $po^{242} to^{31} \rightarrow po^{242} to^{31}$ ‘to pull down’
 抱倒 $po^{242} to^{31} \rightarrow po^{51} to^{31}$ ‘to wrestle’
- d. 做死 $tso^{213} si^{31} \rightarrow tso^{213} si^{31}$ ‘to work to death’
 做死 $tso^{213} si^{31} \rightarrow tso^{51} si^{31}$ ‘to act without shame’

It can be seen that the first example in each pair does not undergo TS while the second example does. According to the definition in (61), we can find that the first examples in (70a) and (70b) are both coordination constructions and thus form two phonological phrases as shown in (69). The first examples in (70c) and (70d), on the other hand, are both verb-resultative complement constructions and thus form two phonological phrases as well, similar to the examples in (65). Since Fuzhou TS at the phrasal level applies within but not across the phonological phrase domain, it is blocked in the first example in each pair. In contrast to the first example, the second example in each pair in (70) is a prosodic word and hence forms a domain of application for the TS rule, according to the discussion in Chapter IV.

So far, I have demonstrated that the alternative approach to phonological phrasing in the Fuzhou dialect, which incorporated EBA with RBA, can account for a great number of relevant data concerning Fuzhou TS at the phrasal level. Before we proceed to draw the conclusion, nonetheless, there are still several empirical issues we have to deal with, which will be discussed in Section 6.2.3.3.

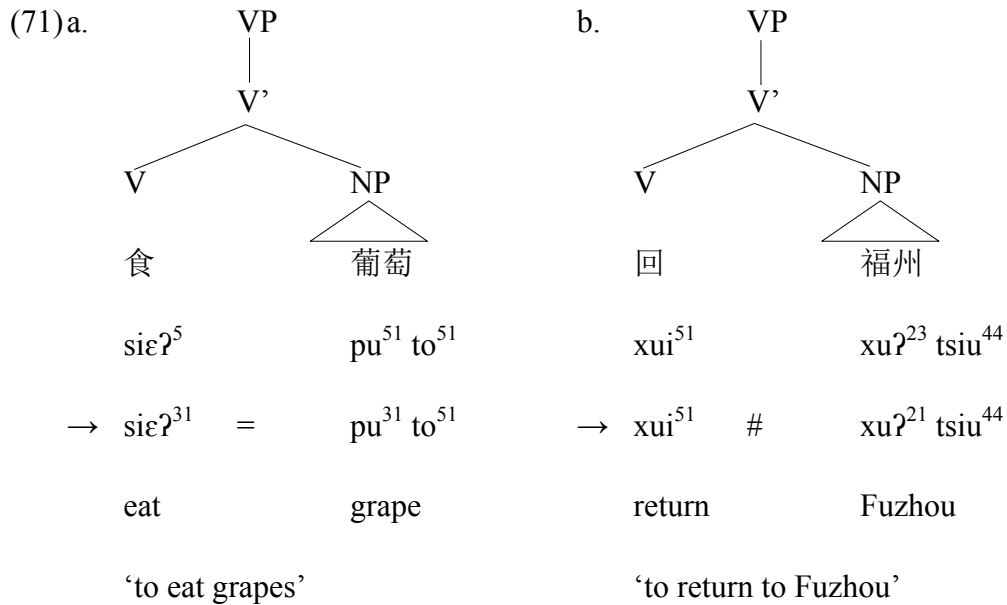
6.2.3.3 Residual issues of Fuzhou phonological tone sandhi at the phrasal level

We have seen that a monosyllabic verb can be incorporated into a phonological phrase with its object when the ϕ restructuring rule is triggered, as exemplified in (62b) and (68). However, it has long been noticed that not every verb in the Fuzhou dialect undergoes TS when it is followed by a non-branching complement (cf. Chen & Norman 1965a, Wright 1983, Hung 1987, Zhang 1992, Chan 1998, among others). This seems to pose difficulties for the alternative approach proposed in Section 6.2.3.2. In this subsection, I will investigate the problems caused by such constructions and examine whether the alternative approach can account for the blocking of TS in these constructions.

6.2.3.3.1 Verb+location

Chen & Norman (1965a) and Wright (1983) have reported that there are a few verbs that never undergo TS with any following constituent, among which there are verbs such as 住 [tiu²⁴²] ‘to live’, 坐 [soy²⁴²] ‘to sit’, 倚 [k^hiɛ²⁴²] ‘to stand’, 放 [pouŋ²¹³] ‘to put’, and 着 [tuo?⁵] ‘to be in or at’.

Chan (1998) has also noticed the distinctive TS behavior exhibited by such verbs, as exemplified in (44), which is reproduced in (71). We can find that TS applies between the verb and the following argument in (71a), while is blocked in (71b).



To deal with the contrast presented in (71), Wright (1983) argues that a verb will undergo tone sandhi only if its following argument is assigned <Theme> theta-role, but not other theta-roles such as <Goal>, <Benefactive>, or <Locative>. This is an ad hoc solution in Wright’s prosodic-based analysis, as discussed in Section 6.2.2.3. Chan (1988) introduces a distinction between two types of argument NPs, namely [+theme] NP and [-theme] NP, to deal with the contrast between (71a) and (71b). Treating the V-NP_[+theme] construction as an incorporated noun constructed through Noun Incorporation while treating V-NP_[-theme] as a syntactic phrase, Chan’s (1998) analysis accounts for the contrast exhibited in (71). As discussed in Section 6.2.2.7, however, this analysis is ad hoc and counter-intuitive, and has to face the problems with the UTAH.

A closer examination reveals that verbs like 食 ‘to eat’ in (71a) and verbs like 回 ‘to return’ and 住 ‘to live’ actually belong to different subcategories of verbs. Verbs like 食 ‘to eat’ are typical transitive verbs which are able to take their own direct object. By contrast, verbs like 回 ‘to return’ and 住 ‘to live’ are intransitive verbs and hence do not take the direct object. The argument that follows an intransitive verb, such as 福州 ‘Fuzhou’ in (71b), is not the direct object of the verb. Furthermore, an intransitive verb such as 回 ‘to return’ and 住 ‘to live’ can only assign the theta-role to its own syntactic argument which occurs in the subject position. Hence the argument following the intransitive verb actually does not receive the theta-role from the verb. Thus we have to answer the following question: where does the argument like 福州 ‘Fuzhou’ in (71b) obtain the theta-role?

Notice that I have mentioned two Fuzhou enclitics that are used as post-verbal particles in Chapter V, namely 𪗇 [kaʔ⁰] and 𪗈 [kau²¹³]. Both of them can be attached to the verb to introduce the location. Basically, the former indicates the location where something is located or some actions take place, e.g., 住𪗇福州 ‘to live in Fuzhou’. The latter indicates the location that is the destination/result of a movement/action, e.g., 回𪗈福州 ‘to return to Fuzhou’. 𪗇 [kaʔ⁰] and 𪗈 [kau²¹³] are not indispensable in such expressions—住𪗇福州 ‘to live in Fuzhou’ can be uttered as 住福州 ‘to live in Fuzhou’, and 回𪗈福州 ‘to return to Fuzhou’ can be uttered as 回福州 ‘to return to Fuzhou’, as exemplified in (72) and (73).

- (72)a. 住 敲 福州
 tiu²⁴² kaʔ⁰ xuʔ²³ tsiu⁴⁴
 → tiu²⁴² # kaʔ⁰ # xuʔ²¹ tsiu⁴⁴
 live PVP Fuzhou
 ‘to live in Fuzhou’
- b. 住 福州
 tiu²⁴² xuʔ²³ tsiu⁴⁴
 → tiu²⁴² # xuʔ²¹ tsiu⁴⁴
 live Fuzhou
 ‘to live in Fuzhou’
- (73)a. 回 邁 福州
 xui⁵¹ kau²¹³ xuʔ²³ tsiu⁴⁴
 → xui⁵¹ # kau²¹³ # xuʔ²¹ tsiu⁴⁴
 return PVP Fuzhou
 ‘to return to Fuzhou’
- b. 回 福州
 xui⁵¹ xuʔ²³ tsiu⁴⁴
 → xui⁵¹ # xuʔ²¹ tsiu⁴⁴
 return Fuzhou
 ‘to return to Fuzhou’

We can find that (72a) and (73a) are similar to (72b) and (73b), respectively, in terms of their semantic meanings as well as their tone sandhi behaviors. This can also be illustrated by examples of other verbs of this type mentioned in the literature, namely, 坐 [soy²⁴²] ‘to sit’, 倚 [k^hiε²⁴²] ‘to stand’, 放 [pouŋ²¹³] ‘to put’, and 着 [tuoʔ⁵] ‘to be in or at’, as presented in (74-77).

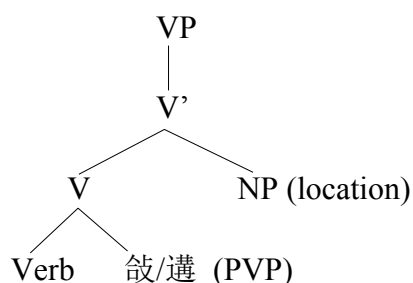
- (74)a. 坐 敲 厅中
 soy²⁴² kaʔ⁰ t^hiaŋ⁴⁴ touŋ⁴⁴
 → soy²⁴² # kaʔ⁰ # t^hiaŋ⁴⁴ touŋ⁴⁴
 sit PVP drawing room
 ‘to sit in the drawing room’
- b. 坐 厅中
 soy²⁴² t^hiaŋ⁴⁴ touŋ⁴⁴
 → soy²⁴² # t^hiaŋ⁴⁴ touŋ⁴⁴
 sit drawing room
 ‘to sit in the drawing room’

- (75)a. 倚 敲 厅中
 $k^{h_i\epsilon^{242}} \quad ka\gamma^0 \quad t^{h_i\alpha\eta^{44}} \quad tou\eta^{44}$
 $\rightarrow k^{h_i\epsilon^{242}} \# ka\gamma^0 \# t^{h_i\alpha\eta^{44}} \quad tou\eta^{44}$
 stand PVP drawing room
 ‘to stand in the drawing room’
- b. 倚 厅中
 $k^{h_i\epsilon^{242}} \quad t^{h_i\alpha\eta^{44}} \quad tou\eta^{44}$
 $\rightarrow k^{h_i\epsilon^{242}} \# t^{h_i\alpha\eta^{44}} \quad tou\eta^{44}$
 stand drawing room
 ‘to stand in the drawing room’
- (76)a. 放 敲 厅中
 $pou\eta^{213} \quad ka\gamma^0 \quad t^{h_i\alpha\eta^{44}} \quad tou\eta^{44}$
 $\rightarrow pou\eta^{213} \# ka\gamma^0 \# t^{h_i\alpha\eta^{44}} \quad tou\eta^{44}$
 put PVP drawing room
 ‘to put in the drawing room’
- b. 放 厅中
 $pou\eta^{213} \quad t^{h_i\alpha\eta^{44}} \quad tou\eta^{44}$
 $\rightarrow pou\eta^{213} \# t^{h_i\alpha\eta^{44}} \quad tou\eta^{44}$
 put drawing room
 ‘to put in the drawing room’
- (77) a. 着 敲 厅中
 $tuo\gamma^5 \quad ka\gamma^0 \quad t^{h_i\alpha\eta^{44}} \quad tou\eta^{44}$
 $\rightarrow tuo\gamma^5 \# ka\gamma^0 \# t^{h_i\alpha\eta^{44}} \quad tou\eta^{44}$
 be in PVP drawing room
 ‘to be in the drawing room’
- b. 着 厅中
 $tuo\gamma^5 \quad t^{h_i\alpha\eta^{44}} \quad tou\eta^{44}$
 $\rightarrow tuo\gamma^5 \# t^{h_i\alpha\eta^{44}} \quad tou\eta^{44}$
 be in drawing room
 ‘to be in the drawing room’

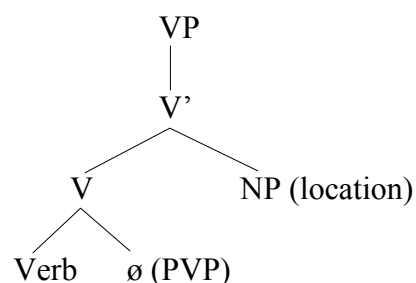
Since a ‘intransitive V+敲/邁+location’ construction shares the same semantic meaning as well as the tone sandhi behavior with its corresponding ‘intransitive V+location’ construction, it is reasonable to assume that they share the same syntactic structure as well and the latter construction is derived from the former by not articulating the enclitic PVP 敲 or 邁. It is the omitted or soundless PVP that assigns the theta-role to the following locative argument. The syntactic structure of

‘intransitive V+ $\text{㇇}/\text{邁}+\text{location}$ ’ and ‘intransitive V+location’ constructions can be presented as follows:

(78)a. intransitive V+ $\text{㇇}/\text{邁}+\text{location}$



b. intransitive V+location



Notice that the non-branching NP in (78a) must be incorporated into a phonological phrase with the preceding head V according to the ϕ restructuring rule and thus phrasal-level TS is expected to apply within the phonological phrase. From the examples in (72a-77a), nevertheless, we can find that neither the verb nor the PVP ($\text{㇇}/\text{邁}$) undergoes TS. Since the PVP is an enclitic in the Fuzhou dialect and forms a Type A clitic group with the preceding prosodic word, as discussed in Chapter V, there are two possible explanations for the blocking of phrasal-level TS in a structure like (78a): (a) an enclitic never undergoes TS itself or triggers TS on the preceding prosodic word; (b) a Type A clitic group embedded within a phonological phrase is not affected by a rule that applies within the domain of the phonological phrase. I will leave the discussion of these two explanations to Section 6.2.3.3.2. It will be shown that the second explanation is more general than the first one. At this moment, nonetheless, no matter which explanation is adopted, they can both account for the blocking of phrasal-level TS in (72a-77a). On the other hand, since (78b) shares the

same structure with (78a), I suggest that phrasal-level TS is blocked in (72b-77b) by the same token.

To recapitulate, the example in either (71a) or (71b) forms a single phonological phrase domain according to the definition in (61). The difference in the tone sandhi behavior of the verbs in (71a) and (71b) is ascribed to the difference between the verbs, which is due to the subcategorization of the verbs. The verb in (71a) is transitive and thus takes two arguments, while the verb in (71b) is intransitive and thus has only one argument. The argument following the verb in (71b) is not the argument of the verb and is not able to receive the theta-role from the verb, and hence there must be a (soundless) constituent that assigns the theta-role to the post-verb argument. Since the ‘intransitive V+ㄟ/ㄨㄛ+location’ construction and the ‘intransitive V+location’ construction share the same semantic meaning and tone sandhi behavior, I assume that they have the same syntactic structure. Thus the verb in cases like (71b) must be followed by an omitted, soundless enclitic ㄟ/ㄨㄛ, which plays a pivotal role in blocking the phrasal-level TS within the phonological phrase domain formed by cases like (71b). Thus, by distinguishing the verbs in (71a) and (71b) as well as their syntactic structure, the problem raised by verbs like 住 ‘to live’, 坐 ‘to sit’, 倚 ‘to stand’, 放 ‘to put’, 回 ‘to return’, and 着 ‘to be in or at’ can be well handled.

6.2.3.3.2 Monosyllabic verb vs. disyllabic verb

The second problem we need to deal with results from the contrast in tone sandhi behavior between monosyllabic verbs and disyllabic verbs in the Fuzhou dialect. It has long been recognized that monosyllabic verbs and disyllabic verbs in the Fuzhou

dialect have different TS behavior at the phrasal level (cf. Chen & Norman 1965a, Wright 1983, Shih 1986, Zhang 1992, among others). A monosyllabic verb can undergo TS when it is followed by an object as long as the object is the first non-branching complement, while a disyllabic verb (to be more specific, the tone of the second syllable in a disyllabic verb) never undergoes TS, as exemplified in (79) and (80) respectively.

(79) a.	趁	钱	b.	食	葡萄	
	t ^h eiŋ ²¹³	tsieŋ ⁵¹		siɛʔ ⁵	pu ⁵¹ to ⁵¹	
	→ t ^h eiŋ ⁴⁴	= tsieŋ ⁵¹		→ siɛʔ ³¹	= pu ³¹ to ⁵¹	
	earn	money		eat	grape	
	‘to earn money’			‘to eat grapes’		
(80) a.	浪费	钱	b.	讨厌	葡萄	
	louŋ ²⁴²	hiɛ ²¹³	tsieŋ ⁵¹	t ^h o ³¹	ʔiɛŋ ²¹³	pu ⁵¹ to ⁵¹
	→ louŋ ⁵¹	hiɛ ²¹³	# tsieŋ ⁵¹	→ t ^h o ⁴⁴	ʔiɛŋ ²¹³	#pu ³¹ to ⁵¹
	waste	money		hate	grape	
	‘to waste money’			‘to hate grapes’		

We can find that examples in (79) and (80) share the same syntactic structure, namely, a verb head plus a non-branching complement. Thus each phrasal-level construction in (79) and (80) forms a single phonological phrase according to the definition in (61). In previous sections, I have demonstrated that the phonological phrase is the domain of application for Fuzhou TS at the phrasal level. Hence, there must be a condition that can manipulate the application and/or blocking of TS within

the phonological phrase domain and thus distinguishes monosyllabic verbs from disyllabic verbs with respect to their tone sandhi behavior.

The concept of the foot has been adopted by several linguists (e.g., Wright 1983, Shih 1986, among others) to deal with the contrast presented in (79) and (80). However, it is noteworthy that the domain of the phonological phrase is constructed on the basis of syntactic notions, as can be seen in either EBA or RBA. Thus it is not appropriate to attribute the contrast between (79) and (80) to phonological factors such as the formation of the foot.

In terms of syntactic notions, Zhang (1992) has introduced the concept of c-command to account for the problem caused by the contrast between (79) and (80). As discussed in Section 6.2.2.6, nevertheless, taking c-command condition as a relationship between syllables is not unquestionable since it seems to violate the very spirit of the definition of c-command although it somehow resolves the problem.

Zhang's (1992) analysis suggests that only the syllable that is either the adjunct or the head of an argument can undergo phrasal-level TS. As argued in Section 6.2.2.6, if a constituent is composed of more than one syllable, it is impossible for any single syllable contained in this constituent to serve as the adjunct or the head of an argument on its own—it should be the entire polysyllabic constituent that has the function. Hence, Zhang's analysis actually implies that only monosyllabic adjunct or head in the Fuzhou dialect may undergo phrasal-level TS. A closer examination of relevant data discussed in this chapter verifies this implication. Thus the problem is what is the underlying motive for monosyllabic constituents like 趁 'to earn' and 食

‘to eat’ in (79) to undergo TS and what is the key factor that prevents polysyllabic constituents like 浪费 ‘to waste’ and 讨厌 ‘to hate’ in (80) from undergoing TS.

As discussed in Chapter IV, ω -domain rules in the Fuzhou dialect only apply within the prosodic word domain formed by morpho-syntactic words that are composed of more than one syllable. By contrast, a monosyllabic morpho-syntactic word does not undergo ω -domain rules because of the lack of appropriate phonological environment, although it forms a prosodic word domain according to the ω -domain formation rule. Hence, in cases like (80), the disyllabic verb must form its own prosodic word domain and undergo ω -domain rules before it is grouped into the phonological phrase domain. It recalls the construction of ‘intransitive V+敲/邁+location’ discussed in Section 6.2.3.3.1, in which the group of ‘intransitive V+敲/邁’ forms a Type A clitic group domain before it is incorporated into the phonological phrase domain. I have shown that the phrasal-level TS rule within the phonological phrase does not affect any constituent within the Type A clitic group formed by ‘intransitive V+敲/邁’. Likewise, the prosodic word domain formed by the disyllabic verb in (80) is not affected by the phrasal-level TS rule either. Two possible explanations have been presented in Section 6.2.3.3.1 to account for the blocking of phrasal-level TS within the Type A clitic group, namely, (a) an enclitic never undergoes TS itself or triggers TS on the preceding prosodic word; and (b) a Type A clitic group embedded within a phonological phrase is not affected by a rule that applies within the domain of the phonological phrase. Clearly, the first explanation can only work for the Type A clitic group since the prosodic word in Fuzhou does not contain any clitics. By contrast, the second explanation recalls us to the Restriction on

Rule Application within the Type A Clitic Group Domain proposed in Chapter V, which is repeated here as in (81).

(81) Restriction on Rule Application within the Type A Clitic Group Domain in Fuzhou

Within the Type A clitic group domain, the application or blocking of a particular phonological rule that is specific to the Type A clitic group domain cannot be triggered on any constituent contained in the embedded prosodic word, iff the application or blocking of the same type of rule specific to the embedded prosodic word domain has been triggered.

Hence it seems more reasonable to assume the second explanation if the generality of the restriction is taken into consideration. A more general principle of the Restriction on Rule Application across the embedded domain boundaries can thus be generalized on the basis of the second explanation as well as the restriction in (81), as stated in (82).

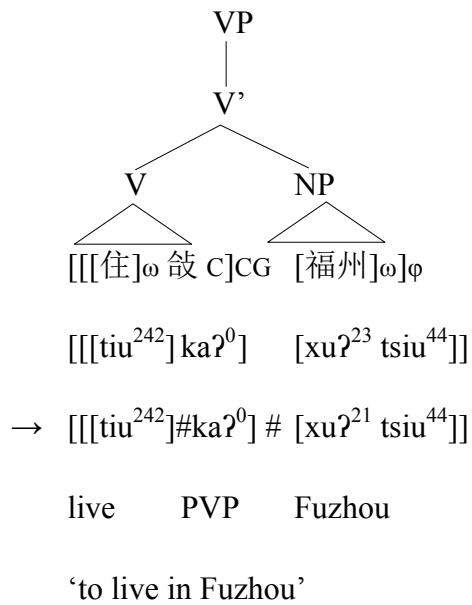
(82) Restriction on Rule Application in the Fuzhou Dialect

Within a given prosodic domain, the application or blocking of a particular phonological rule that is specific to this domain cannot be triggered on any constituent contained in the embedded domain, iff the application or blocking of the same type of rule specific to the embedded domain has been triggered.

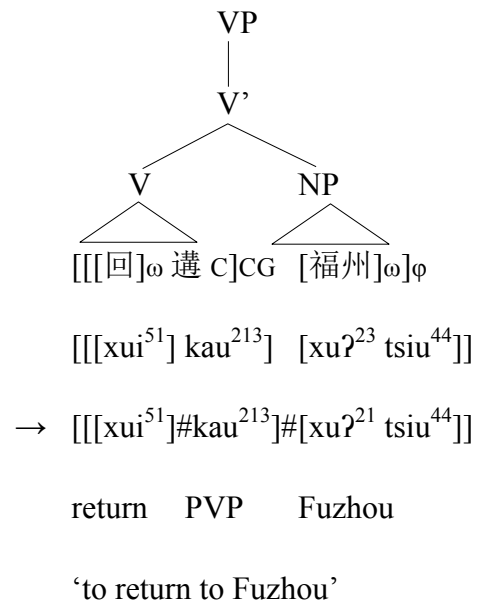
The restriction in (82) accounts for the blocking of phrasal-level TS within the phonological phrase, which is caused by the embedded clitic group formed by

‘intransitive V+敲/邁’ or the embedded prosodic word formed by disyllabic verbs. This can be illustrated by the examples of (72a), (73a), and (80), which are reproduced in (83) and (84) with their internal prosodic structure.

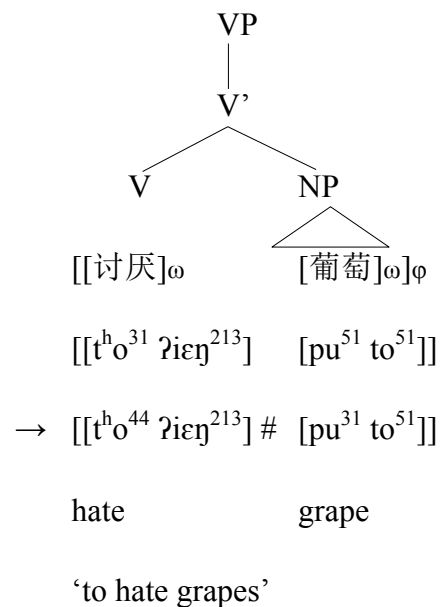
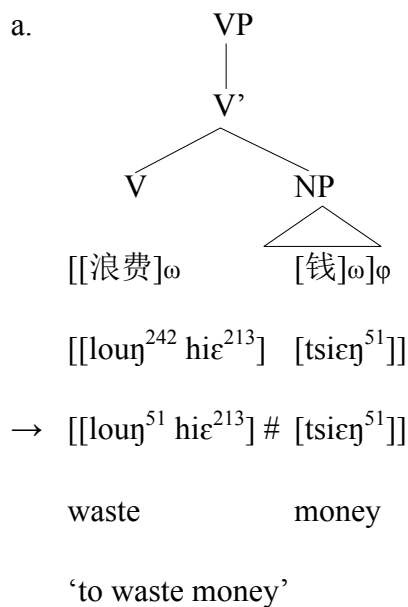
(83)a. = (72a)

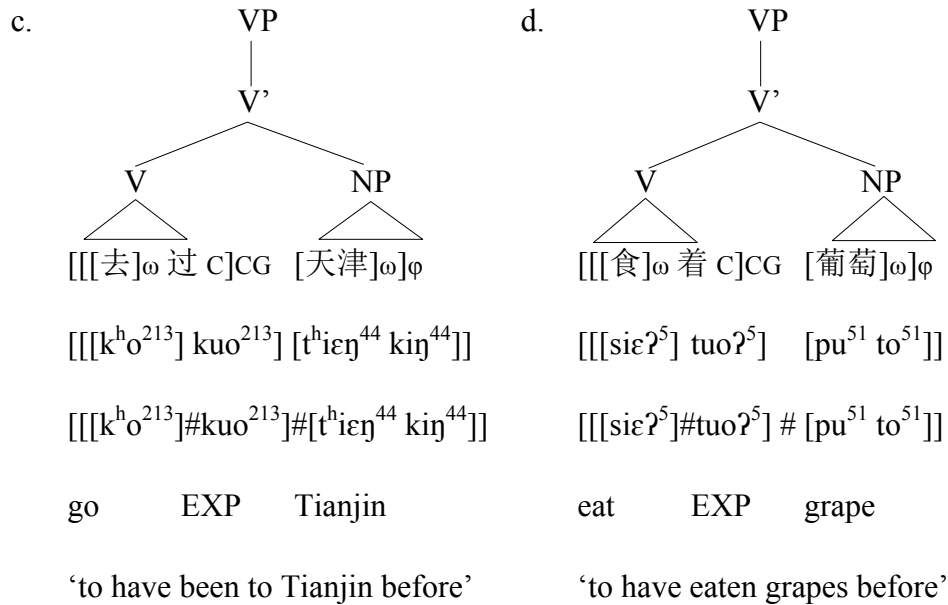


b. = (73a)



(84)= (80)





We can find that within all the phonological phrases formed by examples in (83-85), phrasal-level TS does not apply to the tones of constituents contained in the embedded Type A CGs and ωs since the blocking of TS and the application of TS have been triggered in these embedded domains respectively. Since “intransitive V+location” constructions share the same structure with “intransitive V+敲/邁+location” constructions, as discussed in Section 6.2.3.3.1, phrasal-level TS is blocked within “intransitive V+location” constructions by the same token. The problem caused by the contrast between monosyllabic verbs and disyllabic verbs and the problem caused by ‘intransitive V+(敲/邁)+location’ constructions (φ-internal CGs) in the Fuzhou dialect are thus both well accounted for by assuming the Restriction on Rule Application in (82). We can find that the blocking of phrasal-level TS caused by intransitive verbs and disyllabic verbs should not be attributed to not incorporating such verbs into the same phonological phrase with their following constituents. Instead, these verbs do form a phonological phrase with the following

constituents, but the Restriction on Rule Application in (82) prevents the application of TS rule from being triggered because of the internal prosodic structure of these verbs.

It is noteworthy that the Restriction on Rule Application in (81) proposed for the Type A clitic group is well adapted to the more general restriction in (82). This can be illustrated by (85a). In (85a), the application of TS that is specific to the prosodic word domain has been triggered within the prosodic word 要紧 ‘important’ contained in the Type A clitic group and thus the Type A CG-specific blocking of TS fails to affect the tones of syllables in the prosodic word according to (82), which provides further evidence for the general Restriction on Rule Application in Fuzhou.

6.2.3.3.3 Little *v* and relevant phrasal-level constructions

In addition to intransitive verbs mentioned in Section 6.2.3.3.1, the following words are also claimed not to form a tone sandhi domain with any following constituents (cf. Chen & Norman 1965a, Wright 1983): 乞 [$k^h\text{øy}\text{?}^{23}$] ‘to give’, 叫 [kiu^{213}] ‘to tell’, and 乞 [$k^h\text{øy}\text{?}^{23}$] ‘passive marker’.⁵⁶ Examples of these three words are presented in (86).

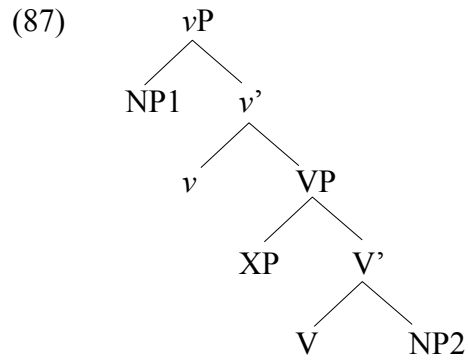
(86)a.	伊 乞 我 钱	b.	伊 叫 我 去
	$\text{ʔi}^{44} k^h\text{øy}\text{?}^{23} \text{ŋuai}^{31} \text{tsien}^{51}$		$\text{ʔi}^{44} \text{kiu}^{213} \text{ŋuai}^{31} k^h\text{o}^{213}$
	→ $\text{ʔi}^{44} \# k^h\text{øy}\text{?}^{23} \# \text{ŋuai}^{31} \# \text{tsien}^{51}$		→ $\text{ʔi}^{44} \# \text{kiu}^{213} \# \text{ŋuai}^{31} \# k^h\text{o}^{213}$
	he give me money		he tell me go
	‘He gave me the money.’		‘He told me to go.’

⁵⁶ 乞 is a versatile word in the Fuzhou dialect: it means ‘to give’ as a verb and can be also used as the passive marker. In Wright (1983), 乞 is recorded as 给 with the pronunciation [$k^h\text{øy}\text{?}^{213}$]. However, it can be found that no characters with such a sound are recorded in any other published materials.

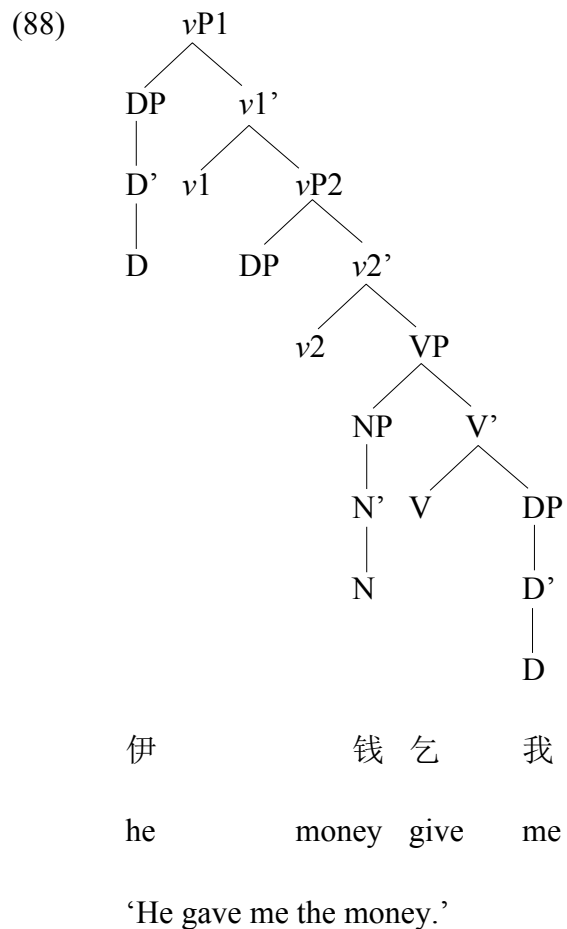
- c. 伊 乞 我 拍
 ʔi⁴⁴ k^høyʔ²³ ŋuai³¹ p^haʔ²³
 → ʔi⁴⁴ # k^høyʔ²³ # ŋuai³¹ # p^haʔ²³
 he PASS me hit
 ‘He was hit by me.’

In Chen & Norman (1965a), these words are taken as lexically marked exceptions to the phrasal-level TS rule. In Wright (1983), the blocking of phrasal-level TS between these words and their following constituents is ascribed to the non-theme theta-role they are assigned with. In this subsection, however, I will show that the blocking should be attributed to the syntactic structure of relevant constructions and thus can be predicted by the formation rule of the phonological phrase in (61).

As can be seen from (86a), 乞 ‘to give’ in the Fuzhou dialect is a ditransitive verb that takes two objects (direct object and indirect object). The double-object construction has long been recognized as a problem for the theory of syntax. Since Larson’s (1988) analysis of ditransitive verbs involving a layered V (VP-shell), there have been a number of proposals regarding the idea of an extra head in the V domain (cf. Grimshaw & Mester 1988, Bowers 1993, Hale & Keyser 1993, Kratzer 1993, Chomsky 1995, among others). Following the idea on (v-)Voice as the head whose specifier hosts the external argument of a verb (Kratzer 1993), Chomsky (1995) first proposes the concept of the light verb, or little *v*. In Chomsky (1995), the job of Agent-introducing is attributed to *v* and VP is taken as the complement of *v*. Thus the basic D-structure of a *v*P can be presented as follows.

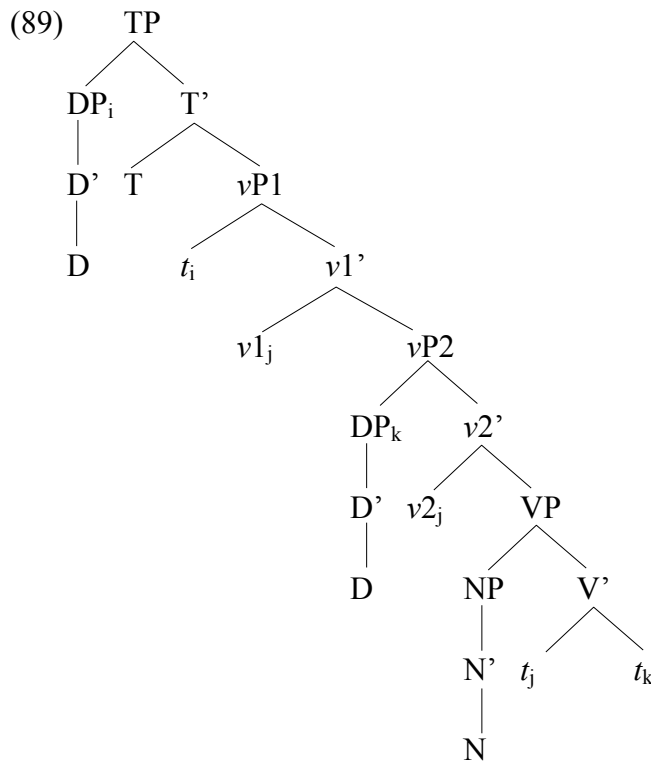


By adopting the structure in (87), the D-structure of the double-object construction of (86a) can be presented as follows (also cf. Tang 2003, 2010).



Clearly, in order to yield the correct S-structure of sentence presented in (86a), the indirect object 我 ‘me’ must move to the specifier position of vP2 and the lexical V

head 乞 ‘give’ must move to the head v_2 position and then to the head v_1 position. Thus the S-structure of (86a) can be presented as in (89). Traces of moved elements are indicated by t . Following the definition in (61), the phonological phrasing of (86a) is also presented in (89).



伊 乞] 我 钱] (61a)⁵⁷

[伊]_φ [乞]_φ [我]_φ [钱]_φ (61b)

[ʔi⁴⁴] [k^høɣʔ²³][ŋuai³¹] [tsiɛŋ⁵¹]

→ [ʔi⁴⁴] # [k^høɣʔ²³][ŋuai³¹][tsiɛŋ⁵¹]

he give me money

‘He gave me the money.’

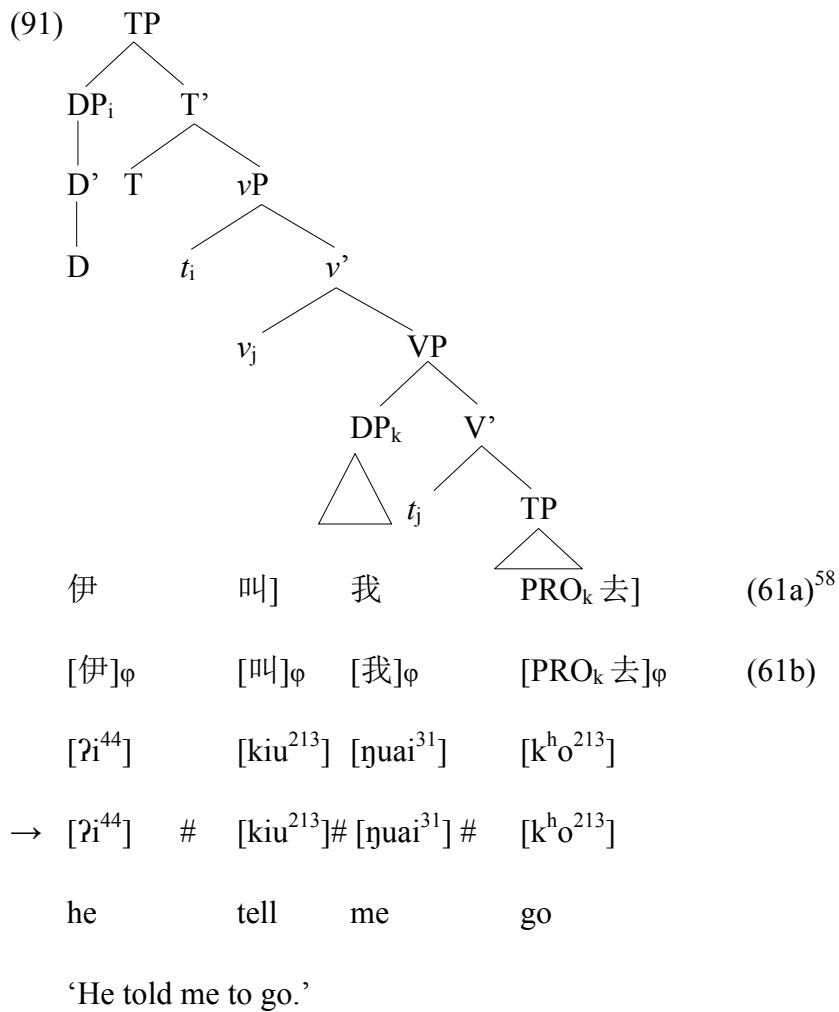
⁵⁷ Though the little v is somewhat “less lexical” than V , a boundary is still inserted at the right edge of the little v in (89) since the v position is filled by the verb 乞 ‘to give’ that originates in the lexical V position.

As we can see from (89), by adopting the concept of *vP* and the structure of *vP* in (87), the blocking of TS between the verb 乞 ‘to give’ and its following constituent can be correctly predicted by the definition in (61). 乞 is not the only ditransitive verb in the Fuzhou dialect. Other ditransitive verbs, such as 送 [soyŋ²¹³] ‘to give’ and 借 [tsuoʔ²³] ‘to lend’, actually exhibit the same behavior as 乞 ‘to give’ with respect to their tone sandhi behavior. In other words, the TS rule is always blocked between a ditransitive verb and the object following it, as exemplified in (90).

- | | | | |
|--------|---|----|---|
| (90)a. | 伊 送 我 钱 | b. | 伊 借 我 钱 |
| | ʔi ⁴⁴ soyŋ ²¹³ ŋuai ³¹ tsiɛŋ ⁵¹ | | ʔi ⁴⁴ tsuoʔ ²³ ŋuai ³¹ tsiɛŋ ⁵¹ |
| | → ʔi ⁴⁴ # soyŋ ²¹³ # ŋuai ³¹ # tsiɛŋ ⁵¹ | | → ʔi ⁴⁴ # tsuoʔ ²³ # ŋuai ³¹ # tsiɛŋ ⁵¹ |
| | he give me money | | he lend me money |
| | ‘He gave me the money.’ | | ‘He lent me the money.’ |

Clearly, double-object constructions containing these ditransitive verbs share the same surface syntactic structure, namely (89), and thus the systematic blocking of TS between a ditransitive verb and the following constituent can be accounted for with the definition in (61) since they belong to two separate phonological phrases.

Now let us move on to the behavior of 叫 ‘to tell’. We can find that examples like (86b) are so-called “pivotal sentences” in Chinese, in which the object of the first verb functions as the subject of the second verb/verb phrase at the same time. Like double-object constructions, pivotal sentences can also be parsed with the concept of *vP*. Thus the surface syntactic structure of (86b) can be presented as in (91) (cf. Tang 2010, He 2011). The phonological phrasing of (86b) is also presented in (91).



From (91), we can find that the tone sandhi behavior exhibited by 叫] ‘to tell’ can be well handled by adopting the concept of *vP* and the structure of *vP* in (87). The definition of the phonological phrase in (61) correctly predicts the blocking of TS between the verb 叫] ‘to tell’ and the following object.

Other verbs that can form pivotal sentences in the Fuzhou dialect include 告 [ko²¹³] ‘to tell’, 请 [ts^hian³¹] ‘to invite’, 劝 [k^huon²¹³] ‘to advise, to persuade’, 干 [kaŋ⁴⁴] ‘to force’, and 逼 [pei²³] ‘to force’. Some examples are presented in (92).

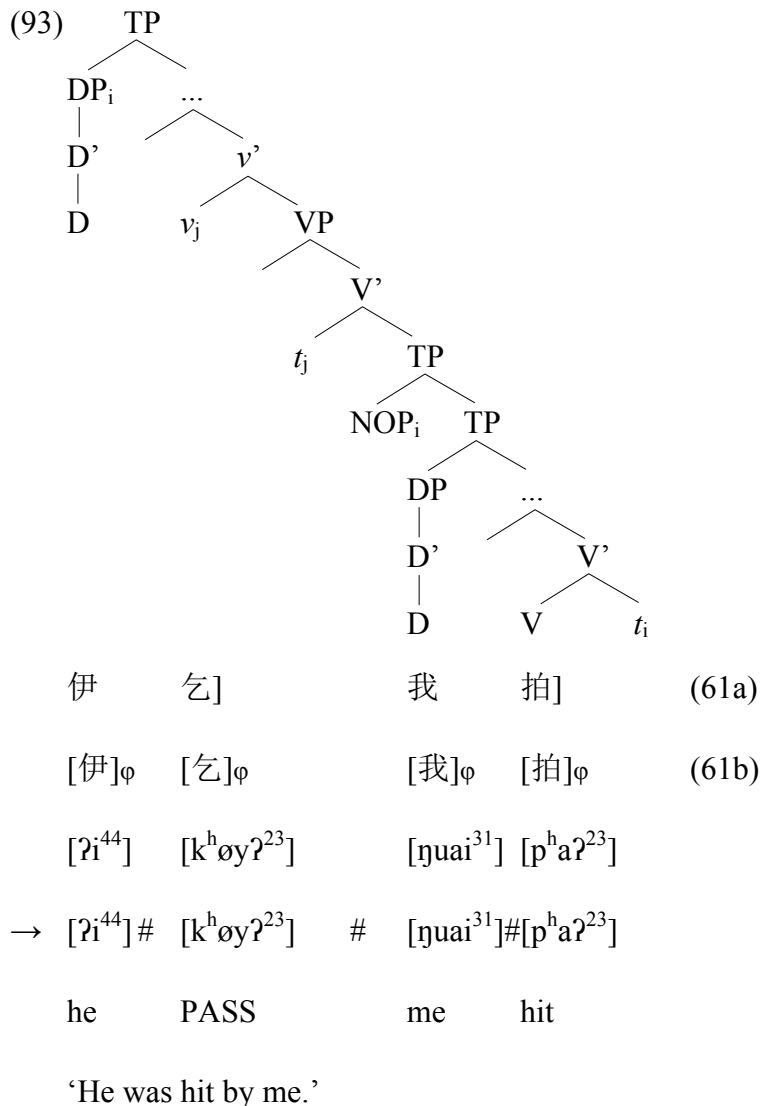
⁵⁸ In syntax, PRO is a phonetically empty pronoun that serves as the subject of a non-finite clause. In (91), the PRO and 我 ‘me’ are coindexed since 我 ‘me’ is the real subject of the verb 去 ‘go’.

We can find that the TS rule, again, is blocked between these verbs and their objects, which can be nicely captured by the structure in (91) and the definition in (61).

- (92) a. 伊 告 我 去 b. 伊 请 我 去
 $\text{ʔi}^{44} \text{ko}^{213} \quad \eta\text{uai}^{31} \quad \text{k}^{\text{h}}\text{o}^{213}$ $\text{ʔi}^{44} \text{ts}^{\text{h}}\text{iaŋ}^{31} \quad \eta\text{uai}^{31} \quad \text{k}^{\text{h}}\text{o}^{213}$
 $\rightarrow \text{ʔi}^{44} \# \text{ko}^{213} \# \eta\text{uai}^{31} \# \text{k}^{\text{h}}\text{o}^{213}$ $\rightarrow \text{ʔi}^{44} \# \text{ts}^{\text{h}}\text{iaŋ}^{31} \# \eta\text{uai}^{31} \# \text{k}^{\text{h}}\text{o}^{213}$
 he tell me go he invite me go
 ‘He told me to go.’ ‘He invited me to go.’
- c. 伊 劝 我 去 d. 伊 干 我 去
 $\text{ʔi}^{44} \text{k}^{\text{h}}\text{uoŋ}^{213} \quad \eta\text{uai}^{31} \quad \text{k}^{\text{h}}\text{o}^{213}$ $\text{ʔi}^{44} \text{kaŋ}^{44} \quad \eta\text{uai}^{31} \quad \text{k}^{\text{h}}\text{o}^{213}$
 $\rightarrow \text{ʔi}^{44} \# \text{k}^{\text{h}}\text{uoŋ}^{213} \# \eta\text{uai}^{31} \# \text{k}^{\text{h}}\text{o}^{213}$ $\rightarrow \text{ʔi}^{44} \# \text{kaŋ}^{44} \# \eta\text{uai}^{31} \# \text{k}^{\text{h}}\text{o}^{213}$
 he advise me go he force me go
 ‘He advised me to go.’ ‘He forced me to go.’
- e. 伊 逼 我 去
 $\text{ʔi}^{44} \text{pei}^{23} \quad \eta\text{uai}^{31} \quad \text{k}^{\text{h}}\text{o}^{213}$
 $\rightarrow \text{ʔi}^{44} \# \text{pei}^{23} \# \eta\text{uai}^{31} \# \text{k}^{\text{h}}\text{o}^{213}$
 he force me go
 ‘He forced me to go.’

The last issue considered in this subsection is the passive marker 乞. Like (86c), examples that contain the passive marker 乞 are similar to passive sentences in Mandarin Chinese. In these sentences, 乞 is used to introduce the agent that is followed by the VP. The object of the verb following the agent is placed in the subject position. The syntactic structure of the passive sentence has long been standing as a

problem for linguists. Feng (1995) proposes an analysis for Mandarin passive sentences, which involves null operator (NOP) movement and predication. A number of other works have appeared in support of Feng's proposal, including Chiu (1995), Cheng et al (1993, 1996), Ting (1995, 1996), Tang (2008, 2010), Huang, Li, and Li (2009), among others. Since passive sentences in the Fuzhou dialect are similar to those in Mandarin Chinese, I follow the previous studies and assume the following surface syntactic structure of (86c), as in (93). We can find that the blocking between the passive marker 乞 and the agent can be accounted for since they belong to separate phonological phrases according to the definition in (61).



So far, I have investigated the tone sandhi behavior of three words (namely, 乞 [k^høyʔ²³] ‘to give’, 叫 [kiu²¹³] ‘to tell’, and 乞 [k^høyʔ²³] ‘passive marker’) in the Fuzhou dialect which have been listed in the literature as exceptions to the TS rule at the phrasal level. By adopting the concept of vP and placing these three words in the v position, the blocking of TS between these words and their following constituents can be attributed to their syntactic structure. According to their syntactic structure and the definition of phonological phrasing in the Fuzhou dialect, these three words are not grouped into the same phonological phrase with the following constituents. Thus the systematic blocking of TS between these words and the following constituents are well accounted for. In addition to these three words, other words that are contained in double-object constructions and pivotal sentences have also been examined in this subsection. I have shown that the blocking of TS exhibited by 乞 ‘to give’, 叫 ‘to tell’, and 乞 ‘passive marker’ is not lexically marked, since other words that share the same syntactic structure with these three words also exhibit the same tone sandhi behavior, which provides further evidence for the analysis in this subsection.

6.2.4 Summary

In Section 6.2, I have revisited the issue of Fuzhou TS at the phrasal level, which has long been recognized as a problem for linguists. In Section 6.2.1, I have reviewed and compared the most important previous analyses and discussed their advantages as well as their shortcomings. In Section 6.2.3, on the basis of the review of previous studies, I have first examined two main approaches, namely, EBA and RBA, with respect to the phonological phrasing in the Fuzhou dialect in Section 6.2.3.1, and

showed that neither of these two main approaches alone can correctly define the phonological phrase in Fuzhou. Then an alternative approach to phonological phrasing has been proposed in the Fuzhou dialect in Section 6.2.3.2, which combines RBA and EBA, as re-presented in (94).

(94) Phonological Phrase (φ) domain in the Fuzhou dialect = (61)

- a. Mark the right edge of every lexical head X, except where XP is an adjunct;
- b. On the non-recursive side of the lexical head X, mark the right edge of the first phonetically overt head Y (if any; either lexical or functional) outside of XP; ω s/CGs that are separated by the right edge of X or Y belong to different φ s;
- c. φ restructuring: a non-branching φ , which is the first complement of X on its recursive side, is joined into the φ that contains X.

I have demonstrated that most relevant data discussed in previous studies can be re-analyzed with this hybrid approach and the application and blocking of phrasal-level TS in these data can be well accounted for.

In Section 6.2.3.3, some residual issues of Fuzhou TS at the phrasal level have been discussed, including the problem caused by “V+location” constructions, the contrast between monosyllabic verbs and disyllabic verbs, as well as the blocking of TS within some special constructions (double-object constructions, pivotal sentences, and passive sentences). In order to deal with the problem caused by “V+location” constructions and the contrast between monosyllabic verbs and disyllabic verbs, I

have proposed a Restriction on Rule Application in the prosodic phonology of the Fuzhou dialect, reproduced as in (95). I have shown that this principle not only accounts for these two problems mentioned above within the domain of the phonological phrase, but also captures the TS behavior within Type A clitic group discussed in Chapter V.

(95) Restriction on Rule Application in the Fuzhou Dialect = (82)

Within a given prosodic domain, the application or blocking of a particular phonological rule that is specific to this domain cannot be triggered on any constituent contained in the embedded domain, iff the application or blocking of the same type of rule specific to the embedded domain has been triggered.

In terms of the blocking of TS within double-object constructions, pivotal sentences, and passive sentences, I have adopted the concept of *vP* and suggested that words like 乞 ‘to give’, 叫 ‘to tell’, and 乞 ‘passive marker’ should occupy the *v* position in the syntactic structure. Thus they always form a phonological phrase on their own according to the phonological phrasing definition in (61)/(94) and never undergo TS. Additional evidence in the Fuzhou dialect has also been given in support of the analysis proposed in Section 6.2.3.3, which suggests that the blocking of TS at the phrasal level caused by words like 乞 ‘to give’, 叫 ‘to tell’, and 乞 ‘passive marker’ is not a lexically marked issue and can be well incorporated in the hybrid approach advanced in this chapter.

6.3 Other Fuzhou phonological phenomena at the phrasal level

In Section 6.2, I have demonstrated that Fuzhou TS at the phrasal level is a phonological rule that refers to the phonological phrase as its domain of application. The application of the TS rule is not the only phonological phenomenon that applies within the domain of the phonological phrase in the Fuzhou dialect. In this section, I will investigate other Fuzhou phenomena at the phrasal level. It will be shown that these phonological phenomena all make crucial reference to the domain of the phonological phrase defined in (61), while they may exhibit different degrees of application within this prosodic domain, which can be accounted for on the basis of syntactic notions.

6.3.1 Final change at the phrasal level

As discussed in Section 2.2.2.2, since final change (FC) is a tonally-conditioned rule in the Fuzhou dialect, whenever the underlying tones 213, 242, and 23 undergo TS and change into their corresponding sandhi tones within a sandhi context, Group B variants of alternating finals that bear these tones will undergo FC. The application of FC along with the application of TS is obligatory, as we have seen in previous chapters. Therefore, it is reasonable to assume that the application or blocking of the FC rule has the same distribution with the TS rule at the phrasal level. In other words, FC applies within phrasal-level constructions in which the TS rule applies as long as there are appropriate phonological environments, while it is blocked whenever the TS rule is blocked at the phrasal level. Thus I assume that the FC rule also refers to the phonological phrase domain defined in (61) as its domain of application at the phrasal

level, but not applies across the phonological phrase boundaries. The application of FC within the phonological phrase domain is also assumed to be conditioned by the restriction proposed in (82).

Relevant data from the Fuzhou dialect well support this assumption, as shown in (96-107).⁵⁹ Sandhi forms of tones and finals are both presented in the following examples. Finals in question are marked in bold. Positions where TS and FC apply are marked by “=” and positions where TS and FC are blocked are marked by “#”. Positions that are not relevant to the discussion are not marked. For the sake of brevity, syntactic trees and each step of the phonological phrase formation are not presented.

(96) Monosyllabic verb-object

a.	[办] _φ [新 护照] _φ	b.	[办 护照] _φ
	[paj̃ ²⁴²] [siŋ ⁴⁴ xou ²⁴² tsiu ²¹³]		[paj̃ ²⁴² xou ²⁴² tsiu ²¹³]
	→ [paj̃ ²⁴²][#siŋ ²¹ xu ⁵¹ tsiu ²¹³]		→ [peij̃ ²¹ = xu ⁵¹ tsiu ²¹³]
	*[peij̃ ²⁴²][siŋ ²¹ xu ⁵¹ tsiu ²¹³]		do passport
	do new passport		‘to apply for a passport’
	‘to apply for a new passport’		

(97) Modifier-head (attributive-noun and adverbial-adjective/verb)

a.	[旧 书] _φ	b.	[固 食力] _φ
	[kou ²⁴² tsy ⁴⁴]		[kou ²¹³ siε ²⁵ li ²⁵]
	→ [ku ⁴⁴ = tsy ⁴⁴]		→ [ku ⁵¹ = siε ³¹ li ²⁵]
	old book		more tired
	‘old book’		‘more tired’

⁵⁹ I did not find any prepositions that contain Group B variants of alternating finals. Hence no examples of Prepositional phrases are presented here.

- c. [硬 爬]_φ
 [ŋaiŋ²⁴² pa⁵¹]
 → [ŋeiŋ⁴⁴ = pa⁵¹]
 with difficulty climb 'to climb with some difficulty'

(98) Subject-predicate

- a. [店]_φ [真 大]_φ
 [taiŋ²¹³] [tsiŋ⁴⁴ tuai²⁴²]
 → [taiŋ²¹³] # [tsiŋ⁵¹ tuai²⁴²]
 *[teiŋ²¹³] [tsiŋ⁵¹ tuai²⁴²]
 store very big
 'The store is big.'
- b. [羊毛裤]_φ [真 好看]_φ
 [yoŋ⁵¹ mo⁵¹ k^hou²¹³] [tsiŋ⁴⁴ xo³¹ k^haŋ²¹³]
 → [yoŋ²¹ mo²¹ k^hou²¹³] # [tsiŋ²¹ xo⁴⁴ k^haŋ²¹³]
 *[yoŋ²¹ mo²¹ k^hu²¹³] [tsiŋ²¹ xo⁴⁴ k^haŋ²¹³]
 woolen pant very good-looking
 'Woolen pants are very good-looking.'

(99) Verb-resultative complement

- a. [伊]_φ [办]_φ [野 好]_φ
 [ʔi⁴⁴] [paiŋ²⁴²] [ʔia³¹ xo³¹]
 → [ʔi⁴⁴] [paiŋ²⁴²] # [ʔia²⁴ xo³¹]
 *[ʔi⁴⁴] [peiŋ²⁴²] [ʔia²⁴ xo³¹]
 he do very good 'He did very well.'

- b. [碰]_φ [呆]_φ c. [试]_φ [完]_φ
 [p^houŋ²⁴²] [ŋai⁵¹] [ts^hei²¹³] [ʔuoŋ⁵¹]
 → [p^houŋ²⁴²] # [ŋai⁵¹] → [ts^hei²¹³]#[ʔuoŋ⁵¹]
 *[p^huŋ²⁴²] [ŋai⁵¹] *[ts^hi²¹³][ʔuoŋ⁵¹]
 hit bad try finish
 ‘to hit and break’ ‘to finish trying’

(100) Determiner/Quantifier-Classifier-Noun

- a. [试]_φ [只 块]_φ [衣裳]_φ
 [ts^hei²¹³] [tsi³¹ toy²¹³] [ʔi⁴⁴ suoŋ⁵¹]
 → [ts^hei²¹³]#[tsi⁴⁴ toy²¹³] # [ʔi⁴⁴ suoŋ⁵¹]
 *[ts^hi²¹³][tsi⁴⁴ tɔy²¹³] [ʔi⁴⁴ suoŋ⁵¹]
 try this Cl clothes
 ‘to try this piece of clothes’
- b. [试]_φ [七 块]_φ [衣裳]_φ
 [ts^hei²¹³] [ts^heiʔ²³toy²¹³] [ʔi⁴⁴ suoŋ⁵¹]
 → [ts^hei²¹³]# [ts^hiʔ⁴⁴ = toy²¹³]# [ʔi⁴⁴ suoŋ⁵¹]
 *[ts^hi²¹³] [ts^hiʔ⁴⁴ = tɔy²¹³] [ʔi⁴⁴ suoŋ⁵¹]
 try seven Cl clothes
 ‘to try seven pieces of clothes’

(101) Serial verb constructions

- a. [买 裤]_φ [穿]_φ
 [mɛ³¹ k^hou²¹³] [søyŋ²⁴²]
 → [mɛ⁴⁴ k^hou²¹³]# [søyŋ²⁴²]
 *[mɛ⁴⁴ k^h**u**²¹³] [søyŋ²⁴²]
 buy pant wear
 ‘to buy pants to wear’

- b. [去 馆店]_φ [食 饭]_φ
 [k^ho²¹³ kuan³¹ tain²¹³] [siɛʔ⁵ puoŋ²⁴²]
 → [k^ho²¹ kuan⁴⁴ tain²¹³]# [siɛʔ²¹ puoŋ²⁴²]
 *[k^ho²¹ kuan⁴⁴ **te**iŋ²¹³] [siɛʔ²¹ puoŋ²⁴²]
 go restaurant eat rice
 ‘to go to the restaurant to eat food’

(102) Coordination constructions

- | | |
|---|---|
| <p>a. [竹]_φ [共]_φ [兰]_φ
 [tøyʔ²³] [koyŋ²⁴²][lan⁵¹]
 → [tøyʔ²³]#[koyŋ²⁴²]#[lan⁵¹]
 *[tyʔ²³][køyŋ²⁴²][lan⁵¹]
 bamboo and orchid
 ‘bamboo and orchid’</p> | <p>b. [裤]_φ [共]_φ [袜]_φ
 [k^hou²¹³][koyŋ²⁴²][ʔuaʔ⁵]
 → [k^hou²¹³]#[koyŋ²⁴²]#[ʔuaʔ⁵]
 *[k^hu²¹³][køyŋ²⁴²][ʔuaʔ⁵]
 pant and socks
 ‘pants and socks’</p> |
|---|---|

- | | |
|---|--|
| <p>c. [竹]_φ ∅ [兰]_φ
 [tøy²³] ∅ [lan⁵¹]
 → [tøy²³]#∅ [lan⁵¹]
 *[ty²³] ∅ [lan⁵¹]
 bamboo orchid
 ‘bamboo and orchid’</p> | <p>d. [裤]_φ ∅ [袜]_φ
 [k^hou²¹³] ∅ [ʔua⁵]
 → [k^hou²¹³]#∅ [ʔua⁵]
 *[k^hu²¹³] ∅ [ʔua⁵]
 pant socks
 ‘pants and socks’</p> |
|---|--|

(103) V+location

- | | |
|---|---|
| <p>a. [坐 ∅ 厅中]_φ
 [soy²⁴² ∅ t^hian⁴⁴ touŋ⁴⁴]
 → [soy²⁴² # ∅ t^hian⁴⁴ touŋ⁴⁴]
 *[søy²⁴² ∅ t^hian⁴⁴ touŋ⁴⁴]
 sit drawing room
 ‘to sit in the drawing room’</p> | <p>b. [放 ∅ 厅中]_φ
 [pouŋ²¹³ ∅ t^hian⁴⁴ touŋ⁴⁴]
 → [pouŋ²¹³ # ∅ t^hian⁴⁴ touŋ⁴⁴]
 *[puŋ²¹³ ∅ t^hian⁴⁴ touŋ⁴⁴]
 put drawing room
 ‘to put in the drawing room’</p> |
|---|---|

(104) Disyllabic verb+object

- | | |
|---|--|
| <p>a. [中意 伊]_φ
 [tøyŋ²¹³ ʔei²¹³ ʔi⁴⁴]
 → [tyŋ⁵¹ ʔei²¹³ # ʔi⁴⁴]
 *[tyŋ⁵¹ ʔi²¹³ ʔi⁴⁴]
 like him
 ‘to like him’</p> | <p>b. [兴趣 泅水]_φ
 [xeiŋ²¹³ ts^høy²¹³ siu⁵¹ tsui³¹]
 → [xiŋ⁵¹ ts^høy²¹³ # siu³¹ tsui³¹]
 *[xiŋ⁵¹ ts^hy²¹³ siu³¹ tsui³¹]
 interest swimming
 ‘to be interested in swimming’</p> |
|---|--|

(105) Double object

- | | |
|--|---|
| <p>a. [乞]_φ [我]_φ [钱]_φ
 [k^høyʔ²³] [ŋuai³¹] [tsien⁵¹]
 → [k^høyʔ²³]#[ŋuai³¹] [tsien⁵¹]
 *[k^hyʔ²³] [ŋuai³¹] [tsien⁵¹]
 give me money
 ‘to give me the money’</p> | <p>b. [送]_φ [我]_φ [钱]_φ
 [soyŋ²¹³] [ŋuai³¹] [tsien⁵¹]
 → [soyŋ²¹³]#[ŋuai³¹][tsien⁵¹]
 *[soyŋ²¹³][ŋuai³¹][tsien⁵¹]
 give me money
 ‘to give me the money’</p> |
|--|---|

(106) Pivotal sentence

- [逼]_φ [我]_φ [PRO 去]_φ
 [peiʔ²³] [ŋuai³¹] [k^ho²¹³]
 → [peiʔ²³]#[ŋuai³¹][k^ho²¹³]
 *[piʔ²³] [ŋuai³¹] [k^ho²¹³]
 force me go
 ‘to force me to go.’

(107) Passive sentence

- [伊]_φ [乞]_φ [我]_φ [拍]_φ
 [ʔi⁴⁴] [k^høyʔ²³] [ŋuai³¹] [p^haʔ²³]
 → [ʔi⁴⁴] [k^høyʔ²³]# [ŋuai³¹] [p^haʔ²³]
 *[ʔi⁴⁴] [k^hyʔ²³] [ŋuai³¹] [p^haʔ²³]
 he PASS me hit
 ‘He was hit by me.’

From examples in (96-107), we can find that the FC rule also refers to the phonological phrase domain defined in (61) as its domain of application at the phrasal level, similar to the TS rule. Like the TS rule, FC also applies within but not across the phonological phrase domain. Whenever tones 213, 242, and 23 are changed due to the application of TS within a phonological phrase, Group B variants of alternating finals, which serve as tone bearing units of these tones, will undergo FC. Within the phonological phrase domain, the application of FC is also restricted by the restriction proposed in (82), as can be seen in examples in (103) and (104), in which the application of FC in the phonological phrase domain cannot not triggered within the embedded Type A clitic group domain and prosodic word domain and thus does not change the finals contained in the embedded domains.

6.3.2 Initial consonant lenition at the phrasal level

Let us now move on to the application of initial consonant lenition (CL) at the phrasal level. It has been noticed that TS and FC apply within more phrasal-level constructions than CL does (cf. Chen & Norman 1965a, Shih 1986, among others). As mentioned in Section 6.2.2.1, Chen & Norman (1965a) distinguish four types of “junctures”, namely terminal juncture, plus juncture, intermediate juncture, and close juncture. According to Chen & Norman, the CL rule is blocked at terminal juncture, plus juncture, as well as intermediate juncture (recall that TS and FC are claimed to apply at intermediate juncture), while applies only at close juncture. Chen & Norman’s observation is presented in (108), in which the application of CL is marked by “=” while the blocking is marked by “#”.

(108) CL and Chen & Norman's junctures

I. Terminal Juncture (Blocking of CL)

End of sentence/clause

II. Plus Juncture (Blocking of CL)

a. Subject # Predicate

b. Determiner-Classifier # Noun

c. Verb # Resultative complement

d. Reduplicated Adjective # adjective reduplication marker

e. Some marked words (e.g., 共 [koyŋ²⁴²] 'and, with'; 乞 [k^høyʔ²³] 'to give'; 着 [tuoʔ⁵] 'to be in or at') #

III. Intermediate Juncture (Blocking of CL)

a. Verb # Object (both monosyllabic)

b. 会 [ʔa²⁴²] ('can') # Verbc. 咧 [lɛ³¹] (progressive action) # Verb

d. Adj. # Adj.

IV. Close Juncture (Application of CL)

a. Determiner = Classifier

b. Adj. = Noun (both monosyllabic)

c. Adverb = Verb (both monosyllabic)

d. 𠵹 [ma²⁴²] ('cannot') = Verb

As discussed in Section 6.2.2.1, Chen & Norman's (1965a) observation actually mixes up contexts at different levels and involves some contexts that should not be

considered as at the phrasal level. Also, the list in (108) contains a number of lexically marked contexts, such as 共 [koyŋ²⁴²] ‘and, with’, 乞 [k^høyŋ²³] ‘to give’, and 着 [tuoŋ⁵] ‘to be in or at’, which may be accounted for with a unified analysis, as what we have seen for the phrasal-level TS in Section 6.2.3.

Comparing the list in (108) with the list in (5) (see Section 6.2.2.1), we can find that actually the most important difference between the application of CL at the phrasal level and the application of TS and FC lies in the blocking of CL between a monosyllabic verb and a monosyllabic object (see 108 IIIa). According to the discussion in Section 6.2.3, we know that it would be more accurate to assume that the blocking occurs between a monosyllabic verb and a non-branching object. Since a monosyllabic verb and a non-branching object forms a phonological phrase following the φ -restructuring rule in (61c), it is reasonable to assume that CL is blocked within the phonological phrase that is constructed by the φ -restructuring rule. This is well supported by the following examples, in which sandhi forms of initials in question are marked in bold. Sandhi forms of tones and finals are presented as well. The blocking of CL is marked by “#”.

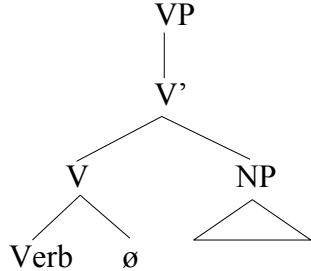
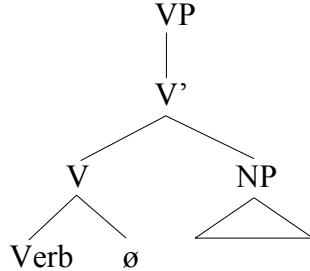
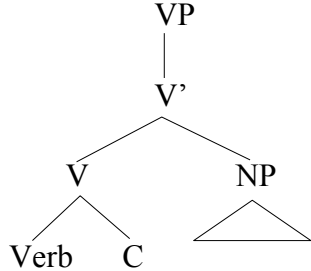
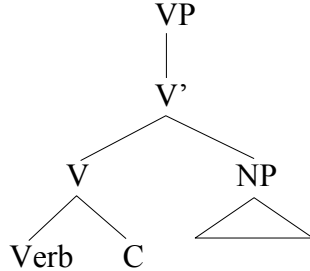
(109) Monosyllabic verb-non-branching object

a.	<p>VP V' / \ V NP [食 饭]_φ</p>	b.	<p>VP V' / \ V NP [办 护照]_φ</p>
	[siɛʔ ⁵ puoŋ ²⁴²]		[paiŋ ²⁴² xou ²⁴² tsiu ²¹³]
→	[siɛʔ ²¹ # puoŋ ²⁴²]	→	[peiŋ ²¹ #xu ⁵¹ ʒiu ²¹³]
	*[siɛʔ ²¹ βuoŋ ²⁴²]		*[peiŋ ²¹ ŋu ⁵¹ ʒiu ²¹³]
	eat rice		do passport
	‘to eat food’		‘to apply for a passport’

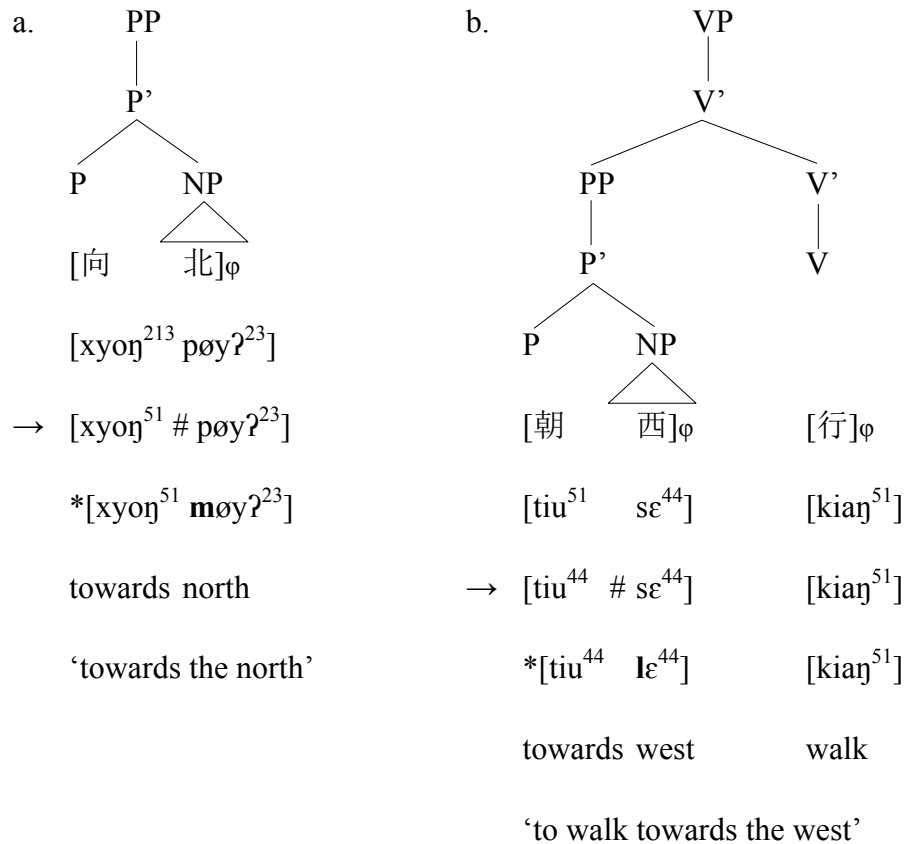
(110) Disyllabic verb-non-branching object

a.	<p>VP V' / \ V NP [喜欢 书]_φ</p>	b.	<p>VP V' / \ V NP [中意 别依]_φ</p>
	[xi ³¹ xuaŋ ⁴⁴ tsy ⁴⁴]		[tøŋ ²¹³ ʔei ²¹³ peiʔ ⁵ nøŋ ⁵¹]
→	[xi ²¹ ʔuaŋ ⁴⁴ # tsy ⁴⁴]	→	[tyŋ ⁵¹ ŋei ²¹³ # peiʔ ³¹ nøŋ ⁵¹]
	*[xi ²¹ ʔuaŋ ⁴⁴ ny ⁴⁴]		*[tyŋ ⁵¹ ŋei ²¹³ βeiʔ ³¹ nøŋ ⁵¹]
	hate insect		tease other people
	‘to like books’		‘to like other people’

(111) V+(敲/邁)+location

- a.
- 
- [住 ø 泉州]_φ [tiu²⁴² ø tsuoŋ⁵¹ tsiu⁴⁴]
- [tiu²⁴² ø # tsuoŋ⁴⁴ ʒiu⁴⁴] → [xui⁵¹ ø # tsuoŋ⁴⁴ ʒiu⁴⁴]
- *[tiu²⁴² ø ʒuoŋ⁴⁴ ʒiu⁴⁴]
- live Quanzhou return Quanzhou
- ‘to live in Quanzhou’ ‘to return to Quanzhou’
- b.
- 
- [回 ø 泉州]_φ [xui⁵¹ ø tsuoŋ⁵¹ tsiu⁴⁴]
- [xui⁵¹ ø # tsuoŋ⁴⁴ ʒiu⁴⁴]
- *[xui⁵¹ ø ʒuoŋ⁴⁴ ʒiu⁴⁴]
- live Quanzhou return Quanzhou
- ‘to live in Quanzhou’ ‘to return to Quanzhou’
- c.
- 
- [住 敲 泉州]_φ [tiu²⁴² kaʔ⁰ tsuoŋ⁵¹ tsiu⁴⁴]
- [tiu²⁴² ʔaʔ⁰ # tsuoŋ⁴⁴ ʒiu⁴⁴] → [xui⁵¹ ʔau²¹³ # tsuoŋ⁴⁴ ʒiu⁴⁴]
- *[tiu²⁴² ʔaʔ⁰ ʒuoŋ⁴⁴ ʒiu⁴⁴]
- live PVP Quanzhou return PVP Quanzhou
- ‘to live in Quanzhou’ ‘to return to Quanzhou’
- d.
- 
- [回 邁 泉州]_φ [xui⁵¹ kau²¹³ tsuoŋ⁵¹ tsiu⁴⁴]
- [xui⁵¹ ʔau²¹³ # tsuoŋ⁴⁴ ʒiu⁴⁴]
- *[xui⁵¹ ʔau²¹³ ʒuoŋ⁴⁴ ʒiu⁴⁴]
- live PVP Quanzhou return PVP Quanzhou
- ‘to live in Quanzhou’ ‘to return to Quanzhou’

(112) Prepositional phrases



From examples in (109-112), we can find that CL is not only blocked between a monosyllabic verb and a monosyllabic object, as in Chen & Norman's (1965a) observation and in (109a), but also blocked between a monosyllabic verb and a disyllabic object, as in (109b). Moreover, CL is blocked within all the other phrasal-level constructions that form the phonological phrase domain through ϕ -restructuring, as exemplified in (110-112). It is noteworthy that the blocking of CL within the phonological phrase domain in above examples is also restricted by the restriction in (82)—though the CL rule is blocked in the phonological phrase domain because of the restructuring rule, the application of CL can still be triggered within

the embedded prosodic word domain, as in (109b) and (110-111), and within the embedded Type A clitic group domain, as in (111c, d).

It is noteworthy that CL is also blocked in the phonological phrase domain formed by the following constructions. The blocking of CL is marked by “#”.

(113) Modifier-head (the head contains two syllables)

- a.
-
- NP
|
N'
/ \
AP N'
/ \
△ N
[新 护照]_φ
[sin⁴⁴ xou²⁴² tsiu²¹³]
→ [sin²¹ # xu⁵¹ ʒiu²¹³]
*[sin²¹ ŋu⁵¹ ʒiu²¹³]
new passport
'new passport'
- b.
-
- AP
|
A'
/ \
AdvP A'
/ \
△ A
[野 欢喜]_φ
[ʔia³¹ xuaŋ⁴⁴ xi³¹]
→ [ʔia²¹ # xuaŋ⁵¹ ŋi³¹]
*[ʔia²¹ ʔuaŋ⁵¹ ŋi³¹]
very happy
'very happy'
- c.
-
- VP
|
V'
/ \
AdvP V'
/ \
△ V
[野 中意]_φ
[ʔia³¹ tøyŋ²¹³ ʔei²¹³]
→ [ʔia²¹ # tøyŋ⁵¹ ŋei²¹³]
*[ʔia²¹ løyŋ⁵¹ ŋei²¹³]
very like
'to like (sth.) very much'⁶⁰

⁶⁰ One of my informants, Mrs. Song, suggests that [ʔia²¹ løyŋ⁵¹ ŋei²¹³] may be accepted as well, while she believes that [ʔia²¹ # tøyŋ⁵¹ ŋei²¹³] is more accurate and authentic. I will return to this example in Chapter VIII, in which the variability in the acceptability of such examples will be discussed.

The blocking of CL in (113) can be ascribed to the Restriction on Rule Application in (82) as well. It can be seen that in each example in (113), the phonological phrase contains a disyllabic morpho-syntactic word that forms a prosodic word domain in which the application of CL, which is also a ω -specific phonological phenomenon, is triggered. Thus according to the restriction in (82), the ϕ -specific application of CL does not affect the constituents within the embedded prosodic word and hence leaves the initial of the first syllable contained in the prosodic word unchanged.

In addition to cases in (109-113), the CL rule is also blocked within phrasal-level constructions that form more than one phonological phrase. In other words, like phrasal-level TS and FC, CL is also blocked across phonological phrase boundaries, as shown in (114-122). By contrast, in the phonological phrase domain constructed on the basis of the definition in (61a) and (61b), without the ϕ -restructuring, the phrasal-level CL rule applies, as long as its application does not violate the restriction in (82), which can be seen in (114-122) as well. Positions in question are marked—the application of CL is marked by “=”, while the blocking of CL is marked by “#”. Sandhi forms of initials in question are marked in bold. For the sake of brevity, syntactic trees are not presented in the following examples.

(114) Monosyllabic verb-branching object

- a. [办] ϕ [新 护照] ϕ
 [paiŋ²⁴²] [siŋ⁴⁴ xou²⁴² tsiu²¹³]
 → [paiŋ²⁴²]#[siŋ²¹ xu⁵¹ ʒiu²¹³]
 *[paiŋ²⁴²] [**niŋ**²¹ xu⁵¹ tsiu²¹³]
 do new passport ‘to apply for a new passport’

(116) Subject-predicate

- a. [旧 书]_φ [真 贵]_φ
 [kou²⁴² tsy⁴⁴] [tsiŋ⁴⁴ kui²¹³]
 → [ku⁴⁴ ʒy⁴⁴]# [tsiŋ⁵¹ ŋui²¹³]
 *[ku⁴⁴ ʒy⁴⁴] [ʒiŋ⁵¹ ŋui²¹³]
 old book very expensive

‘Old books are very expensive.’

- b. [依]_φ [野 侈]_φ
 [nøyŋ⁵¹] [ʔia³¹ sɛ²⁴²]
 → [nøyŋ⁵¹]# [ʔia⁴⁴ lɛ²⁴²]
 *[nøyŋ⁵¹] [ŋia⁴⁴ lɛ²⁴²]
 people very many ‘There are many people.’

(117) Verb-resultative complement

- a. [伊]_φ [办]_φ [野 好]_φ
 [ʔi⁴⁴] [paiŋ²⁴²] [ʔia³¹ xo³¹]
 → [ʔi⁴⁴] [paiŋ²⁴²]# [ʔia²⁴ ʔo³¹]
 *[ʔi⁴⁴] [paiŋ²⁴²] [ŋia²⁴ ʔo³¹]
 he do very good ‘He did very well.’

- | | |
|---|--|
| b. [食] _φ [饱] _φ | c. [看] _φ [完] _φ |
| [siɛʔ ⁵] [pa ³¹] | [k ^h aŋ ²¹³] [ʔuoŋ ⁵¹] |
| → [siɛʔ ⁵]# [pa ³¹] | → [k ^h aŋ ²¹³]# [ʔuoŋ ⁵¹] |
| *[siɛʔ ⁵] [βa ³¹] | *[k ^h aŋ ²¹³] [ŋuoŋ ⁵¹] |
| eat full | look finish |
| ‘to eat one’s full’ | ‘to finish watching’ |

(118) Determiner/quantifier-classifier-noun

- a. [食]_φ [只 块]_φ [糕]_φ
 [siɛʔ⁵] [tsi³¹ toy²¹³] [ko⁴⁴]
 → [siɛʔ⁵] [tsi⁴⁴ = loy²¹³] # [ko⁴⁴]
 *[siɛʔ⁵] [tsi⁴⁴ loy²¹³] [ʔo⁴⁴]
 eat this Cl cake ‘to eat this piece of cake’
- b. [食]_φ [蜀 块]_φ [糕]_φ
 [siɛʔ⁵] [suoʔ⁵ toy²¹³] [ko⁴⁴]
 → [siɛʔ⁵] [suoʔ²¹ = loy²¹³] # [ko⁴⁴]
 *[siɛʔ⁵] [suoʔ²¹ loy²¹³] [ʔo⁴⁴]
 eat one Cl cake ‘to eat one piece of cake’

(119) Serial verb constructions

- a. [买 裤]_φ [颂]_φ
 [mɛ³¹ k^hou²¹³] [søyn²⁴²]
 → [mɛ⁴⁴ k^hou²¹³] # [søyn²⁴²]
 *[mɛ⁴⁴ k^hou²¹³] [løyŋ²⁴²]
 buy pant wear ‘to buy pants to wear’
- b. [去 馆店]_φ [食 饭]_φ
 [k^ho²¹³ kuan³¹ taiŋ²¹³] [siɛʔ⁵ puoŋ²⁴²]
 → [k^ho²¹ kuan⁴⁴ naiŋ²¹³] # [siɛʔ²¹ puoŋ²⁴²]
 *[k^ho²¹ kuan⁴⁴ naiŋ²¹³] [niɛʔ²¹ puoŋ²⁴²]
 go restaurant eat rice
 ‘to go to the restaurant to eat food’

(120) Coordination constructions

- | | |
|--|---|
| <p>a. [饭]_φ [共]_φ [汤]_φ
 [puoŋ²⁴²] [koyŋ²⁴²][t^houŋ⁴⁴]
 → [puoŋ²⁴²]#[koyŋ²⁴²]#[t^houŋ⁴⁴]
 *[puoŋ²⁴²] [ŋoyŋ²⁴²] [nouŋ⁴⁴]
 rice and soup
 ‘rice and soup’</p> | <p>b. [煮]_φ [共]_φ [食]_φ
 [tsy³¹] [koyŋ²⁴²][siɛʔ⁵]
 → [tsy³¹] # [koyŋ²⁴²]#[siɛʔ⁵]
 *[tsy³¹] [ʔoyŋ²⁴²] [niɛʔ⁵]
 cook and eat
 ‘cooking and eating’</p> |
| <p>c. [饭]_φ ∅ [汤]_φ
 [puoŋ²⁴²] ∅ [t^houŋ⁴⁴]
 → [puoŋ²⁴²] # ∅ # [t^houŋ⁴⁴]
 *[puoŋ²⁴²] ∅ [nouŋ⁴⁴]
 rice soup
 ‘rice and soup’</p> | <p>d. [煮]_φ ∅ [食]_φ
 [tsy³¹] ∅ [siɛʔ⁵]
 → [tsy³¹] # ∅ # [siɛʔ⁵]
 *[tsy³¹] ∅ [liɛʔ⁵]
 cook eat
 ‘cooking and eating’</p> |

(121) Double-object

- | | |
|---|---|
| <p>a. [乞]_φ [贼]_φ [钱]_φ
 [k^høyʔ²³] [ts^heiʔ⁵] [tsiɛŋ⁵¹]
 → [k^høyʔ²³] # [ts^heiʔ⁵]#[tsiɛŋ⁵¹]
 *[k^høyʔ²³] [ʒeiʔ⁵] [ʒiɛŋ⁵¹]
 give thief money
 ‘to give the thief the money’</p> | <p>b. [送]_φ [伊]_φ [钱]_φ
 [soyŋ²¹³] [ʔi⁴⁴] [tsiɛŋ⁵¹]
 → [soyŋ²¹³]#[ʔi⁴⁴] [tsiɛŋ⁵¹]
 *[søyŋ²¹³] [ŋi⁴⁴] [ʒiɛŋ⁵¹]
 give him money
 ‘to give him the money’</p> |
|---|---|

(122) Pivotal sentences

- | | |
|--|--|
| <p>a. [劝]_φ [伊]_φ [去]_φ</p> <p>[k^huon²¹³][ʔi⁴⁴] [k^ho²¹³]</p> <p>→ [k^huon²¹³][ʔi⁴⁴]#[k^ho²¹³]</p> <p>*[k^huon²¹³][ŋi⁴⁴] [ʔo²¹³]</p> <p>advise him go</p> <p>‘to advise him to go’</p> | <p>b. [干]_φ [伊]_φ [去]_φ</p> <p>[kaŋ⁴⁴] [ʔi⁴⁴] [k^ho²¹³]</p> <p>→ [kaŋ⁴⁴]#[ʔi⁴⁴]#[k^ho²¹³]</p> <p>*[kaŋ⁴⁴][ŋi⁴⁴] [ʔo²¹³]</p> <p>force him go</p> <p>‘to force him to go’</p> |
|--|--|

(123) Passive sentence

- [乞]_φ [贼]_φ [拍]_φ
- [k^høʔ²³] [ts^heiʔ⁵] [p^haʔ²³]
- [k^høʔ²³]#[ts^heiʔ⁵]#[p^haʔ²³]
- *[k^høʔ²³] [ʒeiʔ⁵] [βaʔ²³]
- PASS thief hit
- ‘to be hit by the thief’

Examples in (109-123) thus reveal two outstanding characteristics of the application of the CL rule at the phrasal level. First, like phrasal-level TS and FC, CL is blocked between two phonological phrases—in other words, it does not apply across the phonological phrase domain boundaries. Second, unlike phrasal-level TS and FC, which are almost obligatory within the phonological phrase domain and are only restricted by the Restriction on Rule Application in (82), the application of the CL rule at the phrasal level is more restricted. As we have seen from examples in (109-123), the CL rule refers to the phonological phrase as its domain of application

at the phrasal level. Nonetheless, it is not only restricted by the restriction in (82), as shown in examples like (111c-d) and (113), but also blocked within the phonological phrase domain constructed through the φ -restructuring rule, as shown in (109-112). Therefore, the phrasal-level CL rule has a different degree of application within the phonological phrase domain as compared to TS and FC.

Following the discussion above, the examples mentioned in the end of Section 2.2.2.5 can be well accounted for, as presented in (124).

- (124) a. 做细 $tso^{213} sa^{213} \rightarrow tso^{51} la^{213}$ ‘(in) childhood’
 b. 做细 $tso^{213} sa^{213} \rightarrow tso^{51} sa^{213}$ ‘to be a concubine’

It can be found that 做细 ‘(in) childhood’ in (124a) is a noun while 做细 ‘to be a concubine’ in (124b) is a verb-object construction in which the object is non-branching. Thus (124a) is actually a prosodic word while (124b) forms a phonological phrase through φ -restructuring. Hence the CL rule applies within (124a) but fails to apply within (124b).

6.3.3 Summary

In Section 6.3, I have examined the application/blocking of two important Fuzhou phonological rules, namely FC and CL, at the phrasal level. I have shown that these two rules both crucially refer to the phonological phrase domain defined in (61) as the domain of application, and neither of them can be triggered across the phonological phrase domain. In addition, these two rules are both restricted by the Restriction on Rule Application in (82). Though they share the same domain of

application and are restricted by the same restriction at the phrasal level, I have demonstrated that these two rules do exhibit different degrees of application. As a tonally-conditioned rule, the FC rule applies whenever the TS rule is triggered within a phonological phrase. In contrast, unlike TS and FC, CL exhibits more restricted degree of application within the phonological phrase domain—it is blocked within the phonological phrase domain if the domain is constructed through ϕ -restructuring.

6.4 Discussion and conclusions

So far, I have discussed the application of Fuzhou TS, FC, and CL at the phrasal level in this chapter. According to the discussion in this chapter, all these three Fuzhou phonological rules make crucial reference to the phonological domain as the domain of application at the phrasal level. Based on the review of previous studies on the issue of Fuzhou TS at the phrasal level as well as the discussion of both EBA and RBA approaches to phonological phrasing, I have defined the phonological phrase domain in the Fuzhou dialect in Section 6.2, as reproduced in (125).

- (125) Phonological Phrase (ϕ) domain in the Fuzhou dialect = (61)/(94)
- a. Mark the right edge of every lexical head X, except where XP is an adjunct;
 - b. On the non-recursive side of the lexical head X, mark the right edge of the first phonetically overt head Y (if any; either lexical or functional) outside of XP; ω s/CGs that are separated by the right edge of X or Y belong to different ϕ s;

- c. φ restructuring: a non-branching φ , which is the first complement of X on its recursive side, is joined into the φ that contains X.

Nonetheless, as we have seen in Section 6.2 and Section 6.3, although TS, FC, and CL can apply within the phonological phrase domain defined in (125), these rules are not triggered within the phonological phrase domain without any restriction. In order to deal with the restriction on the application of these rules within the phonological phrase, a Restriction on Rule Application in the Fuzhou dialect has been formally proposed in Section 6.2, as re-presented in (126).

(126) Restriction on Rule Application in the Fuzhou Dialect = (82)/(95)

Within a given prosodic domain, the application or blocking of a particular phonological rule that is specific to this domain cannot be triggered on any constituent contained in the embedded domain, iff the application or blocking of the same type of rule specific to the embedded domain has been triggered.

Hence, within a phonological phrase containing another prosodic domain (e.g., ω or CG), phonological phenomena that are specific to the embedded domain are triggered first. Once phonological phenomena specific to the embedded domain are triggered, the embedded domain becomes a closed domain that is resistant to phonological phenomena specific to the external domain. This has been demonstrated by relevant data of the phonological phrase in the Fuzhou dialect, as shown in Section 6.2 and Section 6.3. Data of Fuzhou clitic group provide additional evidence for this restriction. As discussed in Chapter V, the blocking of TS and FC within the Type A

clitic group domain does not affect the syllables contained in the embedded prosodic word if the ω -specific application of TS and FC has been triggered within the prosodic word domain. Also, the application of CL that is specific to the Type A clitic group domain is not triggered on the initials of syllables in the embedded prosodic word formed by “diminutive” nouns and reduplicated monosyllabic adjectives, since the blocking of CL specific to these prosodic words has been triggered.

Moreover, I have shown that different rules may exhibit different degrees of application within the phonological phrase domain in the Fuzhou dialect. On the basis of the discussion in this chapter, the application of TS, FC, and CL within the phonological phrase domain in the Fuzhou dialect can be summarized as follows.

Table 14. Phonological phenomena and the phonological phrase in the Fuzhou dialect

Application \ Phenomena	TS	FC	CL
Phonological phrase			
Defined by (125a, b) (no ϕ -restructuring)	√	√	√
Defined by (125a, b, c) (with ϕ -restructuring)	√	√	×

As can be seen in Table 14, TS and FC are both obligatory within the phonological phrase (only restricted by the restriction in (126)). By contrast, CL is not triggered within all phonological phrases. If a phonological phrase is constructed through ϕ -restructuring, CL is blocked. Thus we can find that not only the phonological phrase, the domain of application for these phonological rules at the phrasal level, is established on the basis of syntactic notions, but also the different degrees of application of these rules within this domain are conditioned by the syntactic structure, which should be taken as a typical example of the syntax-phonology interface.

Chapter VII. Proclitics and Type B Clitic Group in the Fuzhou Dialect

As mentioned in Chapter V, clitics in the Fuzhou dialect can be further divided into proclitics and enclitics, according to their position in relation to the host they attach to. On the one hand, the morpho-syntactic functions as well as phonological behavior of Fuzhou enclitics have been investigated in Chapter V. I have demonstrated that the group of “host+enclitic” forms a prosodic domain of application for several phonological phenomena in this dialect, including the mandatory blocking of TS and FC as well as the obligatory application of CL between the host and the enclitic. On the basis of the observation that these phonological phenomena in the Fuzhou dialect refer crucially to the group of “host+enclitic”, the clitic group domain, specifically, the Type A clitic group domain in this case, which has exactly the extension of the host plus the enclitic, has been established as a prosodic constituent in the Fuzhou dialect.

On the other hand, in addition to enclitics discussed in Chapter V, it has also been noticed that the Fuzhou dialect has some proclitic-like elements (cf. Chen & Norman 1965a, Wright 1983, Chen 1998, Li & Liang 2001, among others). In this chapter, I will first investigate the morpho-syntactic functions of these elements in Section 7.1 and show that these elements share some common properties of clitics across languages as well as Fuzhou enclitics. Then in Section 7.2, I will examine the phonological behavior of the group composed of the proclitic and the host, namely Type B clitic group, in this dialect. I will show that Type B clitic group in the Fuzhou dialect exhibits different phonological behavior as compared to the prosodic word and

the phonological phrase. Although Type B clitic group differs from Type A clitic group in terms of their phonological behavior, the clitic group domain in Fuzhou as a whole is distinct from both the prosodic word domain and the phonological phrase domain, which provides further evidence for the existence of the clitic group in this dialect. Section 7.3 presents a discussion on the violation of the Strict Layer Hypothesis observed in the cases of the clitic group (including both Type A and Type B) in the Fuzhou dialect. Section 7.4 examines the Restriction on Rule Application proposed in Chapter VI through an investigation of data relevant to the domain of Type B clitic group in the Fuzhou dialect. Section 7.5 closes this chapter with a brief summary.

7.1 Proclitics in the Fuzhou dialect and their morpho-syntactic functions

Some proclitic-like elements have been recorded in the literature on the Fuzhou dialect, such as the progressive aspect marker 嘍 [lɛ³¹], auxiliary verbs 有 [ʔou²⁴²] ‘to exist, to have’ and 是 [sei²⁴²] ‘to be’, as well as prepositions 将 [tsuon⁴⁴] (similar to *ba* 把 in modern Mandarin) and 跟 [kyŋ⁴⁴] ‘with’ (cf. Chen & Norman 1965a, Wright 1983, Chen 1998, Li & Liang 2001, among others). In this section, morpho-syntactic functions of these proclitics are investigated. In the examples, the group of “proclitic+host” is labeled with “CG”, the prosodic word host with “ω”, the phonological phrase host with “φ”, and the proclitics with a lowercase “C”. For the sake of brevity, examples in this section present only the underlying segmental structure.

7.1.1 Progressive aspect marker 咧 [lɛ³¹]

As discussed in Section 5.3, 咧 in the Fuzhou dialect can be used as an enclitic which has multiple morpho-syntactic roles including the durative aspect marker, perfective aspect marker, post-verbal particle, as well as the locative marker. Besides, 咧 can also be used preceding a verb or verb phrase to indicate an ongoing action (cf. Zheng 1988b, Chen 1998, Li & Liang 2001, Li 2002, among others). Like its enclitic counterpart 咧 [lɛ⁰], the proclitic 咧 [lɛ³¹] never occurs on its own. The proclitic 咧 [lɛ³¹] differs from the enclitic 咧 [lɛ⁰] in that it has to attach to the verb or verb phrase on its right, rather than on its left. In addition to their direction of attachment, the proclitic 咧 [lɛ³¹] is also different from the enclitic 咧 [lɛ⁰] in terms of the tone—it carries a *shang* tone instead of a neutral tone. Some examples of the progressive aspect marker 咧 [lɛ³¹] are presented as follows. It is noteworthy that the Layeredness constraint is violated in examples like (1a)—the proclitic attaches to the entire phonological phrase instead of the first prosodic word contained in the phonological phrase, creating a clitic group containing a phonological phrase. This will be further supported by the phonological behavior of Type B clitic group shown in Section 7.2.

- | | | | |
|--------|--|----|--|
| (1) a. | 伊 [咧] _C [洗 碗] _φ CG | b. | 伊 [咧] _C [睏] _ω CG |
| | ʔi [lɛ [sɛ ʔuan]] | | ʔi [lɛ [k ^h ouŋ]] |
| | he PROG wash bowl | | he PROG sleep |
| | ‘He is washing dishes.’ | | ‘He is sleeping.’ |

7.1.2 Auxiliary verbs 是 [sei²⁴²] and 有 [ʔou²⁴²]

是 [sei²⁴²] and 有 [ʔou²⁴²] are two commonly-used auxiliary verbs in the Fuzhou dialect. These two proclitics are different from other Fuzhou clitics in that they can be used alone when answering questions. Nevertheless, they are treated as clitics in this dissertation for the following reasons: (a) they belong to a functional category, i.e., the auxiliary verb; (b) their semantic meanings are “less concrete” than verbs that indicate actions; and (c) the group of “是/有+host” exhibits similar phonological behavior as other groups composed of the proclitic plus the host in the Fuzhou dialect, as will be seen in Section 7.2, which can distinguish such groups from other prosodic constituents.

Let us take a look at 是 [sei²⁴²] first. Like *be* in English, the proclitic 是 [sei²⁴²] is also used as a copula and it usually links two nominal/pronominal elements. As a proclitic, 是 [sei²⁴²] attaches to the left of the adjacent element, as presented in (2).

- (2) a. 嚟 [是 C [葡萄]ω]CG b. 伊 [是 C [蜀 隻]φ]CG 好 侬
 tsui [sei [pu to]] ʔi [sei [suoʔ tsiεʔ]] xo nøyŋ
 this be grape he be one Cl good people
 ‘This is a grape.’ ‘He is a nice person.’

Compared with 是 [sei²⁴²], the auxiliary verb 有 [ʔou²⁴²] is more versatile. The basic meaning of the proclitic 有 [ʔou²⁴²] is ‘to have, to own’, and thus it can be used to indicate possession, as exemplified in (3). In addition to the basic meaning, 有 [ʔou²⁴²] is usually used before a verb or verb phrase to emphasize the existence of an action or an event in the Fuzhou dialect (cf. Zheng 1985, Li et al 1994, among others).

In this case, the proclitic 有 [ʔou²⁴²] is similar to English *do/did* that is used before the verb and expresses the idea of ‘indeed, really’, as exemplified in (4).

(3) a. 伊 [有 C [蜀 本]φ]CG 书

ʔi [ʔou [suoʔ puoŋ]] tsy

he have one Cl book

‘He has one book.’

b. 我 [有 C [三 隻]φ]CG 团

ŋuai [ʔou [saŋ tsiεʔ]] kian

I have three Cl son

‘I have three sons.’

(4) a. 伊 [有 C [去]ω]CG b. 只 间 店 暝 晡 [有 C [开]ω]CG

ʔi [ʔou [k^ho]]

tsi kaŋ taiŋ maŋ puo [ʔou [k^hui]]

he have go

this Cl store evening have open

‘He did go.’

‘This store is open at night.’

c. 只 架 车 [有 C [去 泉州]φ]CG

tsi ka ts^hia [ʔou [k^ho tsoŋ tsiu]]

this Cl car have go Quanzhou

‘The car does go to Quanzhou.’

7.1.3 Prepositions 将 [tsoŋ⁴⁴] and 跟 [kyŋ⁴⁴]

将 [tsoŋ⁴⁴] and 跟 [kyŋ⁴⁴] have been identified as clitics in the literature (cf. Wright 1983, Shih 1986). Neither of them can be used alone and both have to attach to the constituent on the right.

将 [tsuoŋ⁴⁴] is similar to *ba* 把 in Mandarin Chinese. It is used to introduce a noun/noun phrase that is the object of the following verb/verb phrase. The noun/noun phrase following 将 [tsuoŋ⁴⁴] is the receiver of the action denoted by the verb/verb phrase. This object noun/noun phrase is “disposed” or “affected” in the event described, like its counterpart in the *ba* construction (cf. Wang 1954, Chao 1968, Huang, Li, & Li 2009, among others), as exemplified in (5).

- (5) a. 我 [将 C [蜀 头]_φ]CG 虫 拍 死 去
 ŋuai [tsuoŋ [suo? t^hau]] t^høyŋ p^ha?si k^ho
 I tsuoŋ one Cl worm hit die PERF
 ‘I hit and killed a worm.’

- b. 伊 [将 C [眠床]_ω]CG 排 鼓 厅中
 ?i [tsuoŋ [miŋ ts^houŋ]] pɛ ka? t^hiaŋ touŋ
 he tsuoŋ bed put PVP drawing room
 ‘He put the bed in the drawing room.’

The preposition 跟 [kyŋ⁴⁴] in the Fuzhou dialect is similar to *gen* 跟 in Mandarin Chinese, which means ‘with’. It is used before a noun/noun phrase to express the idea of “doing something together with somebody”, as in (6).

- (6) a. 我 [跟 C [依妹]_ω]CG 齐 行
 ŋuai [kyŋ [ʔi mui]] tse kiaŋ
 I with younger sister together walk
 ‘I will walk together with the younger sister.’

- b. 伊 [跟 C [两 隻]_φ]CG 先生 齐 去
 ?i [kyŋ [laŋ tsiε?]] siŋ saŋ tse k^ho
 he with two Cl teacher together go
 ‘He will go together with two teachers.’

7.1.4 Recursive clitic group with proclitics

There are some cases with proclitics in which the violation of Nonrecursivity can be observed, as exemplified in (7).

- (7) a. 我 [有 C [将 C [只 件]_φ]CG]CG 事计 交代 伊
 ŋuai [ʔou [tsuoŋ [tsi ʔyoŋ]]] tai kie kau tai ?i
 I have tsuoŋ this Cl thing hand over he
 ‘I did hand over this work to him.’
- b. 伊 [有 C [跟 C [我]_ω]CG]CG 齐 去
 ?i [ʔou [kyŋ [ŋuai]]] tse k^ho
 he have with I together go
 ‘He did go with me.’

7.1.5 Summary

On the basis of the above discussion and examples presented in Section 7.1, we can find that those proclitic-like elements in the Fuzhou dialect share some of the most common morpho-syntactic properties of clitics across languages, including enclitics in this dialect: (a) they all belong to functional categories; (b) most of them never occur as the only element of an utterance and must attach to the adjacent

prosodic unit on the right; (c) the meaning of the string of the proclitic plus the host is predictable from the meaning of the host and that of the proclitic; and (d) they can attach to material already containing the affix, as in (6a), or the proclitic, as in (7). Therefore, according to the discussion of clitics across languages in Section 5.1, it is reasonable to assume that these elements in the Fuzhou dialect are clitics. To be more specific, these elements are proclitics, regarding their position in relation to the host they attach to. According to the definition of the clitic group domain in the Fuzhou dialect discussed in Chapter V, the group of the proclitic plus the host thus also forms the clitic group in Fuzhou. The phonological behavior of such a group, namely Type B clitic group, provides further evidence for the establishment of the clitic group domain in this dialect, as will be discussed in Section 7.2.

7.2 Phonological phenomena and Type B clitic group in the Fuzhou dialect

This section investigates the phonological behavior of the group of “proclitic + host”, namely Type B clitic group, in the Fuzhou dialect, through the examination of the application of major Fuzhou phonological rules. As will be demonstrated in the following subsections in Section 7.2, on the one hand, Type B clitic group in Fuzhou exhibits different phonological behavior as compared to Type A clitic group. On the other hand, the clitic group in this dialect as a whole can be distinguished from both the prosodic word domain and the phonological phrase domain in terms of their phonological properties. This further demonstrates that there are phonological phenomena characteristic only of the domain of the clitic group, but not in any other prosodic domains.

7.2.1 Phonological tone sandhi and Type B clitic group in the Fuzhou dialect

According to the discussion of the application of TS in previous chapters, we have found that the phonological tone sandhi rule (TS) has different degrees of application in different prosodic domains. As shown in Chapter IV, TS applies within the prosodic word domain formed by most morpho-syntactic words, with the exception of prosodic words formed by “diminutive” nouns and sound-splitting words, as exemplified in (8), in which the morphological tone sandhi rule (MTS) applies. For the sake of brevity, only sandhi forms of tones are presented in the examples in Section 7.2.1. Sandhi tones in question are marked in bold. Prosodic words are placed within brackets and labeled with “ ω ”.

- (8) a. [袋袋] ω [toy²⁴² toy²⁴²] → *toy⁵¹ toy²⁴² (*TS) ‘bag’
 [袋袋] ω [toy²⁴² toy²⁴²] → toy²¹ toy²⁴² (MTS) ‘bag’
- b. [跳 liu] ω [t^{hiu}²¹³ liu²¹³] → *t^{hiu}⁵¹ liu²¹³ (*TS) ‘to jump’
 [跳 liu] ω [t^{hiu}²¹³ liu²¹³] → t^{hiu}³¹ liu²¹³ (MTS) ‘to jump’

As discussed in Chapter V, within the Type A clitic group domain, which is composed of the host plus the enclitic, the TS rule is obligatorily blocked between the host and the enclitic, as exemplified in (9), in which the blocking of TS is marked by “#”. Clitic groups are placed within brackets and labeled with “CG” and the enclitics are labeled with a lowercase “C”.

- (9) a. [[我]_ω 其 c]CG
 [[ŋuai³¹]ki⁰]
 → [[ŋuai³¹]_#ki⁰]
 I NOM
 ‘mine’
- b. [[去]_ω 过 c]CG 天津
 [[k^ho²¹³]kuo²¹³] t^hieŋ⁴⁴ kiŋ⁴⁴
 → [[k^ho²¹³]_#kuo²¹³] t^hieŋ⁴⁴ kiŋ⁴⁴
 *[[k^ho⁵¹]kuo²¹³] t^hieŋ⁴⁴ kiŋ⁴⁴
 go EXP Tianjin
 ‘to have been to Tianjin before’
- c. 我 [[[看]_ω 过 c]CG 了 c]CG
 ŋuai³¹ [[[k^haŋ²¹³] kuo²¹³] lau³¹]
 → ŋuai³¹ [[[kaŋ²¹³] # kuo²¹³] # lau³¹]
 *ŋuai³¹ [[[k^haŋ²¹] kuo⁵¹] lau³¹]
 I see EXP CRS
 ‘I have seen (that).’

At the phrasal level, as discussed in Chapter VI, TS refers to the phonological phrase as its domain of application, as in (10). Positions where TS applies is indicated by “=”. Phonological phrases are placed within brackets and labeled with “φ”.

- (10) a. [旧 书]_φ
 [kou²⁴² tsy⁴⁴]
 → [kou⁴⁴ = tsy⁴⁴]
 old book
 ‘old book’
- b. [真 贵]_φ
 [tsiŋ⁴⁴ kui²¹³]
 → [tsiŋ⁵¹ = kui²¹³]
 very expensive
 ‘very expensive’

- | | | | |
|----|---|----|--|
| c. | [食 葡萄] _φ | d. | [只 隻] _φ |
| | [siɛʔ ⁵ pu ⁵¹ to ⁵¹] | | [tsi ³¹ tsiɛʔ ²³] |
| | → [siɛʔ ³¹ = pu ³¹ to ⁵¹] | | → [tsi ⁴⁴ = tsiɛʔ ²³] |
| | eat grape | | this Cl |
| | ‘to eat grapes’ | | ‘this one (something)’ |

Different from enclitics in the Fuzhou dialect, proclitics in this dialect are invariably incorporated into a TS domain with the host they attach to, as has been observed in the literature (cf. Wright 1983, Shih 1986, among others). Specifically, the proclitic within a Type B clitic group obligatorily undergoes TS as long as the appropriate phonological context is provided. Thus Type B clitic group behaves similarly to the phonological phrase but differently from the prosodic word and Type A clitic group, in terms of the application of TS. Empirical evidence from the Fuzhou dialect supports this observation, as presented in (11-14), in which sandhi tones in question are marked in bold.

(11) Application of TS in “progressive aspect marker 咧 [lɛ³¹] + host”

- | | | | |
|----|--|----|--|
| a. | 伊 [咧] _C [洗 碗] _φ CG | b. | 伊 [咧] _C [睏] _ω CG |
| | ʔi ⁴⁴ [lɛ ³¹ [sɛ ³¹ ʔuaj ³¹]] | | ʔi ⁴⁴ [lɛ ³¹ [k ^h ouŋ ²¹³]] |
| | → ʔi ⁴⁴ [lɛ ²¹ [sɛ ²⁴ ʔuaj ³¹]] | | → ʔi ⁴⁴ [lɛ ⁴⁴ [k ^h ouŋ ²¹³]] |
| | he PROG wash bowl | | he PROG sleep |
| | ‘He is washing dishes.’ | | ‘He is sleeping.’ |

(12) Application of TS in “auxiliary verb + host”⁶¹I. Auxiliary verb 是 [sei²⁴²] + hosta. 嘖 [是 C [葡萄]_ω]CGtsui⁵¹ [sei²⁴² [pu⁵¹ to⁵¹]]→ tsui⁵¹ [sei⁵¹ [pu³¹ to⁵¹]]

this be grape

‘This is a grape.’

b. 伊 [是 C [蜀 隻]_φ]CG 好 侬ʔi⁴⁴ [sei²⁴² [suoʔ⁵ tsiεʔ²³]] xo³¹ nøyŋ⁵¹→ ʔi⁴⁴ [sei⁵¹ [suoʔ²¹ tsiεʔ²³]] xo³¹ nøyŋ⁵¹

he be one Cl good people

‘He is a nice person.’

II. Auxiliary verb 有 [ʔou²⁴²] + hosta. 伊 [有 C [蜀 本]_φ]CG 书ʔi⁴⁴ [ʔou²⁴² [suoʔ⁵ puoŋ³¹]] tsy⁴⁴→ ʔi⁴⁴ [ʔou⁵¹ [suoʔ³¹ puoŋ³¹]] tsy⁴⁴

he have one Cl book

‘He has one book.’

⁶¹ Notice that 是 [sei²⁴²] and 有 [ʔou²⁴²] undergo TS no matter what kind of object noun they are followed by. They undergo TS when followed by a non-branching object, such as (12Ia), or by a branching object, such as (12Ib) and (12IIa, b). Recall that verbs like 食 [sie⁵] ‘to eat’ and 办 [paiŋ²⁴²] ‘to do’ never undergo TS when followed by a branching object, since in that case the verbs are not incorporated into the same phonological phrase with the object, as discussed in Chapter VI. This implies that (a) auxiliary verbs 是 and 有 differ from verbs like 食 and 办 in terms of the phonological behavior; and (b) the group composed of auxiliary verb 是 or 有 and the following object is different from the group composed of verbs like 食 and 办 and their object.

- b. 我 [有 C [三 隻]_φ]CG 囡
 ŋuai³¹ [ʔou²⁴² [saŋ⁴⁴ tsiɛʔ²³]] kian³¹
 → ŋuai³¹ [ʔou²¹ [saŋ⁵¹ tsiɛʔ²³]] kian³¹
 I have three Cl son ‘I have three sons.’
- c. 伊 [有 C [去]_ω]CG
 ʔi⁴⁴ [ʔou²⁴² [k^ho²¹³]]
 → ʔi⁴⁴ [ʔou⁵¹ [k^ho²¹³]]
 he have go ‘He did go.’
- d. 只 间 店 暝晡 [有 C [开]_ω]CG
 tsi³¹ kan⁴⁴ taiŋ²¹³ maŋ⁵¹ puo⁴⁴ [ʔou²⁴² [k^hui⁴⁴]]
 → tsi²¹ kan⁴⁴ taiŋ²¹³ maŋ⁴⁴ puo⁴⁴ [ʔou⁴⁴ [k^hui⁴⁴]]
 this Cl store evening have open
 ‘This store is open at night.’

(13) Application of TS in “preposition + host”⁶²

I. Preposition 将 [tsuoŋ⁴⁴] + host

- a. 我 [将 C [蜀 头]_φ]CG 虫 拍 死去
 ŋuai³¹ [tsuoŋ⁴⁴ [suoʔ⁵ t^hau⁵¹]] t^høyŋ⁵¹ p^haʔ²³ si³¹ k^ho⁰
 → ŋuai³¹ [tsuoŋ⁵¹ [suoʔ³¹ t^hau⁵¹]] t^høyŋ⁵¹ p^haʔ²³ si³¹ k^ho⁰
 I tsuoŋ one Cl worm hit die PERF
 ‘I hit and killed a worm.’

⁶² As shown in Chapter VI, in prepositional phrases, the tone of the preposition is usually incorporated into the same phonological phrase with the following non-branching object and thus undergoes TS, while it does not undergo TS when it is followed by a branching object. By contrast, prepositions 将 [tsuoŋ⁴⁴] and 跟 [kyŋ⁴⁴] undergo TS no matter what kind of object noun phrases they are followed by, as exemplified in (13). This implies that prepositions 将 [tsuoŋ⁴⁴] and 跟 [kyŋ⁴⁴] behave more like auxiliary verbs 是 [sei²⁴²] and 有 [ʔou²⁴²] in the Fuzhou dialect with respect to their phonological behavior, while different from normal prepositions. Hence, both 将 [tsuoŋ⁴⁴] and 跟 [kyŋ⁴⁴] should be treated as proclitics rather than normal prepositions.

- b. 伊 [将 C [眠床]_ω]CG 排 敲 厅中
 ʔi⁴⁴ [tsuoŋ⁴⁴ [miŋ⁵¹ ts^houŋ⁵¹]] pɛ⁵¹ kaʔ⁰ t^hiaŋ⁴⁴ touŋ⁴⁴
 → ʔi⁴⁴ [tsuoŋ⁵¹ [miŋ³¹ ts^houŋ⁵¹]] pɛ⁵¹ kaʔ⁰ t^hiaŋ⁴⁴ touŋ⁴⁴
 he tsuoŋ bed put PVP drawing room
 ‘He put the bed in the drawing room.’

II. Preposition 跟 [kyŋ⁴⁴] + host

- a. 我 [跟 C [依妹]_ω]CG 齐 行
 ŋuai³¹ [kyŋ⁴⁴ [ʔi⁴⁴ mui²¹³]] tɕɛ⁵¹ kiaŋ⁵¹
 → ŋuai³¹ [kyŋ²¹ [ʔi⁵¹ mui²¹³]] tɕɛ³¹ kiaŋ⁵¹
 I with younger sister together walk
 ‘I will walk together with the younger sister.’

- b. 伊 [跟 C [两 隻]_φ]CG 先生 齐 去
 ʔi⁴⁴ [kyŋ⁴⁴ [laŋ²⁴² tɕiɛʔ²³]] siŋ⁴⁴ saŋ⁴⁴ tɕɛ⁵¹ k^ho²¹³
 → ʔi⁴⁴ [kyŋ²¹ [laŋ⁵¹ tɕiɛʔ²³]] siŋ⁴⁴ saŋ⁴⁴ tɕɛ²¹ k^ho²¹³
 he with two Cl teacher together go
 ‘He will go together with two teachers.’

(14) Application of TS in recursive clitic group with proclitics

- a. 我 [有 C [将 C [只 件]_φ]CG]CG 事计 交代 伊
 ŋuai³¹ [ʔou²⁴² [tsuoŋ⁴⁴ [tsi³¹ ʔyoŋ²⁴²]]] tai²⁴² kie²¹³ kau⁴⁴ tai²⁴² ʔi⁴⁴
 → ŋuai³¹ [ʔou²¹ [tsuoŋ²¹ [tsi⁴⁴ ʔyoŋ²⁴²]]] tai⁵¹ kie²¹³ kau⁵¹ tai²⁴² ʔi⁴⁴
 I have tsuoŋ this Cl work hand over he
 ‘I did hand over this work to him.’

- b. 伊 [有 C [跟 C [我]_ω]CG]CG 齐 去
 ʔi⁴⁴ [ʔou²⁴² [kyn⁴⁴ [ŋuai³¹]]] tse⁵¹ k^ho²¹³
 → ʔi⁴⁴ [ʔou²¹ [kyn⁵¹ [ŋuai³¹]]] tse²¹ k^ho²¹³
 he have with I together go
 ‘He did go with me.’

Examples in (11-14) show that the TS rule obligatorily applies within the domain formed by Type B clitic group composed of “proclitic + host” in the Fuzhou dialect with no exceptions. Hence, one of the most outstanding phonological properties of Type B clitic group in the Fuzhou dialect is the obligatory application of TS within the domain, which distinguishes Type B clitic group from the prosodic word and Type A clitic group. Since TS is obligatory between the proclitic and the host CG-internally, the tone of a Fuzhou proclitic is always dependent on the tones of syllables in the host, which shows that Fuzhou proclitics, like Fuzhou enclitics, are also phonologically dependent.

It is noteworthy that the proclitic in Type B clitic group is not incorporated into a tone sandhi domain only with the adjacent prosodic word within the following phonological phrase (if any). Instead, the proclitic attaches to the entire phonological phrase as its host and then the clitic group of “proclitic + phonological phrase host” forms a tone sandhi domain. For example, if the proclitic 咧 [lɛ³¹] in (11a) is incorporated into the tone sandhi domain only with the prosodic word 洗 [sɛ³¹] ‘to wash’, the sandhi tone of 咧 [lɛ³¹] should be determined by the citation tone or the sandhi tone of 洗 [sɛ³¹], and thus be changed into either [lɛ²⁴] or [lɛ⁴⁴], which is

incorrect. The proclitic 咧 [lɛ³¹] in (11a) actually attaches to the phonological phrase 洗碗 ‘to wash dishes’ in which the TS rule applies, and then the tone of 咧 becomes 21 following the trisyllabic TS rule. Therefore, when a proclitic is followed by a phonological phrase, the proclitic attaches to the entire phonological phrase as the host and the clitic group of “proclitic + phonological phrase host” forms the domain of application for TS, which serves as solid evidence for the violation of Layeredness in this dialect.

7.2.2 Final change and Type B clitic group in the Fuzhou dialect

As a tonally-conditioned rule, the application/blocking of the FC rule in the Fuzhou dialect within different prosodic domains exhibits a similar distribution as the TS rule. As we have seen in Chapter IV, the FC rule obligatorily applies in the prosodic word domain formed by most types of morpho-syntactic words, as in (15), and optionally applies in the prosodic word domain formed by sound-splitting words. Sandhi forms of tones and finals are both presented in the following examples, in which sandhi finals in question are marked in bold.

- (15)a. [竹圉]ω tøy²³ kian³¹ → **ty²⁴** kian³¹ ‘small bamboo’
 b. [对分]ω toy²¹³ puonj⁴⁴ → **tøy⁴⁴** puonj⁴⁴ ‘to halve’
 c. [咒嘴]ω tsou²¹³ ts^hui²¹³ → **tsu⁵¹** ts^hui²¹³ ‘to swear’

Within the Type A clitic group domain, as shown in Chapter V, FC is blocked between the host and the enclitic along with the TS rule, as in (16).

- (16)a. [[旧]_ω 其 C]CG 书
 [[kou²⁴²ki⁰] tsy⁴⁴
 → [[kou²⁴²#ki⁰] tsy⁴⁴
 *[[ku²⁴²] ki⁰] tsy⁴⁴
 old MOD book
 ‘old book’
- b. [[坐]_ω 囉 C]CG
 [[soy²⁴²] la²⁴²]
 → [[soy²⁴²]#la²⁴²]
 *[[sɔy⁵¹] la²⁴²]
 sit DLM
 ‘to sit awhile’
- c. [[面]_ω 咧 C]CG
 [[meiŋ²¹³] lɛ⁰]
 → [[meiŋ²¹³] # lɛ⁰]
 *[[miŋ²¹³] lɛ⁰]
 face LOC
 ‘on the face’

Unlike Type A clitic group, the phonological phrase in the Fuzhou dialect forms the domain of application of the FC rule, as discussed in Chapter VI, which is exemplified in (17).

- (17)a. [旧 书]_φ
 [kou²⁴² tsy⁴⁴]
 → [ku⁴⁴ tsy⁴⁴]
 old book
 ‘old book’
- b. [固 食力]_φ
 [kou²¹³ siɛʔ⁵ liʔ⁵]
 → [ku⁵¹ siɛʔ³¹ liʔ⁵]
 more tired
 ‘more tired’

c. [办 护照] _φ	d. [七 块] _φ
[paiŋ ²⁴² xou ²⁴² tsiu ²¹³]	[ts ^h eiʔ ²³ toy ²¹³]
→ [peŋ ²¹ xu ⁵¹ tsiu ²¹³]	→ [ts ^h iʔ ⁴⁴ toy ²¹³]
do passport	seven Cl
‘to apply for a passport’	‘seven pieces’

In contrast to Type A clitic group, Type B clitic group, which is composed of “proclitic + host”, exhibits an obligatory application of FC, as exemplified in (18-19).⁶³ Since FC is a tonally-conditioned rule in the Fuzhou dialect and always occurs along with the TS rule, it is no wonder that FC obligatorily applies within the domain formed by Type B clitic group in which the application of TS is obligatory. Sandhi finals in question are marked in bold in the following examples.⁶⁴

(18) Application of FC in “auxiliary verb + host”

I. Auxiliary verb 是 [sei²⁴²] + host

a. 嘸 [是 C [葡萄]_ω]CG

tsui⁵¹ [sei²⁴² [pu⁵¹ to⁵¹]]

→ tsui⁵¹ [sɿ⁵¹ [pu³¹ to⁵¹]]

this be grape

‘This is a grape.’

⁶³ Since the progressive aspect marker 咧 [lɛ³¹], and prepositions 将 [tsuoŋ⁴⁴] and 跟 [kyŋ⁴⁴] do not contain Group B alternating finals, no examples of these proclitics are presented in Section 7.2.2.

⁶⁴ Notice that in the examples in (18-19), 是 [sei²⁴²] and 有 [ʔou²⁴²] undergo FC when followed by an object noun/noun phrase, whether the object is branching or not, which again distinguishes these two proclitics from verbs we have seen in Chapter VI.

- b. 伊 [是 C [蜀 隻]_φ]CG 好 依
 ʔi⁴⁴ [sei²⁴² [suoʔ⁵ tsiɛʔ²³]] xo³¹ nøyŋ⁵¹
 → ʔi⁴⁴ [si⁵¹ [suoʔ²¹ tsiɛʔ²³]] xo³¹ nøyŋ⁵¹
 he be one Cl good people
 ‘He is a nice person.’

II. Auxiliary verb 有 [ʔou²⁴²] + host

- a. 伊 [有 C [蜀 本]_φ]CG 书
 ʔi⁴⁴ [ʔou²⁴² [suoʔ⁵ puoŋ³¹]] tsy⁴⁴
 → ʔi⁴⁴ [ʔu⁵¹ [suoʔ³¹ puoŋ³¹]] tsy⁴⁴
 he have one Cl book
 ‘He has one book.’
- b. 我 [有 C [三 隻]_φ]CG 团
 ŋuai³¹ [ʔou²⁴² [saŋ⁴⁴ tsiɛʔ²³]] kian³¹
 → ŋuai³¹ [ʔu²¹ [saŋ⁵¹ tsiɛʔ²³]] kian³¹
 I have three Cl son
 ‘I have three sons.’
- c. 伊 [有 C [去]_ω]CG
 ʔi⁴⁴ [ʔou²⁴² [k^ho²¹³]]
 → ʔi⁴⁴ [ʔu⁵¹ [k^ho²¹³]]
 he have go
 ‘He did go.’

- d. 只 间 店 暝晡 [有 C [开]ω]CG
 tsi³¹ kaŋ⁴⁴ taiŋ²¹³ maŋ⁵¹ puo⁴⁴ [ʔou²⁴² [k^hui⁴⁴]]
 → tsi²¹ kaŋ⁴⁴ taiŋ²¹³ maŋ⁴⁴ puo⁴⁴ [ʔu⁴⁴ [k^hui⁴⁴]]
 this Cl store evening have open
 ‘This store is open at night.’

(19) Application of FC in recursive clitic group with proclitics

- a. 我 [有 C [将 C [只 件]ω]CG]CG 事计 交代 伊
 ŋuai³¹ [ʔou²⁴² [tsuoŋ⁴⁴ [tsi³¹ ʔyoŋ²⁴²]]] tai²⁴² kie²¹³ kau⁴⁴ tai²⁴² ʔi⁴⁴
 → ŋuai³¹ [ʔu²¹ [tsuoŋ²¹ [tsi⁴⁴ ʔyoŋ²⁴²]]] tai⁵¹ kie²¹³ kau⁵¹ tai²⁴² ʔi⁴⁴
 I have tsuoŋ this Cl work hand over he
 ‘I did hand over this work to him.’
- b. 伊 [有 C [跟 C [我]ω]CG]CG 齐 去
 ʔi⁴⁴ [ʔou²⁴² [kyŋ⁴⁴ [ŋuai³¹]]] tse⁵¹ ʔo²¹³
 → ʔi⁴⁴ [ʔu²¹ [kyŋ⁵¹ [ŋuai³¹]]] tse²¹ ʔo²¹³
 he have with I together go
 ‘He did go with me.’

Examples in (18-19) demonstrate that Type B clitic group can be distinguished from Type A clitic group with respect to the application of FC. Type B clitic group can also be distinguished from the prosodic word domain in that it never shows any “optional” application of FC. Therefore, we can conclude that the second phonological property of Type B clitic group in the Fuzhou dialect is the obligatory application of the FC rule between the proclitic and the host inside the domain.

(24) Blocking of CL in “auxiliary verb + host”

I. Auxiliary verb 是 [sei²⁴²] + hosta. 嘖 [是 C [葡萄]_ω]CGtsui⁵¹ [sei²⁴² [pu⁵¹ to⁵¹]]→ tsui⁵¹ [si⁵¹ # [pu³¹ lo⁵¹]]*tsui⁵¹ [si⁵¹ [βu³¹ lo⁵¹]]

this be grape ‘This is a grape.’

b. 伊 [是 C [蜀 隻]_φ]CG 好 依ʔi⁴⁴ [sei²⁴² [suoʔ⁵ tsiɛʔ²³]] xo³¹ nøyŋ⁵¹→ ʔi⁴⁴ [si⁵¹ # [suoʔ²¹ ʒiɛʔ²³]] xo³¹ nøyŋ⁵¹*ʔi⁴⁴ [si⁵¹ [luoʔ²¹ ʒiɛʔ²³]] xo³¹ nøyŋ⁵¹

he be one Cl good people ‘He is a nice person.’

II. Auxiliary verb 有 [ʔou²⁴²] + hosta. 伊 [有 C [蜀 本]_φ]CG 书ʔi⁴⁴ [ʔou²⁴² [suoʔ⁵ puoŋ³¹]] tsy⁴⁴→ ʔi⁴⁴ [ʔu⁵¹ # [suoʔ³¹ βuoŋ³¹]] tsy⁴⁴*ʔi⁴⁴ [ʔu⁵¹ [luoʔ³¹ βuoŋ³¹]] tsy⁴⁴

he have one Cl book ‘He has one book.’

b. 我 [有 C [三 隻]_φ]CG 囡ŋuai³¹ [ʔou²⁴² [saŋ⁴⁴ tsiɛʔ²³]] kian³¹→ ŋuai³¹ [ʔu²¹ # [saŋ⁵¹ ʒiɛʔ²³]] kian³¹*ŋuai³¹ [ʔu²¹ [laŋ⁵¹ ʒiɛʔ²³]] kian³¹

I have three Cl son ‘I have three sons.’

c. 伊 [有 C [去]ω]CG

ʔi⁴⁴ [ʔou²⁴² [k^ho²¹³]]

→ ʔi⁴⁴ [ʔu⁵¹ # [k^ho²¹³]]

*ʔi⁴⁴ [ʔu⁵¹ [ʔo²¹³]]

he have go

‘He did go.’

d. 只 间 店 暝晡 [有 C [开]ω]CG

tsi³¹ kaŋ⁴⁴ taiŋ²¹³ maŋ⁵¹ puo⁴⁴ [ʔou²⁴² [k^hui⁴⁴]]

→ tsi²¹ ʔaŋ⁴⁴ taiŋ²¹³ maŋ⁴⁴ muo⁴⁴ [ʔu⁴⁴ # [k^hui⁴⁴]]

*tsi²¹ ʔaŋ⁴⁴ taiŋ²¹³ maŋ⁴⁴ muo⁴⁴ [ʔu⁴⁴ [ʔui⁴⁴]]

this Cl store evening have open

‘This store is open at night.’

(25) Blocking of CL in “preposition + host”

I. Preposition 将 [tsuoŋ⁴⁴] + host

a. 我 [将 C [蜀 头]φ]CG 虫 拍 死 去

ŋuai³¹ [tsuoŋ⁴⁴ [suoʔ⁵ t^hau⁵¹]] t^høyŋ⁵¹ p^haʔ²³ si³¹ k^ho⁰

→ ŋuai³¹ [tsuoŋ⁵¹ # [suoʔ³¹ lau⁵¹]] t^høyŋ⁵¹ p^haʔ²³ si³¹ ʔo⁰

*ŋuai³¹ [tsuoŋ⁵¹ [nuoʔ³¹ lau⁵¹]] t^høyŋ⁵¹ p^haʔ²³ si³¹ ʔo⁰

I tsuoŋ one Cl worm hit die PERF

‘I hit and killed a worm.’

- b. 伊 [将 C [书桌]_ω]CG 排 放 厅中
 ʔi⁴⁴ [tsuoŋ⁴⁴ [tsy⁴⁴ toʔ²³]] pɛ⁵¹ kaʔ⁰ t^hian⁴⁴ touŋ⁴⁴
 → ʔi⁴⁴ [tsuoŋ²¹#[tsy⁵¹ loʔ²³]] pɛ⁵¹ ʔaʔ⁰ t^hian⁴⁴ nouŋ⁴⁴
 *ʔi⁴⁴ [tsuoŋ²¹ [ʒy⁵¹ loʔ²³]] pɛ⁵¹ ʔaʔ⁰ t^hian⁴⁴ nouŋ⁴⁴
 he tsuoŋ desk put PVP drawing room
 ‘He put the desk in the drawing room.’

II. Preposition 跟 [kyŋ⁴⁴] + host

- a. 我 [跟 C [依妹]_ω]CG 齐 行
 ŋuai³¹ [kyŋ⁴⁴ [ʔi⁴⁴ mui²¹³]] tɕɛ⁵¹ kian⁵¹
 → ŋuai³¹ [kyŋ²¹ # [ʔi⁵¹ mui²¹³]] tɕɛ³¹ ʔian⁵¹
 ŋuai³¹ [kyŋ²¹ [ŋi⁵¹ mui²¹³]] tɕɛ³¹ ʔian⁵¹
 I with younger sister together walk
 ‘I will walk together with the younger sister.’
- b. 伊 [跟 C [两 隻]_φ]CG 先生 齐 去
 ʔi⁴⁴ [kyŋ⁴⁴ [lan²⁴² tɕiɛʔ²³]] siŋ⁴⁴ saŋ⁴⁴ tɕɛ⁵¹ k^ho²¹³
 → ʔi⁴⁴ [kyŋ²¹ # [lan⁵¹ ʒiɛʔ²³]] siŋ⁴⁴ naŋ⁴⁴ tɕɛ²¹ ʔo²¹³
 *ʔi⁴⁴ [kyŋ²¹ [naŋ⁵¹ ʒiɛʔ²³]] siŋ⁴⁴ naŋ⁴⁴ tɕɛ²¹ ʔo²¹³
 he with two Cl teacher together go
 ‘He will go together with two teachers.’

(26) Blocking of CL in recursive clitic group with proclitics

- a. 我 [有 C [将 C [只 件]_φ]CG]CG 事计 交代 伊
 ŋuai³¹ [ʔou²⁴² [tsuoŋ⁴⁴ [tsi³¹ ʔyoŋ²⁴²]]] tai²⁴² kie²¹³ kau⁴⁴ tai²⁴² ʔi⁴⁴
 → ŋuai³¹ [ʔu²¹ # [tsuoŋ²¹ # [tsi⁴⁴ ʔyoŋ²⁴²]]] tai⁵¹ ʔie²¹³ kau⁵¹ lai²⁴² ʔi⁴⁴
 *ŋuai³¹ [ʔu²¹ [ʒuoŋ²¹ [ʒi⁴⁴ ʔyoŋ²⁴²]]] tai⁵¹ ʔie²¹³ kau⁵¹ lai²⁴² ʔi⁴⁴
 I have tsuoŋ this Cl work hand over he
 ‘I did hand over this work to him.’
- b. 伊 [有 C [跟 C [爸奶]_ω]CG]CG 齐 去
 ʔi⁴⁴ [ʔou²⁴² [kyn⁴⁴ [pa²⁴² ne³¹]]] tse⁵¹ k^ho²¹³
 → ʔi⁴⁴ [ʔu²¹ # [kyn²¹ # [pa⁵¹ ne³¹]]] tse²¹ ʔo²¹³
 *ʔi⁴⁴ [ʔu²¹ [ʔyn²¹ [ma⁵¹ ne³¹]]] tse²¹ ʔo²¹³
 he have with parents together go
 ‘He did go with parents.’

From examples in (23-26), we can find that the blocking of CL is consistently triggered in Type B clitic group—the CL rule never applies to the initial of the first syllable of the host to which a proclitic attaches to. Hence, the mandatory blocking of CL can be considered as another distinctive property of Type B clitic group.

7.2.4 Summary

According to the discussion in Section 7.2, the application/blocking of TS, FC, and CL in Type B clitic group in the Fuzhou dialect can be summarized as in Table

Table 15. Phonological phenomena and Type B clitic group in the Fuzhou dialect

Application \ Phenomena	TS	FC	CL
Clitic group			
Progressive aspect marker 咧 [le ³¹] + host	√	N/A	×
Auxiliary verb (是[sei ²⁴²]/有[ʔou ²⁴²]) + host	√	√	×
Preposition (将[tsoŋ ⁴⁴]/跟[kyŋ ⁴⁴]) + host	√	N/A	×
Recursive clitic group with proclitics	√	√	×

Comparing Table 15 with Table 13 in Chapter V, we can find that Type A and Type B clitic groups in the Fuzhou dialect exhibit quite different phonological properties. As discussed in Chapter V, within Type A clitic group, which is composed of the host plus the enclitic, both TS and FC are obligatorily blocked between the host and the enclitic, while CL is consistently triggered. In contrast, in Type B clitic group, which is composed of the proclitic plus the host, TS and FC obligatorily applies between the proclitic and the host while CL is consistently blocked.

From Table 12 in Chapter IV, we can find that Type B clitic group is also different from the prosodic word in terms of the application of phonological phenomena. First, TS applies within the prosodic word domain with the exception of “diminutive” nouns and sound-splitting words in which MTS applies, while TS is an obligatory rule within Type B clitic group. In addition, the FC rule is optional within the prosodic word domain formed by sound-splitting words, while it obligatorily applies within Type B clitic group as long as the proclitic contains a Group B alternating final. The difference between the behavior of TS and FC within the

prosodic word domain and that within Type B clitic group is an issue of the degree of application of a given phonological rule in different domains. Type B clitic group is also different from the prosodic word domain with respect to the application of CL—this rule can apply within the prosodic word domain, but they are consistently blocked in Type B clitic group, which is an issue of whether a given phonological rule applies within a given domain.

Moreover, Type B clitic group in Fuzhou has different phonological behavior as compared to the phonological phrase, as can be seen by comparing Table 15 and Table 14 in Chapter VI. As pointed out in Chapter VI, TS, FC, and CL can all be triggered within the domain of the phonological phrase. By contrast, only TS and FC are triggered within the domain of Type B clitic group.

One might argue that Type B clitic group can be considered as a subtype of phonological phrase since CL is also blocked in the phonological phrase formed through ϕ -restructuring according to the discussion in Chapter VI. By so doing, however, we have to account for the phonological disparities between Type B clitic group and the phonological phrase regarding the application of TS and FC in constructions containing branching complements. As mentioned in Notes 61 and 62, auxiliary verbs 是 [sei²⁴²] and 有 [ʔou²⁴²] as well as prepositions 将 [tsuoŋ⁴⁴] and 跟 [kyŋ⁴⁴] undergo TS whenever they are followed by an object noun/noun phrase, whether the object is branching or not.⁶⁵ In contrast, when verbs like 食 [siɛ⁵] ‘to eat’ and 办 [paiŋ²⁴²] ‘to do’ and prepositions like 向 [xyoŋ²¹³] ‘towards’ and 按 [aŋ⁵¹] ‘according to’ precede a branching object, the TS rule fails to apply to these

⁶⁵ Notice that the progressive aspect marker 咧 [lɛ³¹] also undergoes TS when followed by a single verb or a branching verb phrase, as shown in (11).

verbs and prepositions since they are not grouped into the same phonological phrase with the following branching object. Furthermore, as noticed in Note 64, 是 [sei²⁴²] and 有 [ʔou²⁴²] also undergo FC when followed by an object noun/noun phrase, regardless of the internal branchingness of the object, whereas normal verbs are not incorporated into the same phonological phrase with the following branching object and thus do not undergo FC. Therefore, in terms of the phonological behavior, Type B clitic group is still quite different from the phonological phrase formed through ϕ -restructuring and thus should not be considered as a subtype of phonological phrase.

Although Type A and Type B clitic groups have different phonological behavior in terms of the application and blocking of TS, FC, and CL, the clitic group domain in Fuzhou as a whole can be distinguished from both the prosodic word domain and the phonological phrase domain. By comparing the application and blocking of TS, FC, and CL in the clitic group (both Type A and Type B) with the application and blocking of these three rules in the prosodic word domain and the phonological phrase domain, we can find that these rules exhibit different degrees of application within the clitic group and within the other two domains.

In the prosodic word domain, although TS, FC, and CL can all apply within the domain, they are not obligatory in all subtypes of the prosodic word. The application and blocking of these rules in the prosodic word domain is conditioned by morphological processes of morpho-syntactic word formation in the Fuzhou dialect. In the phonological phrase domain, although the application of both TS and FC is

obligatory, the application of CL is not—it applies only within the phonological phrase domain that is not constructed through ϕ -restructuring, which is conditioned by the syntactic structure.

By contrast, the behavior of these rules in the clitic group is more clear-cut, as we have seen from Table 15 and Table 13 in Chapter V. The application and blocking of these rules in the clitic group domain are conditioned neither by morphological processes nor by the syntactic structure. The difference in the phonological properties between Type A and Type B clitic groups is simply due to the difference between enclitics and proclitics, or in other words, the direction in which a clitic attaches to its host. Within either Type A or Type B, the application and blocking of the phonological rules are quite straightforward, with no exceptions or optionalities.

Thus, I can now draw the conclusion that the clitic group in the Fuzhou dialect as a whole does have different phonological behavior as compared to the prosodic word as well as the phonological phrase. There are phonological phenomena that are characteristic only of the clitic group in this dialect. Therefore, the clitic group should be established as an indispensable prosodic constituent in Fuzhou and thus maintained in the prosodic hierarchy of this dialect.

7.3 Violation of the Strict Layer Hypothesis caused by the clitic group in Fuzhou

As mentioned in Section 2.1.4.1, the Strict Layer Hypothesis has been challenged by evidence from different languages. Many examples of the violation of Exhaustivity, Nonrecursivity, and even Layeredness have been found across languages (cf. Ladd 1986, Odden 1987, Hyman et al 1987, Inkelas 1989, Kanerva 1989, Itô & Mester

1992/2003, Zhang 1992, 2014, 2017, Prince & Smolensky 1993, Mester 1994, Hayes 1995, Truckenbrodt 1995, 1999, Vogel 2009, among others).

In order to handle the violation of the Strict Layer Hypothesis in Chinese dialects, Zhang (1992, 2017) proposes a supplementary principle to the Strict Layer Hypothesis, as reproduced in (27).

(27) Stipulation of prosodic recursivity

Prosodic recursivity is prohibited between the units of different hierarchies (language-universal), but optionally in the units of the same hierarchy (language-specific).

As mentioned in Section 2.1.4.1, the stipulation in (27) has been demonstrated to account for the violation of Exhaustivity, Nonrecursivity, and Layeredness found in some Chinese dialects, such as Chongming and Pingyao. This stipulation is also well supported by the evidence from the Fuzhou dialect. On the one hand, we have seen many examples of the violation of Exhaustivity in Chapter VI—a phonological phrase in Fuzhou can dominate a prosodic word directly. On the other hand, in Chapter V and Chapter VII, we have seen that the violation of Nonrecursivity and Layeredness is also allowed in Fuzhou—there are a lot of examples of the clitic group that exhibit the violation of these two constraints.

Some examples that violate the Nonrecursivity constraint are presented in (28).

- (28)a. 骹 [[断]_ω 了 c]CG 其 c]CG 许 隻 依
 k^ha⁴⁴ [[[toun³¹] lau³¹] ki⁰] xi³¹ tsiε²³ nøyŋ⁵¹
 → k^ha⁴⁴ [[[toun³¹] nau³¹] ʔi⁰] xi⁴⁴ ʒiε²³ nøyŋ⁵¹
 leg break CRS MOD that Cl people
 ‘that person whose leg was broken’
- b. [[[收]_ω 遘 c]CG 其 c]CG 批 野 宝贵
 [[[siu⁴⁴] kau²¹³] ki⁰] p^hiε⁴⁴ ʔia³¹ po³¹ kui²¹³
 → [[[siu⁴⁴] ʔau²¹³] ʔi⁰] p^hiε⁴⁴ ʔia²¹ po⁴⁴ ʔui²¹³
 receive PVP POSS letter very valuable
 ‘The letter received is very valuable.’
- c. 我 [有 c [将 c [只 件]_φ]CG]CG 事计 交代 伊
 ŋuai³¹ [ʔou²⁴² [tsuon⁴⁴ [tsi³¹ ʔyon²⁴²]]] tai²⁴² kiε²¹³ kau⁴⁴ tai²⁴² ʔi⁴⁴
 → ŋuai³¹ [ʔu²¹ [tsuon²¹ [tsi⁴⁴ ʔyon²⁴²]]] tai⁵¹ ʔiε²¹³ kau⁵¹ lai²⁴² ʔi⁴⁴
 I have tsuon this Cl work hand over he
 ‘I did hand over this work to him.’
- d. 伊 [有 c [跟 c [爸奶]_ω]CG]CG 齐 去
 ʔi⁴⁴ [ʔou²⁴² [kyŋ⁴⁴ [pa²⁴² nε³¹]]] tse⁵¹ k^ho²¹³
 → ʔi⁴⁴ [ʔu²¹ [kyŋ²¹ [pa⁵¹ nε³¹]]] tse²¹ ʔo²¹³
 he have with parents together go
 ‘He did go with parents.’

As seen from (28), a clitic group in the Fuzhou dialect may dominate another clitic group of the same type. Take (28a) as an example. In the internal Type A clitic

group, the enclitic 了 [lau³¹] attaches to the prosodic word 断 ‘break’ as the host, while in the external Type A clitic group, the enclitic 其 [ki⁰] attaches to the internal Type A clitic group [断了]CG as the host. In (28d), the proclitic 跟 [kyŋ⁴⁴] attaches to the prosodic word 爸妈 ‘parents’ as the host within the internal Type B clitic group, while the proclitic 有 [ʔou²⁴²] attaches to the internal Type B clitic group [跟爸妈]CG as the host in the external Type B clitic group.

In addition, a Type B clitic group in the Fuzhou dialect can also dominate a Type A clitic group, as exemplified in (29).

(29)a. 嘜 [是 C [[我]_ω 其 C]CG]CG

tsui⁵¹ [sei²⁴² [[ŋuai³¹] ki⁰]]

→ tsui⁵¹ [sei⁵¹ [[ŋuai³¹] ʔi⁰]]

this be I POSS

‘This is mine.’

b. 伊 [有 C [[买]_ω 过 C]CG]CG

ʔi⁴⁴ [ʔou²⁴² [[me³¹] kuo²¹³]]

→ ʔi⁴⁴ [ʔou⁵¹ [[me³¹] ʔuo²¹³]]

he have buy EXP

‘He did have bought (sth).’

c. 伊 [将 C [[依妹]_ω 其 C]CG]CG 拈 走 去

ʔi⁴⁴ [tsuoŋ⁴⁴ [[ʔi⁴⁴ mui²¹³] ki⁰]] niɛŋ⁴⁴ tsau³¹ k^ho⁰

→ ʔi⁴⁴ [tsuoŋ²¹ [[ʔi⁵¹ mui²¹³] ʔi⁰]] niɛŋ⁴⁴ tsau³¹ ʔo⁰

he tsuoŋ younger sister POSS take go PERF

‘He took away the younger sister’s (things).’

Take (29a) as an example. The enclitic 其 [ki⁰] attaches to the prosodic word 我 ‘I’ as the host and then the group of 我+其 forms a Type A clitic group. Then the proclitic 是 [sei²⁴²] attaches to the Type A clitic group [我其]CG as the host and the group of 是+[我其]CG forms a Type B clitic group. The formation process of the prosodic structure in (29b, c) is the same with that in (29a).

The violation of Layeredness is also allowed in the cases of the clitic group in Fuzhou, as we have seen in many examples of Type B clitic group. Some examples are presented as follows.

- (30)a. 伊 [嘞C [洗 碗]_φ]CG
 ʔi⁴⁴ [lɛ³¹ [sɛ³¹ ʔuan³¹]]
 → ʔi⁴⁴ [lɛ²¹ [sɛ²⁴ ʔuan³¹]]
 he PROG wash bowl
 ‘He is washing dishes.’
- b. 伊 [是 C [蜀 隻]_φ]CG 好 侬
 ʔi⁴⁴ [sei²⁴² [suo^{ʔ5} tsiɛ^{ʔ23}]] xo³¹ nøyŋ⁵¹
 → ʔi⁴⁴ [si⁵¹ [suo^{ʔ21} ʒiɛ^{ʔ23}]] xo³¹ nøyŋ⁵¹
 he be one Cl good people
 ‘He is a nice person.’
- c. 我 [有 C [将 C [只 件]_φ]CG]CG 事计 交代 伊
 ŋuai³¹ [ʔou²⁴² [tsuoŋ⁴⁴ [tsi³¹ ʔyon²⁴²]]] tai²⁴² kie²¹³ kau⁴⁴ tai²⁴² ʔi⁴⁴
 → ŋuai³¹ [ʔu²¹ [tsuoŋ²¹ [tsi⁴⁴ ʔyon²⁴²]]] tai⁵¹ ʔie²¹³ kau⁵¹ lai²⁴² ʔi⁴⁴
 I have tsuoŋ this Cl work hand over he
 ‘I did hand over this work to him.’

From (30), we can find that a Type B clitic group in the Fuzhou dialect may dominate a phonological phrase, which is located at the next higher level in the prosodic hierarchy. This is supported by the tone sandhi behavior of Type B clitic group—the proclitic in a Type B clitic group attaches to the entire phonological phrase (if any) as the host and the group of “proclitic + phonological phrase host” forms the domain of application for TS. This has been discussed at the end of Section 7.2.1, and can also be illustrated by above examples in (30).

As can be seen from (28-30), the violation of Nonrecursivity and Layeredness in the cases of the clitic group in the Fuzhou dialect happens among the prosodic word, the clitic group, and the phonological phrase, all of which are located in the morpho-syntax-based hierarchy. Therefore, Zhang’s (1992, 2017) stipulation well accounts for the violation of these two constraints exhibited by the clitic group in Fuzhou, which further substantiates the idea that a weakened SLH is required in the theory of prosodic phonology.

It is noteworthy that by allowing the violation of Nonrecursivity and Layeredness, Fuzhou Type B clitic group is not necessarily isomorphic to any morpho-syntactic structures. We have seen several examples in this chapter, such as [是 C[蜀隻]_φ]CG (2b), [有 C[三隻]_φ]CG (3b), [将 C[蜀头]_φ]CG (5a), [跟 C[两隻]_φ]CG (6b), and [有 C[将 C[只件]_φ]CG]CG (7a), none of which corresponds to any syntactic constituent since the head noun in each example is excluded from the clitic group.

7.4 Type B clitic group and the Restriction on Rule Application in the Fuzhou dialect

As discussed in Section 7.2, TS and FC obligatorily applies within the domain of the group of “proclitic + host”, namely the Type B clitic group domain, while CL is consistently blocked. To be specific, the application of TS and FC and the blocking of CL occur between the proclitic and the host. We have seen that the host in a Type B clitic group can be a prosodic word, a clitic group, or a phonological phrase. According to the Restriction on Rule Application in the prosodic phonology of the Fuzhou dialect formulated in Chapter VI, one can assume that the application of TS and FC as well as the blocking of CL between the proclitic and the host should not affect the internal prosodic word, clitic group, or phonological phrase, iff the application or blocking of the same type of rule can be triggered within the embedded prosodic domain. This assumption can be well supported by relevant data in the Fuzhou dialect, as exemplified in (31-33). Segments and tones in question are marked in bold.

(31) Proclitic + prosodic word

a.	伊	[咧] _C	[定动] _ω CG	b.	嘢	[是] _C	[葡萄] _ω CG
	ʔi ⁴⁴	[lɛ ³¹	[tiŋ ²⁴² toyŋ ²⁴²]]		tsui ⁵¹	[sei ²⁴²	[pu ⁵¹ to ⁵¹]]
→	ʔi ⁴⁴	[lɛ ²¹	[tiŋ ⁵¹ noyŋ²⁴²]]	→	tsui ⁵¹	[si ⁵¹	[pu³¹ lo ⁵¹]]
	*ʔi ⁴⁴	[lɛ ²¹	[tiŋ ⁵¹ toyŋ²⁴²]]		*tsui ⁵¹	[si ⁵¹	[pu³¹ to ⁵¹]]
	he	PROG	move		this	be	grape
	‘He is moving.’				‘This is a grape.’		

- c. 伊 [将 C [老鼠]_ω]CG 拍 死 去
 ʔi⁴⁴ [tsuoŋ⁴⁴ [lo³¹ ts^hy³¹]] p^haʔ²³ si³¹ k^ho⁰
 → ʔi⁴⁴ [tsuoŋ²¹ [lo²⁴ ʒy³¹]] p^haʔ²³ si³¹ ʔo⁰
 *ʔi⁴⁴ [tsuoŋ²¹ [lo²⁴ ts^hy³¹]] p^haʔ²³ si³¹ ʔo⁰
 he tsuoŋ mouse hit die PERF
 ‘He hit and killed the mouse’

(32) Proclitic + clitic group

- a. 嚟 [是 C [旧 其]CG]CG
 tsui⁵¹ [sei²⁴² [kou²⁴² ki⁰]]
 → tsui⁵¹ [si⁵¹ [kou²⁴² ʔi⁰]]
 *tsui⁵¹ [si⁵¹ [ku²⁴² ki⁰]]
 this be old NOM ‘This is an old one.’
- b. 伊 [有 C [办 着]CG]CG
 ʔi⁴⁴ [ʔou²⁴² [pain²⁴² tuoʔ⁵]]
 → ʔi⁴⁴ [ʔu⁵¹ [pain²⁴² nuoʔ⁵]]
 *ʔi⁴⁴ [ʔu⁵¹ [pein⁴⁴ tuoʔ⁵]]
 he have do EXP ‘He did have applied for (sth).’

(33) Proclitic + phonological phrase

- a. 嚟 [是 C [好 书]_φ]CG
 tsui⁵¹ [sei²⁴² [xo³¹ tsy⁴⁴]]
 → tsui⁵¹ [si²¹ [xo²¹ ʒy⁴⁴]]
 *tsui⁵¹ [si²¹ [xo²¹ tsy⁴⁴]]
 this be good book ‘This is a good book.’

- b. 我 [有 C [三 隻]_φ]CG 团
 ŋuai³¹ [ʔou²⁴² [saŋ⁴⁴ tsiɛʔ²³]] kian³¹
 → ŋuai³¹ [ʔu²¹ [saŋ⁵¹ ʒiɛʔ²³]] kian³¹
 *ŋuai³¹ [ʔu²¹ [saŋ⁵¹ tsiɛʔ²³]] kian³¹
 I have three Cl son
 ‘I have three sons.’
- c. 伊 [将 C [蜀 头]_φ]CG 虫 拍 死 去
 ʔi⁴⁴ [tsuoŋ⁴⁴ [suoʔ⁵ t^hau⁵¹]] t^høyŋ⁵¹ p^haʔ²³ si³¹ k^ho⁰
 → ʔi⁴⁴ [tsuoŋ⁵¹ [suoʔ³¹ lau⁵¹]] t^høyŋ⁵¹ p^haʔ²³ si³¹ ʔo⁰
 *ʔi⁴⁴ [tsuoŋ⁵¹ [suoʔ³¹ t^hau⁵¹]] t^høyŋ⁵¹ p^haʔ²³ si³¹ ʔo⁰
 he tsuoŋ one Cl worm hit die PERF
 ‘He hit and killed a worm’

From examples in (31), we can find that although CL is blocked between the proclitic and the prosodic word host in Type B clitic group, it can still apply within the embedded prosodic word domain. From examples in (32), it can be seen that (a) although TS and FC apply to the proclitic within the external Type B clitic group, the application of these two rules does not affect the internal Type A clitic group—TS and FC are still blocked between the prosodic word host and the enclitic within Type A clitic group; and (b) the blocking of CL between the proclitic and the Type A clitic group does not impede the application of this rule between the prosodic word host and the enclitic within the embedded Type A clitic group. From examples in (33), we can see that CL is triggered within the internal phonological phrase domain, though it is

blocked between the proclitic and the phonological phrase host within the Type B clitic group domain. Thus, the Restriction on Rule Application proposed in Chapter VI can be verified by the data of Type B clitic group in the Fuzhou dialect as well.

7.5 Discussion and conclusions

In this chapter, I have discussed the morpho-syntactic functions of Fuzhou proclitics as well as the phonological properties of the clitic group composed of the proclitic plus the host, namely Type B clitic group, in the Fuzhou dialect. Based on the discussions in Section 7.1 and Section 7.2, the following properties of proclitics and Type B clitic group in the Fuzhou dialect have been identified:

(34) Properties of proclitics in the Fuzhou dialect

- a. Fuzhou proclitics all belong to functional categories;
- b. Most Fuzhou proclitics never occur as the only element of an utterance and must attach to the adjacent constituent on the right as the host;
- c. The meaning of the string of the proclitic plus the host is predictable from the meaning of the proclitic and that of the host;
- d. Fuzhou proclitics can attach to material already containing the affix or the proclitic;
- e. Fuzhou proclitics are phonologically dependent—the tone of a proclitic is always decided by the tones of following syllables.

(35) Properties of Type B clitic group in the Fuzhou dialect

- a. TS and FC obligatorily apply within the Type B clitic group domain; specifically, they apply between the proclitic and the host;

- b. CL is obligatorily blocked within the Type B clitic group domain; specifically, it is blocked between the proclitic and the host.

On the one hand, from (34), we can find that Fuzhou proclitics share a number of morpho-syntactic and phonological properties with clitics across languages, including Fuzhou enclitics, and thus should not be treated as prefixes or independent words. On the other hand, from (35), we can find that Type B clitic group in Fuzhou exhibits different phonological behavior as compared to Type A clitic group with respect to the application of phonological phenomena. Nonetheless, as I have argued in previous sections in this chapter, the clitic group in this dialect as a whole does have peculiar phonological behavior which can distinguish the clitic group from the prosodic word and the phonological phrase. Therefore, the clitic group should be maintained and established as an indispensable prosodic constituent in the prosodic phonology of the Fuzhou dialect.

By establishing such a prosodic constituent that contains the host plus the clitic in the Fuzhou dialect, I distinguish the group of “host+enclitic” (Type A) and the group of “proclitic+host” (Type B) from the prosodic word and the phonological phrase. I have thus accounted for the peculiar phonological behavior exhibited by the group of “host+enclitic” and the group of “proclitic+host”, part of which has been noticed in previous studies with no further explanations. The distinctive phonological behavior of Type A clitic group in the Fuzhou dialect examined in Chapter V as well as the behavior of Type B clitic group examined in this chapter, in turn, provide evidence and motivation for the existence of the clitic group within the prosodic hierarchy.

Moreover, as we have seen from examples in Chapter V and this chapter, a clitic group in the Fuzhou dialect can dominate not only a prosodic word, but also another clitic group or a phonological phrase. This indicates that the violation of Nonrecursivity and Layeredness is allowed in this dialect, which constitutes a great challenge to the Strict Layer Hypothesis. I have shown that this can be accounted for by assuming a weakened Strict Layer Hypothesis and adopting Zhang's (1992, 2017) stipulation, instead of excluding the clitic group from the prosodic hierarchy. The domain formation of the clitic group in the Fuzhou dialect thus can be formally presented in (36).

(36) Clitic group (CG) formation in the Fuzhou dialect

The domain of the CG in the Fuzhou dialect consists of one independent (i.e., nonclitic) prosodic constituent (ω , CG, or φ), plus any adjacent

- a. directional clitic(s), or
- b. plain clitic(s)/nondirectional clitic(s) such that there is no possible host with which they share more category memberships.

By so doing, the problem caused by the attachment of clitics to constituents higher than the prosodic word in the Fuzhou dialect can be nicely captured. This problem with the clitic group domain is not due to the clitic group itself, but only due to the restrictions imposed by the Strict Layer Hypothesis, as suggested by Vogel (2009). Therefore, it can be resolved by resorting to a weakened Strict Layer Hypothesis entailing Zhang's (1992, 2017) stipulation, with no any undesirable theoretical consequences.

The Restriction on Rule Application in the prosodic phonology of the Fuzhou dialect, which is formulated in Chapter VI, is further discussed in Section 7.4. By examining the data relevant to Type B clitic group, I have demonstrated that this restriction prevents the application of rules specific to Type B clitic group (i.e., the mandatory application of TS and FC and the blocking of CL) from affecting the embedded prosodic domain. Thus this restriction has been further supported, which, in turn, shows that the clitic group as a whole should be maintained as an indispensable prosodic constituent in this dialect since the two types of clitic groups are both conditioned by the same restriction like other prosodic constituents.

Chapter VIII. The Intonational Phrase in the Fuzhou Dialect

This chapter investigates the next prosodic constituent in the prosodic hierarchy, namely the intonational phrase (IPh), which is the last prosodic constituent in the Fuzhou dialect that is discussed in this dissertation. Section 8.1 presents an introduction of the intonational phrase within the framework of the prosodic phonology, including the basic definition and the restructuring of this domain, as well as phonological phenomena that are characteristic of this domain across languages. Section 8.2 discusses the definition and the restructuring of the intonational phrase in the Fuzhou dialect on the basis of the discussion in Section 8.1. Section 8.3 probes Fuzhou phonological phenomena that are relevant to the domain of the intonational phrase. Section 8.4 presents a further discussion on the Restriction on Rule Application in the Fuzhou dialect. Section 8.5 is a brief summary of this chapter.

8.1 Introduction

In this section I will survey the basic claims of the intonational phrase domain within the prosodic phonology framework, following in particular the view presented in Nespor & Vogel's (1986) work. Section 8.1.1 discusses the basic rule of the formation of the intonational phrase. Section 8.1.2 examines the restructuring of the intonational phrase and relevant constraints on the restructuring. Section 8.1.3 investigates some phonological rules that are characteristic of the intonational phrase domain across languages. Section 8.1.4 closes the introduction section with a short summary.

8.1.1 Definition of the intonational phrase

The intonational phrase is located above the phonological phrase in the universal prosodic hierarchy presented in Section 2.1.3.2. According to Nespor & Vogel (1986), the intonational phrase domain groups together one or more phonological phrases on the basis of syntactic information, though the nature of this information is more general than that needed for the definition of the phonological phrase domain.

As pointed out by Nespor & Vogel, the intonational phrase is the domain of an intonation contour and the ends of intonational phrases always coincide with the positions where grammar-related pauses may be introduced in a sentence. Thus a root sentence in syntactic representation, defined as an S (“sentence”) that is not dominated by a node other than S (Emonds 1976), corresponds to an intonational phrase, as illustrated in (1). Intonational phrases are placed within brackets and labeled with “*ι*”.

- (1) a. [Lions are dangerous]*ι*
 b. [Jennifer discovered that her attic had been invaded last winter by a
 family of squirrels]*ι*

In addition to root sentences, there are a number of specific types of constructions that obligatorily form intonational phrases according to Nespor & Vogel. These constructions include parenthetical expressions, nonrestrictive relative clauses, tag questions, vocatives, expletives, and certain moved elements, as exemplified in (2a-f) respectively (cited from Nespor & Vogel 1986). Another construction that obligatorily forms an intonational phrase on its own, namely appositives, is added in

Jensen (1993), as exemplified in (2g). Nespor & Vogel suggest that these constructions are all elements that are linearly represented but not structurally attached to the sentence tree (cf. Safir 1985), and that the same types of constructions will form intonational phrases in all languages that make use of these constructions.

- (2) a. Lions [as you know]_ι are dangerous. (parenthetical expression)
- b. My brother [who absolutely loves animals]_ι just bought himself an exotic tropical bird. (nonrestrictive relative clause)
- c. That's Theodore's cat [isn't it?]_ι (tag question)
- d. [Clarence]_ι I'd like you to meet Mr. Smith. (vocative)
- e. [Good heavens]_ι there's a bear in the back yard. (expletive)
- f. They are so cute [those Australian koalas]_ι. (right dislocation)
- g. Duncan and Mary [our next-door neighbours]_ι have a lovely Labrador retriever. (appositive)

Comparing (1a) and (2a), we can find that (2a) is actually derived from (1a) by inserting the parenthetical expression into the root sentence. In that case, strings that are adjacent to the obligatorily formed intonational phrase [as you know]_ι must automatically form intonational phrases on their own, which can be presented as in (3a). By the same token, intonational phrases formed within utterances in (2b-g) can be presented as in (3b-g).

- (3) a. [Lions]_ι [as you know]_ι [are dangerous]_ι
- b. [My brother]_ι [who absolutely loves animals]_ι [just bought himself an exotic tropical bird]_ι

- c. [That's Theodore's cat]ᵢ [isn't it?]_ᵢ
- d. [Clarence]ᵢ [I'd like you to meet Mr. Smith]ᵢ
- e. [Good heavens]ᵢ [there's a bear in the back yard]ᵢ
- f. [They are so cute]ᵢ [those Australian koalas]ᵢ
- g. [Duncan and Mary]ᵢ [our next-door neighbours]ᵢ [have a lovely
Labrador retriever]ᵢ

On the basis of the discussion seen above, the intonational phrase is defined in Nespor & Vogel (1986) as in (4).

(4) Intonational Phrase (IPh) domain

An Intonational Phrase domain may consist of

- a. all the ϕ s in a string that is not structurally attached to the sentence tree at the level of s-structure, or
- b. any remaining sequence of adjacent ϕ s in a root sentence.

As mentioned in Chapter II, one of the basic claims of prosodic phonology is that the resulting prosodic constituents that make reference to non-phonological notions are not necessarily isomorphic to any morpho-syntactic structures. Although the intonational phrase domain often corresponds to a syntactic constituent, intonational phrases formed by the strings on one or both sides of an intervening obligatory intonational phrase are often not isomorphic to any syntactic constituent. For instance, intonational phrases to the left of the obligatory intonational phrase in (5) (cited from Nespor & Vogel 1986) do not correspond to any syntactic constituent.

- (5) a. [They have]_t [as you know]_t [been living together for years]_t
 b. [He will never]_t [as I said]_t [accept your proposal]_t
 c. [Charles wouldn't]_t [I imagine]_t [have done such as thing]_t
 d. [That's the tortoise that]_t [as you know]_t [inhabits the Galapagos
 Islands]_t

8.1.2 Restructuring of the intonational phrase

In addition to syntactic factors, a number of other factors are also involved in the formation of the intonational phrase domain, including length, rate of speech, style, and contrastive prominence, which affect the ultimate number of intonational phrases within an utterance. This results in the restructuring of the intonational phrase and thus the relatively large degree of variability in the formation of intonational phrases, which distinguishes the intonational phrase from the other prosodic constituents.

As mentioned in Chapter II and Chapter VI, branchingness may play a role in the formation of phonological phrases in some languages including Italian, English, Kinyambo, and Fuzhou. Specifically, in these languages, a non-branching phonological phrase, which is the first complement of a lexical head on its recursive side, may be joined into the phonological phrase that contains the lexical head. Since non-branching phonological phrases are generally shorter than branching ones, length appears to be a crucial factor in determining the restructuring of the phonological phrase in languages mentioned above. Like the phonological phrase, the intonational phrase also undergoes the process of restructuring. As pointed out by Nespor & Vogel, in the restructuring of the intonational phrase, the length of the intonational phrase

plays such a role that the longer the original intonational phrase, the more likely it is to be divided into smaller intonational phrases. According to Nespor & Vogel, there seems to be a tendency to avoid series of very short intonational phrases and sequences of intonational phrases of very different lengths. In other words, smaller intonational phrases constructed through the process of restructuring tend to be average in length. Thus a long intonational phrase like (1b) could be divided into smaller intonational phrases as in (6a) and (6b), while the divisions in (6c) and (6d) are less acceptable.

- (6) a. [Jennifer discovered]_ι [that her attic had been invaded last winter]_ι [by a family of squirrels]_ι
- b. [Jennifer discovered that her attic]_ι [had been invaded last winter by a family of squirrels]_ι
- c. ? [Jennifer]_ι [discovered]_ι [that her attic]_ι [had been invaded]_ι [last winter]_ι [by a family]_ι [of squirrels]_ι (series of very short Is)
- d. ? [Jennifer]_ι [discovered that her attic had been invaded last winter by a family of squirrels]_ι (sequences of Is of very different lengths)

Length is not the only factor that plays a role in determining the restructuring of the intonational phrase. Performance factors and semantic factors related to prominence also affect the number of intonational phrases contained in an utterance. According to Nespor & Vogel, the rate of speech is another key factor in ι -restructuring—the faster the rate of speech, the longer the intonational phrases of a given utterance tend to be, and the converse is also true. Thus if a long sentence like

(1b) is uttered at a rapid tempo, it will contain a single long intonational phrase, as in (1b). By contrast, if it is uttered slowly, it may be divided into several shorter intonational phrases, as in (6a) and (6b).

Since a formal speech is often given at a slow tempo, the more formal the style of speech, the slower the rate of speech tends to be. Hence the style of speech is also suggested to be a factor in determining the restructuring of the intonational phrase—the more formal the style of speech, the more likely a long intonational phrase tends to be further divided.

The last key factor in the process of ι -restructuring mentioned in Nespor & Vogel's discussion is the contrastive prominence of a particular part of an utterance. Bing (1979) distinguishes contrastive prominence from contrastive stress and argues that contrastive prominence is not predictable by rule and the speaker may add it where he wishes. Unlike contrastive stress, which does not require a modification of ι structure, the assignment of contrastive prominence on a particular constituent in the string will lead to the addition of an intonation contour within the string. This becomes clearer as we examine the examples in (7).

- (7) a. [Paul called Paula before Carla called Carl] ι
 b. [Paul called Paula before she called him] ι
 c. [Paul called Paula] ι [before *she*] ι [called *him*] ι

As can be seen from (7), the sentence in (7a) is assigned one ι since it is dominated by a single root sentence. By contrast, the presence of the pronouns in (7b) requires the listener to co-refer the pronouns to the nouns, which creates a different interpretation

from that of (7a). This interpretation must be realized by placing extra prominence on the pronouns and thus causes the single ι in (7b) to be restructured as three smaller ι s, as presented in (7c). It is noteworthy that sentences in (7a) and (7b) have the same syntactic structure, while they are different from each other prosodically, which again supports the idea that the prosodic structure differs from the syntactic structure.

The restructuring of the intonational phrase is not completely free. Due to the Strict Layer Hypothesis, an intonational phrase must dominate one or more phonological phrases and thus the restructuring of the intonational phrase can only occur at the juncture between two phonological phrases. Nespor & Vogel suggest that, in addition, there are certain syntactic constraints on the restructuring of the intonational phrase. The most important syntactic constraint on restructuring is a general tendency to avoid restructuring an intonational phrase in any position other than at the end of a noun phrase. Thus the sentence in (8a) could be broken into smaller intonational phrases after *panda* and/or *bamboo*, leading to the three ways of restructuring presented in (8b-d). By contrast, it is not likely for the restructuring to occur after the verb *eat*, or after the noun *type*, since it is not the end of a noun phrase.

- (8) a. [The giant panda eats only one type of bamboo in its natural habitat] ι
 b. [The giant panda] ι [eats only one type of bamboo] ι [in its natural habitat] ι
 c. [The giant panda] ι [eats only one type of bamboo in its natural habitat] ι
 d. [The giant panda eats only one type of bamboo] ι [in its natural habitat] ι

This NP constraint can be further demonstrated in embedded possessive constructions like (9a), in which restructuring can only occur at the end of the subject NP, as in (9b), but not after any of the other nouns inside the subject NP.

- (9) a. [My friend's neighbor's aunt's mother knows a famous writer]_t
 b. [My friend's neighbor's aunt's mother]_t [knows a famous writer]_t

The NP constraint provides further evidence for the non-isomorphism between prosodic structure and syntactic structure, since restructuring in accordance with this restriction may result in intonational phrases that do not correspond to any syntactic constituents. This can be exemplified in (10), in which the first intonational phrase formed through restructuring in (10b) is not a syntactic constituent.

- (10)a. [I would never have believed the children of John and Mary to be able to become so ill mannered]_t
 b. [I would never have believed the children of John and Mary]_t [to be able to become so ill mannered]_t

Nespor & Vogel point out that restructuring does not occur after all noun phrases. It is suggested that there is a tendency to avoid separating an obligatory argument from its verb even if such a division would respect the NP constraint, as exemplified in (11). By contrast, optional arguments are not affected by such a constraint, as exemplified in (12).

- (11)a. [That lady always gives meat to the stray cats that live in the park]_t
 b. ?*[That lady always gives meat]_t [to the stray cats that live in the park]_t

- (12)a. [That lady always buys meat for the stray cats that live in the park]_ι
 b. [That lady always buys meat]_ι [for the stray cats that live in the park]_ι

As Nespor & Vogel suggest, restructuring of the intonational phrase may also take place before the beginning of a new S', as long as such a division is not in conflict with the NP constraint. Thus (13a) can be restructured as (13b), while the restructuring of (14a) presented in (14b) may not be allowed.

- (13)a. [I though you already knew that he was moving to southern Italy]_ι
 b. [I though you already knew]_ι [that he was moving to southern Italy]_ι
 (14)a. [I though you knew the family that was moving to southern Italy]_ι
 b. * [I though you knew the family]_ι [that was moving to southern Italy]_ι

When an obligatory argument is a sentence, it could be separated from its verb and restructured as an intonational phrase, as exemplified in (15), in which the restructuring in (15b) is acceptable.

- (15)a. [Our neighbor truly believes that black cats bring bad luck]_ι
 b. [Our neighbor truly believes]_ι [that black cats bring bad luck]_ι

Through the comparison of the three constraints mentioned above, Nespor & Vogel propose a hierarchy among these constraints: NP>>S'>>obligatory argument. The S' constraint is stronger than the obligatory argument constraint, as can be seen in (15), and the NP constraint is stronger than the S' constraint, as can be seen in (13-14).

Besides these three constraints, there are some special cases in which syntax affects the restructuring of intonational phrases. As observed by Nespor & Vogel, lists and complexly embedded constructions have particular intonation patterns. Consider the possible restructuring of intonational phrases in sentences containing lists presented in (16). We can find that each of the items in a list can form an intonational phrase, some of which may violate the NP constraint discussed above since the boundaries of intonational phrases may not be inserted after noun phrases.

- (16) a. [The big]t [fat]t [ugly]t [nasty beast]t [scared away the children]t
 b. [That mountain road is long]t [narrow]t [windy]t [and bumpy]t
 c. [Everyone at the party ate]t [talked]t [sang]t [and danced]t
 d. [Ducks]t [geese]t [swans]t [and coots]t [inhabit this lake]t
 e. [They own two cats]t [three dogs]t [four parakeets]t [and a turtle]t
 f. [Let's invite]t: [Arnold]t [Arthur]t [Archibald]t [and Zachary]t
 g. [We were told to buy the following]t: [milk]t [eggs]t [bread]t [and
 cheese]t

Nespor & Vogel propose the following rule to handle these cases:

(17) List Restructuring (optional)

In a sequence of more than two constituents of the same type, i.e., x_1, x_2, \dots, x_n ,
 an intonation break may be inserted before each repetition of the node X.

Similar to the case of lists, the restructuring of intonational phrases in complexly embedded constructions also somewhat pose problems for the NP constraint. It can be

seen that each of the possible restructurings of embedded constructions presented in (18) violates the NP constraint.

- (18)a. [This is the cat]_t [that ate the rat]_t [that ate the cheese]_t
 b. [The book in the bag]_t [on the table]_t [in the study]_t [belongs to Albert]_t
 c. [The woman that represents the company]_t [that owns the stores]_t [that sell the machines]_t [that brew coffee]_t [is a friend of mine]_t

Nespor & Vogel claim that the case of embedded constructions is similar to the case of lists although the embedded constructions are syntactically quite different from the lists. According to Nespor & Vogel, like the case of lists, there are also sequences of a given node X in the case of embedded constructions in (18). For example, the repeated node is prepositional phrase in (18b), while the repeated node is S' in (18a) and (18c). It is noteworthy that it is possible that more than one type of node is repeated in some embedded constructions. For example, it can be seen in (18a) that the boundaries of intonational phrases coincide with S' boundaries. However, the same sentence can also be represented in the way that the repeated node is NP, as presented in (18a').

- (18a') This is [_{NP} the cat that ate [_{NP} the rat that ate [_{NP} the cheese]]]

Nespor & Vogel argue that with the structure in (18a') there is no way to restructure the intonational phrase into smaller ones. Thus it can be demonstrated that the noun plays a role in the restructuring of the intonational phrase, since the intonation break

is always inserted at the end of a noun even in cases in which more than one type of node may be taken as the repeated node, as shown in (18a).

To summarize, like the phonological phrase, the intonational phrase can be restructured as well. Unlike the restructuring of the phonological phrase, however, the restructuring of the intonational phrase is to break an intonational phrase into smaller ones. A number of factors play roles in the process of restructuring, including the length of the intonational phrase formed by the root sentence, the rate and the style of speech, as well as contrastive prominence. The restructuring of the intonational phrase is restricted by several syntactic constraints, including NP constraint, S' constraint, and obligatory argument constraint, among which NP constraint is the strongest. Though lists and embedded constructions seem to pose problems for NP constraint, they can be handled by the optional rule of List Restructuring. The restructuring of the intonational phrase discussed above provides further evidence for the independence of the prosodic structure from the syntactic structure, since the same type of restructuring of the constituents of a particular string is never allowed in syntax.

8.1.3 Phonological rules in the intonational phrase across languages

In Selkirk (1978), the intonational phrase was defined as the domain over which an intonational contour is spread. Nespor & Vogel (1986) further suggest that the intonational phrase also represents the domain of application for a number of segmental phonological rules across languages, in addition to serving as the domain of intonation contours. They discuss four segmental rules, including Gorgia Toscana

and Intervocalic Spirantization in Tuscan Italian, Nasal Assimilation in Spanish, and s-Voicing in Greek. Since the primary goal in this chapter is to investigate the intonational phrase in the Fuzhou dialect, no special attention is given to all of these four rules—only Gorgia Toscana and Intervocalic Spirantization in Tuscan Italian and Nasal Assimilation in Spanish will be briefly discussed in this subsection. All the examples in this subsection are cited from Nespor & Vogel (1986)

Gorgia Toscana in Tuscan Italian changes the voiceless stops /p, t, k/ into the corresponding fricatives [ɸ, θ, h] between two [-consonantal] segments within and across words. This rule applies throughout the intonational phrase domain but not across intonational phrases, as exemplified in (19), where “_” denotes the application of this rule and “_” denotes the blocking.

- (19)a. [Hanno catturato sette canguiri appena nati]_ι
 ‘They have captured seven newly born kangaroos.’
- b. [Almerico]_ι # [quando dorme solo]_ι [cade spesso dall’amaca]_ι
 ‘Almerico, when he sleeps alone, often falls out of the hammock.’

This rule may still apply within the smaller intonational phrases formed by restructuring rules as long as the entire segmental context of this rule is within an intonational phrase, while it may be blocked if the restructuring destroys the segmental context of the rule. Consider the examples in (20). We can find that (20a) forms a single intonational phrase by the basic formation rule given in (4) and thus the Gorgia Toscana rule applies within the domain. In (20b), this rule applies within the first small intonational phrase while it is blocked in the other two positions.

- (20)a. [Quel giardino ha una g^habia piena di corvi canarini colibri e pellicani]_t
 ‘That garden has a cage full of crows, canaries, hummingbirds, and pelicans.’
- b. [Quel giardino ha una g^habia piena di corvi]_t [canarini]_t [colibri]_t [e pellicani]_t

The Intervocalic Spirantization rule, which changes the affricates /tʃ/ and /dʒ/ into the corresponding fricatives [ʃ] and [ʒ] between [-consonantal] segments within and across words, exhibits the same behavior as Gorgia Toscana. In other words, this rule also applies within the intonational phrase, while does not apply across the boundaries of intonational phrases, as shown in (21).

- (21)a. [Il mio cric^heto cerca il suo cibo negli angoli della g^habbia]_t
 ‘My hamster looks for its food in the corners of the cage.’
- b. [Santo cielo]_t [c’è un verme in questa ciliegia]_t
 ‘Good heavens, there’s a worm in this cherry.’

This rule exhibits the same variability in the application we have seen in the case of Gorgia Toscana—if a long intonational phrase in which this rule applies is broken down into shorter ones, this rule applies within the shorter intonational phrases, but not across their boundaries, as exemplified in (22).

- (22)a. [Hanno citato cinque re^hensioni cinquanta libri cento articoli e due^hcento lavori inediti]_t

‘They cited five reviews, fifty books, one hundred articles, and two hundred unpublished works.’

- b. [Hanno citato cinque recensioni]t [cinquanta libri]t [cento articoli]t [e duecento lavori inediti]t

Like the two Italian rules mentioned above, the Nasal Assimilation rule in Spanish exhibits a certain degree of flexibility in its application as well. As Nespór & Vogel suggest, this rule, which assimilates a nasal in place of articulation to a following obstruent, also applies within the intonational phrase, but not across the boundaries, as can be seen in (23).

- (23)a. [Las plumas de faisán cuestan tantísimo hoy día]t

‘Pheasant feathers are very expensive nowadays.’

- b. [Carmenn]t [cántanos una nueva canción]t [por favor]t

‘Carmen, sing us a new song, please.’

When restructuring occurs and breaks a long intonational phrase down into shorter ones, this rule can still apply within shorter intonational phrases, but it is blocked if the restructuring interrupts the context of its application, which is similar to the two Italian rules we have just seen. This can be seen by comparing the application and the blocking of Nasal Assimilation in the examples in (24), in which the sentence in (24a) is uttered more quickly than (24b).

- (24)a. [Usa su sombrero carísimo conse seis plumas de tucán cuando desea crear la impresión que es una persona muy importante]t

‘(She) wears her very expensive hat within six toucan feathers when she wants to create the impression that she is a very important person.’

- b. [Usa su sombrero carísimo con seis plumas de tucán]t [cuando desea crear la impresión que es una persona muy importante]t

As we have seen so far in this subsection, rules such as Gorgia Toscana and Intervocalic Spirantization in Tuscan Italian, as well as Nasal Assimilation in Spanish, may apply in a given position when a particular string is uttered in one way but may be blocked in the same position when the string is uttered in another way. Such type of flexibility in the application of these rules can only be well accounted for by formulating these rules in terms of the domain of the intonational phrase, since the intonational phrase is the prosodic constituent that offers the greatest flexibility as a result of its restructuring possibilities, as argued by Nespor & Vogel (1986). Since there are no syntactic constituents that can provide the necessary domains of application for these rules or allow such type of flexibility, it is further confirmed that the intonational phrase is an indispensable constituent in the prosodic hierarchy and is not isomorphic with any syntactic constituent.

8.1.4 Summary

In Section 8.1, I have reviewed the discussions of the intonational phrase in the theory of prosodic phonology, especially the view in Nespor & Vogel (1986). The formation rule of the intonational phrase and the restructuring of this domain have been discussed. It has been shown that the restructuring of the intonational phrase is

much more flexible than that in the phonological phrase. Such great possibilities in the restructuring of this domain provide motivation for this constituent in prosodic phonology since no constituents in the syntactic structure allow for this type of variability. It has also been demonstrated that the intonational phrase formed by the basic formation rule and smaller intonational phrases formed by the restructuring can serve as the domain of application for several phonological rules across languages, which provides further support for the establishment of this prosodic constituent.

8.2 The intonational phrase in the Fuzhou dialect

8.2.1 Basic intonational phrase in the Fuzhou dialect

As mentioned in Section 8.1, the intonational phrase is the domain of an intonation contour and the ends of an intonational phrase coincide with the positions where pauses may be introduced in a sentence. As in English, Italian, Spanish, and other languages in the world, root sentences like those in (25) in the Fuzhou dialect can form independent intonational phrases since they are associated with intonation contours.

- (25)a. [侬 真 侈]_t
 [nøyŋ⁵¹ tsin⁴⁴ sɛ²⁴²]
 → [nøyŋ⁵¹ tsin⁵¹ nɛ²⁴²]
 people very many
 ‘There are a lot of people.’

- b. [汝 其 衣裳 野 俊]t
 [ny³¹ ki⁰ ʔi⁴⁴ suon⁵¹ ʔia³¹ tsouŋ²¹³]
 → [ny³¹ ʔi⁰ ʔi⁴⁴ luon⁵¹ ʔia⁴⁴ ʒouŋ²¹³]
 you POSS clothes very beautiful

‘Your clothes are very beautiful.’

- c. [伊 咧 洗 碗]t
 [ʔi⁴⁴ lɛ³¹ sɛ³¹ ʔuaŋ³¹]
 → [ʔi⁴⁴ lɛ²¹ sɛ²⁴ ʔuaŋ³¹]
 he PROG wash bowl

‘He is washing dishes.’

- d. [只 隻 依 是 蜀 隻 呆 依]t
 [tsi³¹ tsiɛʔ²³ nøyŋ⁵¹ sei²⁴² suoʔ⁵ tsiɛʔ²³ ŋai⁵¹ nøyŋ⁵¹]
 → [tsi⁴⁴ ʒiɛʔ²³ nøyŋ⁵¹ si⁵¹ suoʔ²¹ ʒiɛʔ²³ ŋai³¹ nøyŋ⁵¹]
 this Cl people be one Cl bad people

‘This person is a bad guy.’

In addition to root sentences, there are also certain syntactic constructions in the Fuzhou dialect that are associated with intonation contours. These constructions include parenthetical expressions, vocatives, expletives, appositives, and certain moved elements, which can be illustrated with sentences in (26). According to my informants, sentences in (26) are grammatical only if pauses are inserted in the positions indicated by the commas, namely on one or both sides of these syntactic

constructions. Thus, these constructions obligatorily correspond to intonational phrases on their own.

(26)a. [只 隻 侬,]t [汝 会 伙 其,]t [是 蜀 隻 呆 侬]t
 [tsi³¹tsieʔ²³nøŋ⁵¹][ny³¹ʔa²⁴²paiʔ²³ki⁰] [sei²⁴²suoʔ⁵tsieʔ²³ŋai⁵¹nøŋ⁵¹]

→ [tsi⁴⁴ʒieʔ²³nøŋ⁵¹][ny³¹ʔa⁵¹paiʔ²³ʔi⁰] [si⁵¹suoʔ²¹ʒieʔ²³ŋai³¹nøŋ⁵¹]

this Cl people you can know NOM be one Cl bad people

‘This person, as you know, is a bad guy.’ (parenthetical expression)

b. [陈 先生,]t [汝 其 衣裳 野 俊]t

[tiŋ⁵¹siŋ⁴⁴saŋ⁴⁴][ny³¹ki⁰ʔi⁴⁴suoŋ⁵¹ʔia³¹tsouŋ²¹³]

→ [tiŋ²¹siŋ⁴⁴naŋ⁴⁴][ny³¹ʔi⁰ʔi⁴⁴luoŋ⁵¹ʔia⁴⁴ʒouŋ²¹³]

Chen teacher you POSS clothes very beautiful

‘Mr. Chen, your clothes are very beautiful.’ (vocative)

c. [少 伊 奶,]t [水 缸 碰 必 去]t

[sa²¹³ʔi⁴⁴ne³¹][tsui³¹kouŋ⁴⁴p^houŋ²⁴²peiʔ²³k^ho⁰]

→ [sa²¹ʔi⁵¹ne³¹][tsui²¹ʔouŋ⁴⁴p^houŋ²⁴²peiʔ²³ʔo⁰]

fuck his mother water jar hit crack PERF

‘Damn! The water jar was hit and developed a crack.’ (expletive)

d. [我 其 骹溜帮,]t [陈 先生,]t [真 本事]t

[ŋuai³¹ki⁰k^ha⁴⁴liu⁵¹pouŋ⁴⁴][tiŋ⁵¹siŋ⁴⁴saŋ⁴⁴][tsiŋ⁴⁴puoŋ³¹søŋ²⁴²]

→ [ŋuai³¹ʔi⁰k^ha⁴⁴liu⁴⁴βouŋ⁴⁴][tiŋ²¹siŋ⁴⁴naŋ⁴⁴][tsiŋ²¹puoŋ⁴⁴nøŋ²⁴²]

I POSS friend Chen teacher very capable

‘My friend, Mr. Chen, is very capable.’ (appositive)

- e. [生 野 俊,]t [许 隻 诸娘团]t
 [saŋ⁴⁴ ʔia³¹ tsouŋ²¹³] [xi³¹ tsiɛʔ²³ tsy⁴⁴ noyŋ⁵¹ kian³¹]
 → [saŋ⁴⁴ ʔia⁴⁴ ʒouŋ²¹³] [xi⁴⁴ ʒiɛʔ²³ tsy⁵¹ noyŋ³¹ ŋian³¹]
 grow very beautiful that Cl girl
 ‘She is very beautiful, that girl.’ (right dislocation)

We can find from (26) that strings that are adjacent to syntactic constructions mentioned above also automatically form intonational phrases on their own, since the positions in which pauses are introduced coincide with the boundaries of these strings.

Therefore, the basic formation rule of the intonational phrase given in (4), namely the cross-linguistic account of *t*-formation proposed by Nespor & Vogel (1986), can be adopted in the prosodic phonology of the Fuzhou dialect. By assuming that the violation of Exhaustivity is allowed in this dialect, the intonational phrase in Fuzhou can not only directly dominate the phonological phrase, but also directly dominate the clitic group, as illustrated in (25) and (26). Thus the basic domain formation rule of the intonational phrase in Fuzhou can be presented as in (27).

(27) Intonational Phrase (IPh) domain in the Fuzhou dialect

The domain of *t* in Fuzhou may consist of

- a. all the CGs/φs in a string that is not structurally attached to the sentence tree at the level of s-structure, or
- b. any remaining sequence of adjacent CGs/φs in a root sentence.

8.2.2 Restructuring of the intonational phrase in the Fuzhou dialect

Like languages investigated in Nespor & Vogel (1986), the restructuring of the intonational phrase also takes place in the Fuzhou dialect, depending on a variety of non-syntactic factors including length, rate of speech, style, and contrastive prominence. In general, the longer the original intonational phrase formed by the formation rule in (27), the more likely it is to be broken down into smaller intonational phrases. Consider sentences in (28a) and (29a). As my informants point out, although these sentences can form long intonational phrases as in (28b) and (29b) respectively, the divisions in (28c) and (29c) sound more natural and are thus more acceptable.

- (28)a. 伊 讲 骹 断 了 其 许 隻 依
 ʔi⁴⁴ kouŋ³¹ k^ha⁴⁴ touŋ³¹ lau³¹ ki⁰ xi³¹ tsiε²³ nøyŋ⁵¹
 → ʔi⁴⁴ kouŋ³¹ k^ha⁴⁴ touŋ³¹ nau³¹ ʔi⁰ xi⁴⁴ ʒiε²³ nøyŋ⁵¹
 he speak leg break CRS MOD that Cl people
 昨暝 敲 街中 乞 别依 拍 去
 so²³ maŋ⁵¹ ka²⁵ kε⁴⁴ touŋ⁴⁴ k^høy²³ pei⁵ nøyŋ⁵¹ p^ha²³ k^ho⁰
 → so⁵¹ maŋ⁵¹ ka²¹ kε⁴⁴ louŋ⁴⁴ k^høy²³ pei³¹ nøyŋ⁵¹ p^ha²³ ʔo⁰
 yesterday in on the street PASS other people hit PERF
 ‘He said that the person whose leg was broken was hit by other people
 on the street yesterday.’

b. [伊讲骹断了其许隻依昨暝敲街中乞别依拍去]₁

c. [伊讲]₁ [骹断了其许隻依]₁ [昨暝敲街中]₁ [乞别依拍去]₁

- (29)a. 礼拜 早头 我 跟 爸奶 齐 去
 le³¹ pai²¹³ tsa³¹ t^hau⁵¹ ŋuai³¹ kyn⁴⁴ pa²⁴² ne³¹ tse⁵¹ k^ho²¹³
 → le⁴⁴ βai²¹³ tsa²¹ lau⁵¹ ŋuai³¹ kyn²¹ pa⁵¹ ne³¹ tse²¹ ʔo²¹³
 Sunday morning I with parents together go
 许间店 买 做年 其 衣裳
 xi³¹ kan⁴⁴ taiŋ²¹³ mε³¹ tso²¹³ nieŋ⁵¹ ki⁰ ʔi⁴⁴ suon⁵¹
 → xi²¹ ʔan⁴⁴ taiŋ²¹³ mε³¹ tso⁴⁴ nieŋ⁵¹ ŋi⁰ ʔi⁴⁴ luon⁵¹
 that Cl store buy celebrate Chinese New Year MOD clothes
 ‘I went together with my parents to that store on Sunday morning to buy
 clothes for the Chinese New Year.’
- b. [礼拜早头我跟爸奶齐去许间店买做年其衣裳]t
- c. [礼拜早头]t [我跟爸奶齐去许间店]t [买做年其衣裳]t

The rate of speech and the rate-related factor, namely the style of speech, may also affect the ultimate number of intonational phrases within an utterance in Fuzhou. As it is in other languages, it is usually the case in Fuzhou that the slower a string is uttered, the more likely it is to break a long intonational phrase into shorter ones. Comparing the speech of two of my informants, Mr. Chen and Mrs. Song, one can find that more pauses are introduced in Mr. Chen’s speech since he is much older than Mrs. Song and he speaks slower than she does, especially when uttering a long sentence. Hence, a sentence like (25d) may be divided into more than one intonational phrase in Mr. Chen’s speech, as in (30a), while the same sentence may form only one intonational phrase in Mrs. Song’s speech, as shown in (30b).

(30)a. [只隻依]ᵀ [是蜀隻呆依]ᵀ

b. [只隻依是蜀隻呆依]ᵀ

‘This person is a bad guy.’

Also, since a more formal style of speech usually corresponds to a slower rate of utterance, a sentence uttered as part of a formal presentation tends to contain more than one intonation contours, while a sentence with the similar length and syntactic structure uttered in an informal colloquial way will contain a single intonational phrase. This becomes clearer as we compare the two sentences in (31), in which the formal sentence in (31a) can be divided into three small intonational phrases, while the sentence in (31b), which has the similar length and syntactic structure with (31a), can form a single intonational phrase when it is uttered in a very informal colloquial way.

(31)a. [我 希望]ᵀ [各 隻 选手]ᵀ [保持 风度]ᵀ

[ŋuai³¹ xi³¹ ʔuoŋ²⁴²][koʔ²³ tsiɛʔ²³ souŋ³¹ ts^hiu³¹][po³¹ t^hi⁵¹ xuŋ⁴⁴ tou²⁴²]

→ [ŋuai³¹ xi⁴⁴ ʔuoŋ²⁴²][koʔ⁴⁴ ʒiɛʔ²³ souŋ²⁴ ʒiu³¹] [po²¹ t^hi⁵¹ xuŋ⁵¹ nou²⁴²]

I hope every Cl contestant keep deportment

‘I hope that every contestant can behave sportingly.’

b. [我 见觉 许 隻 先生 兴趣 洒水]ᵀ

[ŋuai³¹ kien²¹³ koyʔ²³ xi³¹ tsiɛʔ²³ siŋ⁴⁴ saŋ⁴⁴ xeŋ²¹³ ts^høy²¹³ siu⁵¹ tsui³¹]

→ [ŋuai³¹ kien⁵¹ ŋoyʔ²³ xi⁴⁴ ʒiɛʔ²³ siŋ⁴⁴ naŋ⁴⁴ xiŋ⁵¹ ʒøy²¹³ siu³¹ ʒui³¹]

I think that Cl teacher interest swimming

‘I think that that teacher is interested in swimming.’

Contrastive prominence assigned to a particular part in the original intonational phrase also triggers the restructuring of the intonational phrase in the Fuzhou dialect. For example, the sentence in (32) can form a single intonational phrase, as in (32a). If the pronoun 伊 ‘him’ is emphasized, or in other words, when prominence is placed on the pronoun 伊 ‘him’, the single intonational phrase is restructured as two smaller intonational phrases, as in (32b). Similarly, in (33), the root sentence forms one single intonational phrase in (33a), while it is broken down into two intonational phrases when the noun 诸娘团 ‘girl’ is assigned prominence, as in (33b).

- (32)a. [我 看见 伊 将 许 隻 依 拍 去]t
 [ŋuai³¹ k^han²¹³ kiɛŋ²¹³ ʔi⁴⁴ tsuoŋ⁴⁴ xi³¹ tsiɛʔ²³ nøyŋ⁵¹ p^haʔ²³ k^ho⁰]
 → [ŋuai³¹ k^han⁵¹ ŋiɛŋ²¹³ ʔi⁴⁴ tsuoŋ²¹ xi⁴⁴ ʒiɛʔ²³ nøyŋ⁵¹ p^haʔ²³ ʔo⁰]
 I see he tsuoŋ that Cl people hit PERF
 ‘I saw him hit that person.’
- b. [我看见伊]t [将许隻依拍去]t
 ‘I saw HIM (but not others) hit that person.’
- (33)a. [侬家 班 其 诸娘团 野 聪明]t
 [nan⁵¹ ka⁴⁴ paŋ⁴⁴ ki⁰ tsy⁴⁴ noyŋ⁵¹ kian³¹ ʔia³¹ ts^huŋ⁴⁴ miŋ⁵¹]
 → [nan⁴⁴ ŋa⁴⁴ paŋ⁴⁴ ŋi⁰ tsy⁵¹ noyŋ³¹ ŋian³¹ ʔia²¹ ts^huŋ⁴⁴ miŋ⁵¹]
 we class POSS girl very smart
 ‘Girls in our class are very smart.’
- b. [侬家班其诸娘团]t [野聪明]t
 ‘Girls (but not boys) in our class are very smart.’

Similar to ι -restructuring in other languages, the restructuring of the intonational phrase in the Fuzhou dialect is often restricted by certain syntactic constraints we have seen in Section 8.1.2. From the relevant data in the Fuzhou dialect, it can be seen that ι -restructuring in this dialect occurs at the end of a noun phrase in many cases. For example, the sentence in (29a), which can form a single long intonational phrase as in (29b), can be broken down into short intonational phrases as in (34a, b), in which ι -restructuring takes place after noun phrases. By contrast, ι -restructuring is not likely to occur after the verb 去 ‘to go’ or 买 ‘to buy’, as shown in (34c, d).

(34)a. [礼拜早头] ι [我跟爸奶齐去许间店] ι [买做年其衣裳] ι (= 29c)

b. [礼拜早头] ι [我跟爸奶] ι [齐去许间店] ι [买做年其衣裳] ι

c.? [礼拜早头] ι [我跟爸奶齐去] ι [许间店买做年其衣裳] ι

d. ? [礼拜早头] ι [我跟爸奶齐去许间店买] ι [做年其衣裳] ι

‘I went together with my parents to that store on Sunday morning to buy clothes for the Chinese New Year.’

In the Fuzhou dialect, NP constraint can also be demonstrated in embedded possessive constructions like (35), in which the original intonational phrase in (35a) can only be restructured as in (35b) where the restructuring occurs at the end of the subject NP. The restructuring in (35c-d), by contrast, is not acceptable, since it occurs inside the subject NP.

- (35)a. [大伯 其 囡 其 先生 野 后生]t
 [tuai²⁴² pa²³ ki⁰ kian³¹ ki⁰ sin⁴⁴ saŋ⁴⁴ ɣia³¹ xau²⁴² saŋ⁴⁴]
 → [tuai⁵¹ βa²³ ɣi⁰ kian³¹ ŋi⁰ sin⁴⁴ naŋ⁴⁴ ɣia²¹ xau⁴⁴ laŋ⁴⁴]
 father's older brother POSS son POSS teacher very young
 'Father's older brother's son's teacher is very young.'
- b. [大伯其囡其先生]t [野后生]t
- c. * [大伯]t [其囡其先生野后生]t
- d. * [大伯其囡]t [其先生野后生]t

Moreover, NP constraint in Fuzhou can be seen in cases where obligatory intonational phrases are formed. As noted in Nespor & Vogel (1986), regardless of where syntactic constructions such as parenthetical expressions, vocatives, and expletives occur in a sentence, they obligatorily form an intonational phrase. In the Fuzhou dialect, nevertheless, it is more acceptable if the intonational phrase formed by those constructions is inserted at the end of a noun phrase, as in (36a-b), while it is less acceptable to insert such an intonational phrase after a verb or other syntactic constituents, as in (36c-d).

- (36)a. [只 隻 侬]t [汝 会 伙 其]t [是 蜀 隻 呆 侬]t
 [tsi³¹ tsiε²³ nøyŋ⁵¹][ny³¹ ɣa²⁴² pai²³ ki⁰][sei²⁴² suo²⁵ tsiε²³ ŋai⁵¹ nøyŋ⁵¹]
 → [tsi⁴⁴ ʒiε²³ nøyŋ⁵¹][ny³¹ ɣa⁵¹ pai²³ ɣi⁰] [si⁵¹ suo²¹ ʒiε²³ ŋai³¹ nøyŋ⁵¹]
 this Cl people you can know NOM be one Cl bad people
 'This person, as you know, is a bad guy.'

b. [只 隻 依 是 蜀 隻 呆 依,]t [汝 会 伙 其]t
 [tsi³¹tsiɛʔ²³ nøyŋ⁵¹ sei²⁴² suoʔ⁵ tsiɛʔ²³ ŋai⁵¹ nøyŋ⁵¹] [ny³¹ʔa²⁴² paiʔ²³ ki⁰]

→ [tsi⁴⁴ʒiɛʔ²³ nøyŋ⁵¹ si⁵¹ suoʔ²¹ ʒiɛʔ²³ ŋai³¹ nøyŋ⁵¹] [ny³¹ʔa⁵¹ paiʔ²³ ʔi⁰]

this Cl people be one Cl bad people you can know NOM

‘This person is a bad guy, as you know.’

c. ? [只 隻 依 是,]t [汝 会 伙 其,]t [蜀 隻 呆 依]t

[tsi³¹tsiɛʔ²³ nøyŋ⁵¹ sei²⁴²] [ny³¹ʔa²⁴² paiʔ²³ ki⁰] [suoʔ⁵tsiɛʔ²³ ŋai⁵¹nøyŋ⁵¹]

→ [tsi⁴⁴ʒiɛʔ²³ nøyŋ⁵¹ sei²⁴²] [ny³¹ʔa⁵¹ paiʔ²³ ʔi⁰] [suoʔ²¹ʒiɛʔ²³ ŋai³¹nøyŋ⁵¹]

this Cl people be you can know NOM one Cl bad people

‘This person is, as you know, a bad guy.’

d. ? [只 隻 依 是 蜀 隻,]t [汝 会 伙 其,]t [呆 依]t

[tsi³¹tsiɛʔ²³ nøyŋ⁵¹ sei²⁴² suoʔ⁵ tsiɛʔ²³] [ny³¹ʔa²⁴² paiʔ²³ ki⁰] [ŋai⁵¹ nøyŋ⁵¹]

→ [tsi⁴⁴ʒiɛʔ²³ nøyŋ⁵¹ si⁵¹ suoʔ²¹ ʒiɛʔ²³] [ny³¹ʔa⁵¹ paiʔ²³ ʔi⁰] [ŋai³¹ nøyŋ⁵¹]

this Cl people be one Cl you can know NOM bad people

‘This person is a, as you know, bad guy.’

Although t-restructuring in the Fuzhou dialect occurs after noun phrases in many cases, it does not mean that restructuring can occur after all types of noun phrases. When a verb takes two obligatory arguments, it is usually the case that the intonational phrase boundary is assigned at the end of the second argument in the string, as exemplified in (37a), but not at the end of the first argument, as exemplified in (37b).

- (37)a. [先生 送 蜀 本 书 乞 侬家 其 爸奶]_t
 [siŋ⁴⁴ saŋ⁴⁴ soŋŋ²¹³ suoŋ⁵ puoŋ³¹ tsy⁴⁴ k^høyŋ²³ naŋ⁵¹ ka⁴⁴ ki⁰ pa²⁴² ne³¹]
 → [siŋ⁴⁴ naŋ⁴⁴ soŋŋ²¹³ suoŋ³¹ βuoŋ³¹ tsy⁴⁴ k^høyŋ²³ naŋ⁴⁴ ŋa⁴⁴ ʔi⁰ pa⁵¹ ne³¹]
 teacher give one Cl book give we POSS parents
 ‘The teacher gave a book to our parents.’
- b. ? [先生送蜀本书]_t [乞侬家其爸奶]_t

In the Fuzhou dialect, an obligatory argument can be separated from its verb by *t*-restructuring when the argument is a sentence, as exemplified in (38), in which the restructuring in (38b) is acceptable. This indicates that *t*-restructuring in the Fuzhou dialect can occur before the beginning of a new S', as in English (see Section 8.1.2), and that S' constraint is stronger than obligatory argument constraint in Fuzhou.

- (38)a. [我见觉许隻先生兴趣泗水]_t (= 31b)
 b. [我见觉]_t [许隻先生兴趣泗水]_t
 ‘I think that that teacher is interested in swimming.’

Thus we can find that the beginning of a new S' is another position where *t*-restructuring in the Fuzhou dialect can occur. As mentioned in Section 8.1.2, in English, when the restructuring of the intonational phrase before the beginning of a new S' is in conflict with NP constraint, or in other words, if such a *t*-restructuring occurs inside a noun phrase, the resulting division of an utterance is not acceptable, as exemplified in (39) (=14).

- (39) a. [I though you knew the family that was moving to southern Italy]_ι
 b. * [I though you knew the family]_ι [that was moving to southern Italy]_ι

As we can see from (39b), an intonational phrase boundary is assigned before the beginning of the relative clause (i.e., ‘that was moving to southern Italy’). This is not allowed since the boundary is inserted inside the noun phrase ‘the family that was moving to southern Italy’, which thus violates NP constraint. Hence, Nespor & Vogel (1986) claims that NP constraint is stronger than S’ constraint. This conclusion, however, can neither be verified nor falsified in the Fuzhou dialect. The Fuzhou dialect employs the syntactic construction “clause+其” before the head noun to function as the relative clause, as in (28), in which the relative clause 骹断了其 ‘the leg was broken+MOD’ modifies the head noun 侬 ‘people’. Since the relative clause is always located preceding the head noun in the Fuzhou dialect, ι -restructuring before the beginning of the relative clause would never occur inside the noun phrase. Hence, in this dialect, it appears that no evidence can be provided to rank NP constraint over S’ constraint or the other way around. Since the obligatory argument constraint can be violated when an obligatory argument is a sentence, a hierarchy among these three constraints in the Fuzhou dialect may be proposed as: NP/S’ >> obligatory argument.

It is noteworthy that although NP constraint, S’ constraint, and obligatory argument constraint play an important role in ι -restructuring in the Fuzhou dialect, they are not inviolable. Since the intonational phrase in the Fuzhou dialect dominates one or more phonological phrases/clitic groups, the restructuring usually occurs at the juncture between two phonological phrases/clitic groups. However, in the Fuzhou

dialect, *ɪ*-restructuring that is caused by performance factors (rate/style of speech) and semantic factors (contrastive prominence) may take place inside a phonological phrase/clitic group. Specifically, when a string is uttered at a very slow tempo or a particular part in a string is emphasized, a phonological phrase or a clitic group contained in the original intonational phrase may be divided into two parts. And these two parts are separated by boundaries of intonational phrases and are thus contained in two adjacent intonational phrases. The *ɪ*-restructuring occurring within a phonological phrase or a clitic group thus may violate the three constraints discussed above. The insertion of intonational phrase boundaries inside the phonological phrase or the clitic group and relevant phonological phenomena will be discussed in detail in Section 8.3.

Relevant data show that lists constitute another special case in the restructuring of the intonational phrase in the Fuzhou dialect, as they do in English and other languages.⁶⁶ As can be seen in the following examples, each item in a list can form an independent intonational phrase since pauses may be introduced on both sides of each item.

- (40) a. [伊 是 蜀 隻]_ɪ [聰明]_ɪ [好疼]_ɪ
 [ʔi⁴⁴sei²⁴² suo^{ʔ5} tsiɛ^{ʔ23}] [ts^huŋ⁴⁴ miŋ⁵¹] [xo³¹ t^hiaŋ²¹³]
 → [ʔi⁴⁴si⁵¹ suo^{ʔ21} ʒiɛ^{ʔ23}] [ts^huŋ⁴⁴ miŋ⁵¹] [xo⁴⁴ liaŋ²¹³]
 she be one Cl smart cute

⁶⁶ According to my informants, complexly embedded constructions like those we have seen in Section 8.1.2 are rarely used in the Fuzhou dialect. Hence the case of complexly embedded constructions will not be discussed in this chapter.

- [听嘴 其 诸娘团]t
 [t^hiaŋ⁴⁴ ts^hui²¹³ ki⁰ tsy⁴⁴ noyŋ⁵¹ kian³¹]
 → [t^hiaŋ⁵¹ ʒui²¹³ ʔi⁰ tsy⁵¹ noyŋ³¹ ŋian³¹]
 obedient MOD girl
 ‘She is a smart, cute, obedient girl.’
- b. [洗汤房 里势 有 两 把 牙刷,]t
 [sɛ³¹ touŋ⁴⁴ puŋ⁵¹ tiɛ³¹ siɛ²¹³ ʔou²⁴² laŋ²⁴² pa³¹ ŋai³¹ sou²³]
 → [sɛ²¹ louŋ⁴⁴ muŋ⁵¹ tiɛ⁴⁴ liɛ²¹³ ʔu²¹ laŋ⁵¹ ma³¹ ŋai⁴⁴ lou²³]
 bathroom inside have two Cl toothbrush
 [两 把 头梳,]t [共 四 块 面布]t
 [laŋ²⁴² pa³¹ t^hau⁵¹ sœ⁴⁴] [koyŋ²⁴² sei²¹³ toy²¹³ meŋ²¹³ puo²¹³]
 → [laŋ⁵¹ ma³¹ t^hau⁴⁴ lœ⁴⁴] [koyŋ²⁴² si⁵¹ loy²¹³ miŋ⁵¹ muo²¹³]
 two Cl comb and four Cl face towel
 ‘There are two toothbrushes, two combs, and four face towels in the bathroom.’
- c. [包 粽,]t [挂 艾,]t [做 香包,]t
 [pau⁴⁴ tsoyŋ²¹³][kua²¹³ ŋiɛ²¹³] [tso²⁴² xyoŋ⁴⁴ pau⁴⁴]
 → [pau⁵¹ tsoyŋ²¹³][kua⁵¹ ŋiɛ²¹³] [tso²¹ xyoŋ⁴⁴ mau⁴⁴]
 wrap zongzi⁶⁷ hang argyi do scent bag
 [扒 龙船,]t [是 五月节 其 风俗]t
 [pa⁵¹ luŋ⁵¹ suŋ⁵¹] [sei²⁴² ŋu²⁴² ŋuo²⁵ tsai²³ ki⁰ xuŋ⁴⁴ sy²⁵]
 → [pa³¹ luŋ³¹ nuŋ⁵¹] [si²¹ ŋu²¹ ŋuo²⁵ tsai²³ ʔi⁰ xuŋ⁴⁴ ny²⁵]
 row dragon boat be Dragon Boat Festival POSS custom

⁶⁷ 粽 ‘zongzi’ is a kind of pyramid-shaped dumplings that are made of glutinous rice.

‘Making *zongzi*, hanging argyi grass, making scent bags, and racing dragon boats, are customs of the Dragon Boat Festival.’

- d. [福州 有 三山,]t [于山,]t [乌石山,]t
 [xuʔ²³ tsiu⁴⁴ ʔou²⁴² san⁴⁴ san⁴⁴] [ʔy⁴⁴ san⁴⁴] [ʔu⁴⁴ suo⁵ san⁴⁴]
 → [xuʔ²¹ tsiu⁴⁴ ʔu²¹ san⁴⁴ nan⁴⁴] [ʔy⁴⁴ lan⁴⁴] [ʔu²¹ luo⁴⁴ lan⁴⁴]
 Fuzhou have Three Mountains Mt. Yu Mt. Wushi
 [共 屏山]t
 [koyŋ²⁴² piŋ⁵¹ san⁴⁴]
 → [koyŋ²⁴² piŋ⁴⁴ nan⁴⁴]
 and Mt. Ping

‘Fuzhou has Three Mountains: Mt. Yu, Mt. Wushi, and Mt. Ping.’

Similar to the problem posed by lists in other languages, the case of lists in the Fuzhou dialect can be well handled by the rule of List Restructuring in (17) proposed by Nespor & Vogel (1986), according to which an intonational phrase boundary is inserted before each item in the list.

8.2.3 Summary

In Section 8.2, I have investigated the intonational phrase in the Fuzhou dialect from the point of view of intonation contours, potential pause positions, as well as the restructuring of the domain, and I have shown that the intonational phrase in Fuzhou is similar to the intonational phrase in other languages in these aspects.

On the one hand, the intonational phrase in Fuzhou is the domain of intonation contours and the boundaries of an intonational phrase should be inserted in the positions where pauses may be introduced. Hence root sentences and certain syntactic constructions, such as parenthetical expressions, vocatives, expletives, appositives, and certain moved elements, can form intonational phrases on their own in this dialect. Based on such observations, the basic domain formation rule of the intonational phrase in Fuzhou has been proposed. This basic rule is built on Nespor & Vogel's (1986) cross-linguistic account of ι -formation, with the addition of the idea that the intonational phrase can directly dominate both the clitic group and the phonological phrase in this dialect.

On the other hand, as demonstrated by relevant data in the Fuzhou dialect, ι -restructuring in this dialect depends on a variety of factors including the length of the original intonational phrase, the rate and the style of speech, and contrastive prominence, similar to the restructuring of the intonational phrase in other languages. Another property of ι -restructuring shared by the Fuzhou dialect and other languages is that the restructuring is restricted by NP constraint, S' constraint, and obligatory argument constraint. Fuzhou is slightly different from languages discussed in Nespor & Vogel (1986) in that NP constraint appears as strong as S' constraint in ι -restructuring in the Fuzhou dialect. Moreover, we have seen that the rule of List Restructuring proposed by Nespor & Vogel (1986) can account for the intonational phrasing of lists in the Fuzhou dialect, which again, shows that the restructuring of the intonational phrase in Fuzhou behaves similarly to that in other languages.

8.3 Phonological phenomena related to the intonational phrase in the Fuzhou dialect

In addition to serving as the domain over which an intonation contour is spread, the intonational phrase in the Fuzhou dialect is also relevant to certain phonological phenomena in this dialect. As I will show in this section, the intonational phrase in the Fuzhou dialect has two distinctive phonological properties that can distinguish the intonational phrase from other prosodic constituents. On the one hand, all of the major Fuzhou phonological rules are blocked across the boundaries of intonational phrases. Hence, if *t*-restructuring occurs inside a phonological phrase or a clitic group due to performance factors or semantic factors, phonological rules that are expected to apply inside these lower domains would be blocked. On the other hand, when one or more lower domains are contained in a single intonational phrase that is uttered at a rapid tempo, phonological rules that are blocked within these embedded domains or across the boundaries of these domains may be optionally triggered.

Let us begin with the first distinctive phonological property of the intonational phrase domain in the Fuzhou dialect. It has long been noticed that phonological rules in the Fuzhou dialect cannot be triggered across intonational phrases. As mentioned in Chapter VI, Chen & Norman (1965a) distinguish four types of junctures, one of which is terminal juncture. Chen & Norman point out that terminal juncture is a pause or actual stop in the flow of speech and is always associated with intonation contours. According to the discussion in Section 8.1 and Section 8.2, we can find that so-called terminal juncture in Chen & Norman's terminology is actually the boundaries of intonational phrases in Fuzhou. Chen & Norman argue that the TS rule is blocked before this type of juncture and syllables following it will not undergo CL. Since the

FC rule is tonally-conditioned and always occurs together with TS, it will be blocked before this juncture as well. Relevant data in the Fuzhou dialect provide evidence for these observations and demonstrate that actually all the major phonological rules in Fuzhou are blocked across the boundaries of intonational phrases, as exemplified in (41), in which the blocking of phonological rules relevant to the discussion in this section is marked by “#” and sandhi forms in question are marked in bold.

- (41)a. [噉 是 蜀 间 野 好 其 店]t [陈 先生
 [tsui⁵¹ sei²⁴² suoʔ⁵ kan⁴⁴ ʔia³¹ xo³¹ ki⁰ taiŋ²¹³] [tiŋ⁵¹ siŋ⁴⁴ san⁴⁴
 → [tsui⁵¹ si⁵¹ suoʔ⁴⁴ ʔaŋ⁴⁴ ʔia²⁴ ʔo³¹ ʔi⁰ taiŋ²¹³]# [tiŋ²¹ siŋ⁴⁴ nan⁴⁴
 *[tsui⁵¹ si⁵¹ suoʔ⁴⁴ ʔaŋ⁴⁴ ʔia²⁴ ʔo³¹ ʔi⁰ **teiŋ⁵¹**] [**niŋ²¹** siŋ⁴⁴ nan⁴⁴
 this be one Cl very good MOD store Chen teacher
 每日 都 来]t
 mui³¹ niʔ⁵ tu⁴⁴ li⁵¹]
 → mui²¹ niʔ⁵ tu⁴⁴ li⁵¹]
 mui²¹ niʔ⁵ tu⁴⁴ li⁵¹]
 every day all come

‘This is a very nice store. Mr. Chen comes here every day’

- b. [生 野 俊,]t [许 隻 诸娘圉]t
 [san⁴⁴ ʔia³¹ tsouŋ²¹³] [xi³¹ tsiεʔ²³ tsy⁴⁴ noyŋ⁵¹ kian³¹]
 → [san⁴⁴ ʔia⁴⁴ ʒouŋ²¹³]# [xi⁴⁴ ʒiεʔ²³ tsy⁵¹ noyŋ³¹ ŋian³¹]
 *[san⁴⁴ ʔia⁴⁴ ʒuŋ²¹] [**ŋi⁴⁴** ʒiεʔ²³ tsy⁵¹ noyŋ³¹ ŋian³¹]
 grow very beautiful that Cl girl

‘She is very beautiful, that girl.’

- c. [伊讲]ᵀ [骹断了其许隻依]ᵀ [昨暝
 [ʔi⁴⁴kouŋ³¹] [k^ha⁴⁴ touŋ³¹ lau³¹ ki⁰ xi³¹ tsiɛʔ²³ nøyŋ⁵¹] [soʔ²³ maŋ⁵¹
 → [ʔi⁴⁴kouŋ³¹]#[k^ha⁴⁴ touŋ³¹ nau³¹ ʔi⁰ xi⁴⁴ ʒiɛʔ²³ nøyŋ⁵¹]#[soʔ⁵¹ maŋ⁵¹
 *[ʔi⁴⁴kouŋ²¹][ŋa⁴⁴ touŋ³¹ nau³¹ ʔi⁰ xi⁴⁴ ʒiɛʔ²³ nøyŋ²¹] [noʔ⁵¹ maŋ⁵¹
 he speak leg break CRS MOD that Cl people yesterday
 敲 街中]ᵀ [乞 别依 拍 去]ᵀ
 kaʔ⁵ kɛ⁴⁴ touŋ⁴⁴] [k^høyʔ²³ peiʔ⁵ nøyŋ⁵¹ p^haʔ²³ k^ho⁰]
 → kaʔ²¹ kɛ⁴⁴ louŋ⁴⁴]#[k^høyʔ²³ peiʔ³¹ nøyŋ⁵¹ p^haʔ²³ ʔo⁰]
 *kaʔ²¹ kɛ⁴⁴ louŋ⁵¹] [ŋøyʔ²³ peiʔ³¹ nøyŋ⁵¹ p^haʔ²³ ʔo⁰]
 in on the street PASS other people hit PERF
 ‘He said that the person whose leg was broken was hit by other people
 on the street yesterday.’

- d. [包粽]ᵀ [挂艾]ᵀ [做香包]ᵀ [扒
 [pau⁴⁴ tsoyŋ²¹³] [kua²¹³ ŋiɛ²¹³] [tso²⁴² xyoŋ⁴⁴ pau⁴⁴] [pa⁵¹
 → [pau⁵¹ tsoyŋ²¹³]#[kua⁵¹ ŋiɛ²¹³]#[tso²¹ xyoŋ⁴⁴ mau⁴⁴]#[pa³¹
 *[pau⁵¹ tsoyŋ²¹] [ŋua⁵¹ ŋiɛ²¹] [ʒo²¹ xyoŋ⁴⁴ mau²¹] [βa³¹
 wrap zongzi hang argyi do scent bag row
 龙船]ᵀ [是 五月节 其 风俗]ᵀ
 luŋ⁵¹ suŋ⁵¹] [sei²⁴² ŋu³¹ ŋuoʔ⁵ tsaiʔ²³ ki⁰ xuŋ⁴⁴ syʔ⁵]
 → luŋ³¹ nuŋ⁵¹]#[si²¹ ŋu²¹ ŋuoʔ⁵¹ tsaiʔ²³ ʔi⁰ xuŋ⁴⁴ nyʔ⁵]
 *luŋ³¹ nuŋ²¹] [ni²¹ ŋu²¹ ŋuoʔ⁵¹ tsaiʔ²³ ʔi⁰ xuŋ⁴⁴ nyʔ⁵]
 dragon boat be Dragon Boat Festival POSS custom

‘Making *zongzi*, hanging argyi grass, making scent bags, and racing dragon boats, are customs of the Dragon Boat Festival.’

Three types of intonational phrases we have seen in Section 8.2 are presented in (41), namely intonational phrases formed by root sentences, as in (41a), intonational phrases formed by syntactic constructions that obligatorily form *ts*, as in (41b), and intonational phrases formed by *t*-restructuring, as in (41c) and (41d). From examples in (41), we can find that TS, FC, and CL in the Fuzhou dialect are all blocked across the boundaries of these intonational phrases.

Moreover, it has been reported in the literature that when a string is uttered at a very slow tempo or a particular part in a string is emphasized in the Fuzhou dialect, the application of phonological rules at certain positions tends to be blocked (cf. Chen 1998, Li & Liang 2001, Li 2002, among others), as exemplified in (42). Segments and tones in question are marked in bold.

- (42)a. 我 有 三 隻 囡
 ŋuai³¹ ʔou²⁴² saŋ⁴⁴ tsiɛʔ²³ kian³¹
 → ŋuai³¹ **ʔu**²¹ saŋ⁵¹ ʒiɛʔ²³ kian³¹ (no emphasis)
 → ŋuai³¹ **ʔou**²⁴² saŋ⁵¹ ʒiɛʔ²³ kian³¹ (emphasis on 有 ‘to have’)
 I have three Cl son
 ‘I have three sons.’

- b. 只 隻 依 野 好
 tsi³¹ tsiɛʔ²³ nøyŋ⁵¹ ʔia³¹ xo³¹
 → tsi⁴⁴ ʒiɛʔ²³ nøyŋ⁵¹ ʔia²⁴ ʔo³¹ (normal rate of speech)
 → tsi⁴⁴ ʒiɛʔ²³ nøyŋ⁵¹ ʔia³¹ xo³¹ (slow rate of speech)
- this Cl people very good
- ‘This person is very good.’

We can find that each example in (42) may have two readings on the surface. In (42a), when the proclitic 有 ‘to have’ is not emphasized, it undergoes TS and FC since it is incorporated into the Type B clitic group with the following phonological phrase. By contrast, when it is assigned prominence, it is read in its isolation tone and final. In (42b), when the sentence is uttered at a normal rate of speech, 野 ‘very’ undergoes TS and 好 ‘good’ undergoes CL since they together form a phonological phrase. By contrast, if the sentence is uttered at a slow tempo and the articulation process of 野 is lengthened, neither TS nor CL applies. As discussed in Section 8.1 and Section 8.2, factors such as the rate/style of speech and contrastive prominence play a role in the restructuring of the intonational phrase in the world’s languages, including the Fuzhou dialect. Hence examples in (42) can be assumed to serve as evidence for the possibility that *t*-restructuring caused by performance factors (slow rate/formal style of speech) and semantic factors (assignment of contrastive prominence) can take place inside a phonological phrase/clitic group in the Fuzhou dialect. In that case, a phonological phrase or a clitic group contained in the original intonational phrase would be divided into two parts. As presented in (43), these two

parts are separated by the inserted boundaries of intonational phrases and are thus contained in two adjacent intonational phrases, although this violates the NP constraint mentioned in Section 8.2.2. The blocking of rules that is relevant to the discussion in this section is indicated by “#”.

- (43)a. [我 有 三 隻 囡]t (root sentence)
 [我 有]t [三 隻 囡]t (emphasis on 有 ‘to have’)
 [ŋuai³¹ ʔou²⁴²] [saŋ⁴⁴ tsiɛʔ²³ kian³¹]
 → [ŋuai³¹ ʔou²⁴²]#[saŋ⁵¹ ʒiɛʔ²³ kian³¹]
 I have three Cl son
 ‘I have three sons.’
- b. [只 隻 依 野 好]t (root sentence)
 [只 隻 依 野]t [好]t (slow rate of speech)⁶⁸
 [tsi³¹tsiɛʔ²³ nøyŋ⁵¹ ʔia³¹] [xo³¹]
 → [tsi⁴⁴ʒiɛʔ²³ nøyŋ⁵¹ ʔia³¹]# [xo³¹]
 this Cl people very good
 ‘This person is very good.’

Since TS, FC, and CL in the Fuzhou dialect are all blocked across the boundaries of intonational phrases, as we have seen in (41), it is reasonable to assume that it is the t-restructuring caused by performance factors and semantic factors that blocks the application of these phonological rules in (43).

⁶⁸ Notice that in this case, the first resulting intonational phrase is clearly not isomorphic to any morpho-syntactic structures.

Let us now move on to the other distinctive phonological property of the intonational phrase in Fuzhou. It has been observed that when an intonational phrase is uttered at a rapid tempo, phonological rules that are expected to be blocked within or across the boundaries of the embedded domains may be optionally, though not always, triggered (cf. Shih 1986, Li et al 1994). Consider the following examples. Positions where phonological rules are expected to be blocked are marked by “#” while positions where rules are optionally triggered are marked by “=”.

- (44) a. [[食]_φ [大 葡萄]_φ]_t
 [[siɛʔ⁵] [tuai²⁴² pu⁵¹ to⁵¹]]
 → [[siɛʔ⁵]_# [tuai⁵¹ pu³¹ lo⁵¹]] (normal rate of speech)
 → [[siɛʔ²¹]=[tuai⁵¹ pu³¹ lo⁵¹]] (rapid tempo)
 eat big grape ‘to eat big grapes’
- b. [[看见 老板]_φ]_t (adapted from Shih 1986)
 [[k^haŋ²¹³ kiɛŋ²¹³ lo³¹ peiŋ³¹]]
 → [[k^haŋ⁵¹ ŋiɛŋ²¹³ # lo²⁴ peiŋ³¹]] (normal rate of speech)
 → [[k^haŋ²¹ ŋiɛŋ²¹ = lo²⁴ peiŋ³¹]] (rapid tempo)
 see boss ‘to see the boss’
- c. [[天]_φ [长]_φ [地]_φ [久]_φ]_t (adapted from Li et al 1994)
 [[t^hiɛŋ⁴⁴] [tuon⁵¹] [tei²⁴²] [kiu³¹]]
 → [[t^hiɛŋ⁴⁴]_# [tuon⁵¹]_# [tei²⁴²]_# [kiu³¹]] (normal rate of speech)
 → [[t^hiɛŋ²¹]=[nuon²¹]=[ni⁵¹]=[ʔiu³¹]] (rapid tempo)
 sky long earth long
 ‘enduring as the universe (everlasting and unchanging)’

As we can see in (44a), when the intonational phrase is uttered at a normal rate of speech, no phonological rules can apply between the verb 食 ‘to eat’ and the complex object 大葡萄 ‘big grape’ since the verb and the object are contained in two separated phonological phrases according to the ϕ -formation rule proposed in Chapter VI. However, when the intonational phrase is produced at a rapid tempo, the TS rule can be triggered. Another example can be seen in (44b), in which the second syllable of the verb 看见 ‘see’ is not expected to undergo TS following the Restriction on Rule Application proposed in Chapter VI. When the intonational phrase is uttered quickly, nevertheless, TS applies to the second syllable of 看见 ‘to see’. The example in (44c) provides further evidence for the possibility that a rapidly uttered intonational phrase can lead to the application of phonological rules inside the domain. It can be seen that the noun 天 ‘sky’ and the adjective 长 ‘long’ form a subject-predicate construction and so do 地 ‘earth’ and 久 ‘long’. Hence the string in (44c) forms four phonological phrases following the discussion in Chapter VI and thus no phonological rules can apply across their boundaries. However, when the intonational phrase that contains these phonological phrases is uttered quickly, TS, FC, CL are all triggered across the internal ϕ boundaries within the domain of the intonational phrase.

The triggering of phonological rules within an intonational phrase that is uttered at a rapid tempo, together with the blocking of phonological rules across the intonational phrase boundaries, can thus well account for the two alternative readings in the example in (45a) (adapted from Shih 1986).

- (45)a. [固吼 信 佛教]_ɿ
 [ku²¹³ lɛ³¹ seiŋ²¹³ xuʔ⁵ kau²¹³]
 → [ku⁵¹ lɛ³¹] [siŋ⁵¹ xuʔ²¹ kau²¹³] (Reading 1)
 → [ku²¹ lɛ⁴⁴ seiŋ²¹³] [xuʔ²¹ kau²¹³] (Reading 2)
 still believe Buddhism
 ‘to still believe in Buddhism’
- b. [固吼 信 佛教]_ɿ (root sentence)
 [ku²¹³ lɛ³¹ seiŋ²¹³ xuʔ⁵ kau²¹³]
 → [ku⁵¹ lɛ³¹ siŋ⁵¹ xuʔ²¹ kau²¹³] (normal rate of speech)
- c. [固吼 信]_ɿ [佛教]_ɿ (emphasis on 信 ‘to believe’)
 [ku²¹³ lɛ³¹ seiŋ²¹³] [xuʔ⁵ kau²¹³]
 → [ku²¹ lɛ⁴⁴ seiŋ²¹³] [xuʔ²¹ kau²¹³] (rapid tempo)

As we can see in (45a), in Reading 1, 固吼 ‘still’ forms a domain of rule application and 信佛教 ‘believe in Buddhism’ forms the other. By contrast, in Reading 2, 固吼 ‘still’ and 信 ‘to believe’ are incorporated into one domain and 佛教 ‘Buddhism’ forms a domain on its own. Shih (1986) argues that the two readings in (45a) should be attributed to the application/nonapplication of the optional Tone Group Expansion rule (see Chapter VI)—when it applies, 信 ‘to believe’ and 佛教 ‘Buddhism’ are grouped together, while they will be separated when the expansion rule does not apply. However, following the discussion of phonological properties of the _ɿ domain in the Fuzhou dialect, I would argue that the variability in the reading of the example in (45a) is simply due to the relatively large degree of variability in the formation of

intonational phrases. As we can see in (45b), the string forms an intonational phrase on its own since it is a root sentence. The string within this ι domain forms only one ϕ domain according to the discussion in Chapter VI. Since the adverb 固吼 ‘still’ forms a prosodic word domain on its own where phonological rules can be triggered, its second syllable does not undergo TS due to the Restriction of Rule Application. Hence, on the surface, it appears that there are two sandhi domains formed by the string.⁶⁹ In (45c), on the one hand, there are two smaller intonational phrases since prominence is assigned to the verb 信 ‘to believe’. Thus there are ι boundaries between 信 ‘to believe’ and 佛教 ‘Buddhism’ and no phonological rules apply across the boundaries. On the other hand, the first intonational phrase 固吼信 ‘to still believe’ in (45c) is uttered rapidly and thus TS that is originally blocked between 固吼 ‘still’ and 信 ‘to believe’ can be triggered.

On the basis of the discussion above and examples in (41-45), it can be concluded that there are two outstanding phonological properties of the domain of the intonational phrase in the Fuzhou dialect. On the one hand, phonological rules in the Fuzhou dialect are blocked across the boundaries of intonational phrases, as shown in (41). If ι -restructuring caused by slow rate/formal style of speech or assignment of prominence occurs inside a phonological phrase or a clitic group that is contained in an intonational phrase, the insertion of internal ι boundaries will lead to the blocking of phonological rules that are supposed to apply, as we have seen in (42) and (43). On the other hand, when an intonational phrase is uttered at a rapid tempo, phonological

⁶⁹ The same reading can also be observed if prominence is assigned to the adverb 固吼 ‘still’. In that case, boundaries of intonational phrases are inserted between 固吼 ‘still’ and 信 ‘to believe’ and thus no phonological rules may apply in between.

rules that fail to apply within or across the embedded domain(s) may be triggered, as in (44). In some cases, these two properties of the ι domain in the Fuzhou dialect may give rise to a different surface reading of a particular string as compared to the normal surface reading, as exemplified in (45).

8.4 A further discussion on the Restriction on Rule Application in the Fuzhou dialect

Based on the discussions of Type A clitic group and the phonological phrase in the Fuzhou dialect, I have formally proposed the Restriction on Rule Application in this dialect in Chapter VI. I have demonstrated that this restriction can receive support from the data of the clitic group and the phonological phrase in the Fuzhou dialect. Nonetheless, this restriction seems to be violated in the following examples. Sandhi forms in question are marked in bold>.

- (46)a. [[看见 老板] $_{\varphi}$] $_{\iota}$
 [[k^haŋ²¹³ kiεŋ²¹³ lo³¹ peiŋ³¹]]
 → [[k^haŋ²¹ ŋiεŋ²¹ = lo²⁴ peiŋ³¹]] (rapid tempo)
 see boss
 ‘to see the boss’
- b. [[野 中意] $_{\varphi}$] $_{\iota}$
 [[ʔia³¹ tøyŋ²¹³ ʔei²¹³]]
 → [[ʔia²¹ = lɿŋ⁵¹ ŋei²¹³]] (rapid tempo)
 very like
 ‘to like (sth.) very much’

As discussed in Section 8.3, the second syllable of the verb 看见 ‘see’ in (46a) is not expected to undergo TS within the phonological phrase domain in accordance with the Restriction on Rule Application, since it forms a prosodic word domain on its own in which the application of TS is triggered. When the phonological phrase is contained in the intonational phrase that is uttered quickly, in contrast, TS applies between the second syllable of 看见 ‘to see’ and the object 老板 ‘boss’, which means the restriction is violated. The example in (46b) is also a violation of the Restriction on Rule Application. As we have seen in Chapter VI, in a phonological phrase that is composed of a modifier and a polysyllabic head, the application of CL within the phonological phrase fails to be triggered on the initial of the first syllable of the head, since the head forms a prosodic word domain where the application of CL specific to the prosodic word domain has been triggered. Hence, the surface form of (46b) is expected to be [ʔia²¹ # **tyŋ**⁵¹ ŋei²¹³]. Nevertheless, when the intonational phrase containing this phonological phrase is uttered at a rapid tempo, the Restriction on Rule Application is violated. Thus, the initial of the first syllable of the embedded prosodic word 中意 ‘to like’ undergoes CL, which is why one of my informants, Mrs. Song, suggests that the surface form [ʔia²¹ = **lyŋ**⁵¹ ŋei²¹³] may be accepted as well, as mentioned in Chapter VI.

Both examples in (46) exhibit the violation of the Restriction on Rule Application within the intonational phrase domain. Examples in (47) indicate that this restriction actually can be violated in the prosodic word domain as well. Segments in question are marked in bold.

- (47) a. [[裤]_σ [头]_σ]_ω k^hou²¹³ t^hau⁵¹ → k^hu⁴⁴ lau⁵¹ ‘trouser waist’
 b. [[备]_σ [办]_σ]_ω pei²⁴² pain²⁴² → pi⁵¹ βain²⁴² ‘to prepare’

According to the discussion in Chapter III, the final alternation rule (FA) in the Fuzhou dialect is a syllable-domain phonological constraint, which specifies how alternating finals can occur with respect to the tones within individual syllables. Thus the application of FA is triggered in the first syllable in each example in (47) since they both contain an alternating final. According to the Restriction on Rule Application, the application of FC that is specific to the prosodic word domain cannot be triggered on the first syllable since FC and FA should be treated as rules of the same type (they are both segmental rules applying to finals). However, the application of FC is clearly triggered on the first syllable in each example although the first syllable has formed a domain in which the FA rule is triggered, which constitutes another example of the violation of the Restriction on Rule Application in the Fuzhou dialect.

Therefore, it seems that the Restriction on Rule Application can only play a role in the clitic group and the phonological phrase, but not in the prosodic word and the intonational phrase. Notice that in the two cases where the restriction on rule application is violated, namely in the syllable domain contained in the prosodic word domain, and in the phonological phrase domain contained in the intonational phrase domain, the embedded domain and the larger domain are constructed on the basis of different types of information. To be specific, according to the discussion in Chapter II, the syllable is defined by making use of phonological information, while the

prosodic word is defined by making use of morpho-syntactic information; the definition of the phonological phrase is sensitive to morpho-syntactic information, while the definition of the intonational phrase is sensitive to semantic and pragmatic information. In other words, in the cases of the violation of the restriction on rule application, the embedded domain and the larger domain are prosodic units within different hierarchies in the trisected model in Figure 3 and Figure 5 in Chapter II. By contrast, in prosodic domains where the Restriction on Rule Application is obeyed, the embedded domain and the larger domain make use of the same type of information in the definition of their domains. As we have seen in Figure 3 and Figure 5 and the discussions in relevant chapters, the prosodic word (contained in the clitic group or the phonological phrase), the clitic group, as well as the phonological phrase in the Fuzhou dialect, are all sensitive to morpho-syntactic information and located within the morpho-syntax-based hierarchy. Therefore, the Restriction on Rule Application in the Fuzhou dialect can be further refined and presented as in (48).

(48) Restriction on Rule Application in the Fuzhou Dialect (finalized)

Within a given prosodic domain, the application or blocking of a particular phonological rule that is specific to this domain cannot be triggered on any constituent contained in the embedded domain, iff both (a) and (b):

- a. the application or blocking of the same type of rule specific to the embedded domain has been triggered;
- b. the larger domain and the embedded domain are defined by making use of the same type of information, i.e., located in the same hierarchy.

8.5 Summary

In this chapter, I have investigated the last prosodic constituent discussed in this dissertation, namely the intonational phrase, including its formation, possibilities of restructuring, as well as phonological phenomena that refer to this domain. Following the ideas presented in Nespor & Vogel (1986), we have seen the basic definition of the domain of the intonational phrase and the restructuring of this domain in Section 8.1. It has also been shown in Section 8.1 that the intonational phrase is not only the domain over which intonation contours are spread, but also the domain of application for segmental rules across languages.

On the basis of the claims proposed by Nespor & Vogel (1986), the intonational phrase in the Fuzhou dialect is investigated in Section 8.2 and Section 8.3. As shown in Section 8.2, the intonational phrase in the Fuzhou dialect shares most common features with the intonational phrase in other languages with respect to the formation and the restructuring of the domain. On the one hand, root sentences and some syntactic constructions such as parenthetical expressions, vocatives, expletives, appositives, and certain moved elements in this dialect form independent intonational phrases. Based on these observations, the basic domain formation rule of the intonational phrase in this dialect, which is built on Nespor & Vogel's (1986) rule, has been proposed, as re-presented in (49a-b).

On the other hand, I have demonstrated that factors such as the length of the original intonational phrase, the rate and the style of speech, and contrastive prominence, play a role in the restructuring of the intonational phrase in the Fuzhou dialect. In addition, *t*-restructuring in the Fuzhou dialect is restricted by NP constraint,

S' constraint, and obligatory argument constraint, among which NP constraint and S' constraint represent a stronger restriction on the restructuring of the intonational phrase in this dialect. Moreover, the case of lists in Fuzhou can also be handled with the rule of List Restructuring proposed by Nespor & Vogel (1986). All of these facts demonstrate that the intonational phrase in the Fuzhou dialect behaves similarly to the intonational phrase in other languages in the aspect of the formation and the restructuring of this domain. The restructuring of the intonational phrase domain in the Fuzhou dialect thus can be presented as in (49c).

(49) Intonational Phrase (IPh) domain in the Fuzhou dialect

The domain of ι in Fuzhou may consist of

- a. all the CGs/ ϕ s in a string that is not structurally attached to the sentence tree at the level of s-structure, or
- b. any remaining sequence of adjacent CGs/ ϕ s in a root sentence.
- c. ι restructuring: a ι constructed by (a) or (b) can be broken down into smaller ι s when factors such as length, rate of speech, style, contrastive prominence, and items contained in a list are involved.

In Section 8.3, I have examined the phonological properties of the intonational phrase in the Fuzhou dialect. I have shown that the formation and the restructuring of the intonational phrase are relevant to certain phonological phenomena observed in this dialect. As shown in Section 8.3, on the one hand, phonological rules including TS, FC, and CL in the Fuzhou dialect are all blocked across the boundaries of all types of intonational phrases (including those formed by root sentences, certain

syntactic constructions, and ι -restructuring). I have also shown that ι -restructuring caused by slow rate or formal style of speech and assignment of prominence may violate NP constraint, S' constraint, and obligatory argument constraint, and occur at positions inside a phonological phrase or a clitic group, which leads to the blocking of phonological rules inside these domains. On the other hand, as demonstrated by relevant Fuzhou data, when an intonational phrase is uttered at a rapid tempo, phonological rules that are originally blocked within or across the embedded domain(s) may be optionally triggered. Thus we can find that the great degree of variability in the formation/restructuring of the intonational phrase may result in the variability in the application/blocking of Fuzhou phonological rules within this domain, which distinguishes this domain from other domains in this dialect.

From the discussions in Section 8.2 and Section 8.3, we can find that the formation and the restructuring of the intonational phrase in the Fuzhou dialect share a number of common features with the intonational phrase in other languages. These commonalities show that the ι formation rule and ι -restructuring (including factors that affect the restructuring and constraints that impose restrictions on the restructuring) are universal. Nevertheless, the intonational phrase in the Fuzhou dialect does exhibit some differences as compared to the intonational phrase in other languages. For example, NP constraint and S' constraint seem to be the same in terms of the degree of the restrictions they impose on ι -restructuring. Additionally, these constraints are violable in the Fuzhou dialect since ι -restructuring caused by performance factors and semantic factors can take place inside a phonological phrase/clitic group, which is not observed in Nespor & Vogel (1986). Moreover,

when an intonational phrase is uttered quickly, phonological rules that originally do not apply may be triggered within the ι domain, which is not seen in languages like Italian and Spanish. Therefore, the investigation of the intonational phrase domain in the Fuzhou dialect shows that the basic properties of the domain are universal, while the phonological phenomena that are related to this domain constitute a language-specific issue.

Based on some data of the intonational phrase in the Fuzhou dialect, Section 8.4 presents a further discussion on the Restriction on Rule Application in the Fuzhou dialect. Section 8.4 has shown that this restriction seems to be violated within the intonational phrase containing the phonological phrase and within the prosodic word containing syllables. On the basis of the discussion in Chapter II and other relevant chapters, I have argued that the Restriction on Rule Application should be further refined in such a way that it only applies when the larger domain and the embedded domain are defined by making use of the same type of information and thus located in the same hierarchy.

Chapter IX. Conclusion

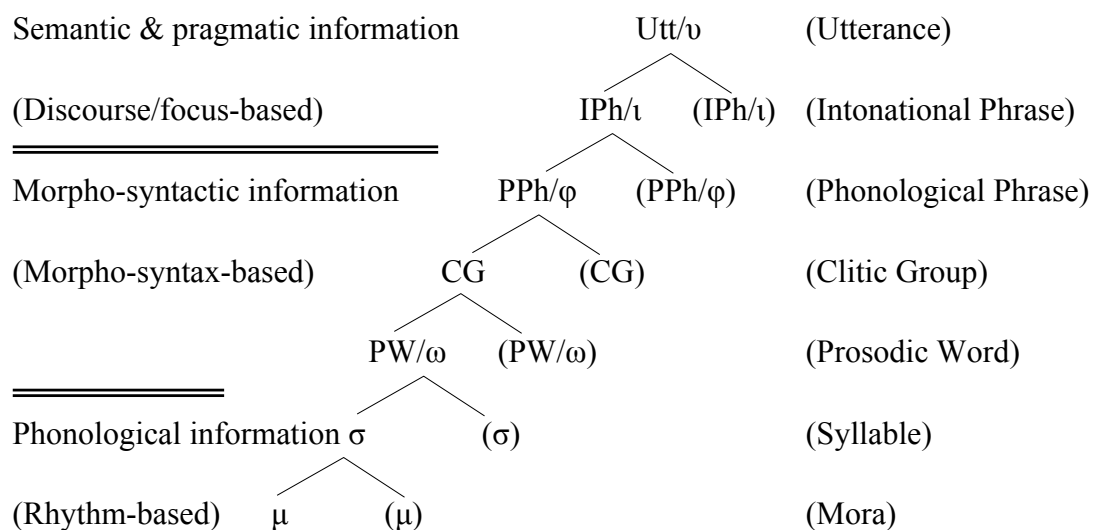
This dissertation presents a study of the Fuzhou dialect within the framework of prosodic phonology. On the one hand, it aims at providing a thorough description and analysis of the phonological system of the Fuzhou dialect by employing the concepts and approaches developed in the theory of prosodic phonology. On the other hand, this dissertation is an attempt to utilize the investigation of the Fuzhou dialect to further our understanding of prosodic phonology in general.

In order to fulfil this two-fold objective, I have studied most of the prosodic constituents in the universal prosodic hierarchy, including the syllable, the foot, the prosodic word, the clitic group, the phonological phrase, and the intonational phrase, in terms of their definitions, domain formations, as well as phonological properties in the Fuzhou dialect. I have demonstrated that most of these universal prosodic constituents should be established as indispensable prosodic domains in the prosodic phonology of the Fuzhou dialect, since there are phonological phenomena that make crucial reference to these domains. The only exception is the foot. I have shown that the foot should be excluded from the tentative prosodic hierarchy in the Fuzhou dialect proposed in Chapter II (Figure 5), due to the lack of conclusive proof for the existence of binary metrical contrast between syllables in this dialect. Additionally, I have argued that the foot does not play a role in the phonological system of the Fuzhou dialect, since there are no phonological phenomena that have to be formulated by referring to the foot. Furthermore, it is reasonable to establish the prosodic word domain in place of the foot domain.

The analyses in this dissertation do not pay special attention to the smallest constituent and the largest constituent in the universal hierarchy, namely the mora and the utterance. In Chapter III, I have discussed some previous studies claiming that the mora is the tone bearing unit in the Fuzhou dialect. Although I have demonstrated that the employment of the notion of mora in these studies is on the wrong track, I have not yet found any evidence to exclude the mora from the prosodic hierarchy in the Fuzhou dialect. Similarly, in spite of the fact that no Fuzhou phonological phenomena relevant to the utterance have been reported in the literature or observed by my informants or myself, no hard evidence has been found so far to verify the non-existence of this domain in this dialect either. Therefore, both the mora and the utterance are still maintained in the prosodic hierarchy in the Fuzhou dialect.

Based on the discussion of prosodic constituents in the Fuzhou dialect in previous chapters, the complete prosodic hierarchy in this dialect can be presented as follows.

Figure 9. Prosodic hierarchy in the Fuzhou dialect



I have explored the phonological properties of these prosodic domains in Fuzhou through a detailed inspection of the application and the blocking of phonological rules in the Fuzhou dialect. Fuzhou phonological rules examined in this dissertation include phonological tone sandhi (TS), morphological tone sandhi (MTS), final alternation (FA), final change (FC), and initial consonant lenition (CL). I have demonstrated that a given phonological phenomenon may be triggered within a particular domain but blocked within another domain in the Fuzhou dialect. Moreover, one phonological phenomenon in Fuzhou may apply within more than one prosodic domain and exhibit different degrees of application in different domains. The definition and domain formation of each major prosodic domain as well as phonological phenomena that crucially refer to these domains in the Fuzhou dialect are summarized in Table 16.

Table 16. Prosodic domains and phonological phenomena in the Fuzhou dialect

Prosodic Domain	Domain Formation and Phonological Phenomena
Syllable (σ) (Chapter III)	<p><u>Domain Formation:</u> The domain of σ is a syllable.</p> <p><u>Phonological Phenomena:</u> Application of FA</p>
Prosodic Word (ω) (Chapter IV)	<p><u>Domain Formation:</u></p> <p>The domain of ω is the terminal node of the syntactic tree.</p> <p><u>Phonological Phenomena:</u> Application of phonological phenomena is conditioned by subtypes of morpho-syntactic words:</p> <ol style="list-style-type: none"> a. Application of TS (polysyllabic monomorphemic words, derived words, compounds, and reduplicated adjectives); b. Application of MTS (“diminutive” nouns and sound-splitting words); c. Application of FC (all subtypes of morpho-syntactic words; optionally in sound-splitting words); d. Application of CL (polysyllabic monomorphemic words, derived words, compounds, and reduplicated disyllabic adjectives).

<p>Clitic Group (CG) (Chapter V & Chapter VII)</p>	<p><u>Domain Formation:</u> The domain of the CG consists of one independent (i.e., nonclitic) prosodic constituent (ω, CG, or φ), plus any adjacent</p> <ol style="list-style-type: none"> a. directional clitic(s), or b. plain clitic(s)/nondirectional clitic(s) such that there is no possible host with which they share more category memberships. <p><u>Phonological Phenomena:</u></p> <ol style="list-style-type: none"> a. Blocking of TS and FC in Type A CG (between the host and the enclitic); b. Application of CL in Type A CG (between the host and the enclitic); c. Application of TS and FC in Type B CG (between the proclitic and the host); d. Blocking of CL in Type B CG (between the proclitic and the host);
<p>Phonological Phrase (φ) (Chapter VI)</p>	<p><u>Domain Formation:</u> The domain of φ</p> <ol style="list-style-type: none"> a. Mark the right edge of every lexical head X, except where XP is an adjunct; b. On the non-recursive side of the lexical head X, mark the right edge of the first phonetically overt head Y (if any; either lexical or functional) outside of XP; ωs/CGs that are separated by the right edge of X or Y belong to different φs; c. φ restructuring: a non-branching φ, which is the first complement of X on its recursive side, is joined into the φ that contains X. <p><u>Phonological Phenomena:</u> Application of phonological phenomena is conditioned by the syntactic structure:</p> <ol style="list-style-type: none"> a. Application of TS and FC; b. Application of CL (in φs NOT constructed through φ-restructuring); c. Blocking of CL (in φs constructed through φ-restructuring).
<p>Intonational Phrase (ι) (Chapter VIII)</p>	<p><u>Domain Formation:</u> The domain of ι may consist of</p> <ol style="list-style-type: none"> a. all the CGs/φs in a string that is not structurally attached to the sentence tree at the level of s-structure, or b. any remaining sequence of adjacent CGs/φs in a root sentence.

c. ι restructuring: a ι constructed by (a) or (b) can be broken down into smaller ι s when factors such as length, rate of speech, style, contrastive prominence, and items contained in a list are involved.

Phonological Phenomena:

a. Blocking of TS, FC, and CL across ι boundaries (including those formed by root sentences, certain syntactic constructions, and ι -restructuring);

b. Optional application of TS, FC, and CL (originally blocked) in a ι that is uttered at a rapid tempo.

In addition to the phonological phenomena summarized in Table 16, I have also pointed out in this dissertation that a particular phonological phenomenon specific to a given domain may not be triggered within an embedded domain if both the internal domain and the external domain are built with reference to the same type of information and located in the same hierarchy. A number of examples have been discussed in Chapter V, Chapter VI, and Chapter VII. For instance, the application of TS and FC within the phonological phrase is not triggered within the embedded Type A clitic group domain between the prosodic word host and the enclitic, since the blocking of TS and FC has operated within this embedded clitic group. In contrast, if the embedded domain and the larger domain are constructed based on different types of information and located in different hierarchies, phonological phenomena bound to the larger domain can apply within the embedded domain, as shown in Chapter VIII. Such observations lead to the formulation of the Restriction on Rule Application in the Fuzhou Dialect, as given in (1).

(1) Restriction on Rule Application in the Fuzhou Dialect

Within a given prosodic domain, the application or blocking of a particular phonological rule that is specific to this domain cannot be triggered on any constituent contained in the embedded domain, iff both (a) and (b):

- a. the application or blocking of the same type of rule specific to the embedded domain has been triggered;
- b. the larger domain and the embedded domain are defined by making use of the same type of information, i.e., located in the same hierarchy.

The prosodic hierarchy in Figure 9, the summary of the domain formation and relevant Fuzhou phonological phenomena of each major prosodic domain in Table 16, as well as the Restriction on Rule Application in (1), well summarize the major discoveries in this study. With these discoveries and relevant discussions in previous chapters, this dissertation makes a number of contributions to the study on the Fuzhou dialect. First, this dissertation provides a comprehensive description of the phonological system of the Fuzhou dialect, especially the phonological rules and interactions between Fuzhou phonology and other components of the grammar. Second, through the discussion of the domains of application for various Fuzhou phonological phenomena, this dissertation reanalyzes and offers explanations for several long-standing controversial issues in the Fuzhou dialect within the framework of prosodic phonology, such as the existence of the foot and clitics, tone sandhi at the phrasal level, and how phonological phenomena can make reference to what kinds of morpho-syntactic information. Third, in addition to the phonological system of the

Fuzhou dialect, this dissertation touches upon many aspects of Fuzhou morphology, syntax, and even semantics, including but not limited to morphological processes of morpho-syntactic word formation, morpho-syntactic functions of clitics, and syntactic structure of phrasal constructions. Hence, this dissertation also increases the understanding of Fuzhou morphology, syntax, and semantics. Fourth, this dissertation offers a detailed description of a lot of new first-hand Fuzhou data, which will serve as a valuable source for future studies on the Fuzhou dialect.

This dissertation also provides supporting evidence for main claims of the theory of prosodic phonology and has many theoretical implications. First, it provides empirical evidence for the existence of prosodic constituents and the prosodic hierarchy. Data from the Fuzhou dialect prove that phonological rules and phonetic processes make reference to prosodic constituents as the domains of application. Second, this dissertation shows that some prosodic constituents in the Fuzhou dialect (e.g., the clitic group), though constructed with morpho-syntactic information, are not necessarily isomorphic to any morpho-syntactic structures. This not only confirms the main claim of prosodic phonology that syntactic and phonological representations are not isomorphic, but also offers another significant motivation for the establishment of prosodic constituents and the prosodic hierarchy. Third, the domain formation of each prosodic constituent in the Fuzhou dialect as well as the Restriction of Rule Application further substantiate that a given constituent should be built by referring to a specific type and amount of morphological, syntactic, or semantic information in the definition of its domain, which is not a free choice. Fourth, a prosodic constituent of a particular level n in the Fuzhou dialect may be able to dominate constituents of the

level $n-2$ or even lower (e.g., ι dominates CG and φ dominates ω), implying that the violation of Exhaustivity may be allowed in the prosodic phonology of this dialect. Fifth, the clitic group in the Fuzhou dialect may dominate another clitic group or a phonological phrase, indicating that the violation of Nonrecursivity and Layeredness is also allowed in this dialect. This, together with the fourth point, offers evidence for the necessity of a weakened Strict Layer Hypothesis entailing Zhang's (1992, 2017) stipulation. Sixth, the analysis of the phonological phrase in the Fuzhou dialect provides a new possibility of phonological phrasing by combining the EBA and the RBA. Last but not least, this dissertation proposes a restriction on rule application across the embedded domain boundaries, and demonstrates this restriction to be an integral part of the prosodic phonology of the Fuzhou dialect. Whether this restriction holds cross-linguistically or not will be a topic investigated in the future.

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