國立政治大學語言學研究所碩士論文

National Chengchi University
Graduate Institute of Linguistics
Master Thesis

指導教授：蕭宇超

Advisor：Yuchau E. Hsiao

從優選理論分析台灣閩南語的重疊構詞

An OT Approach to Reduplication in Taiwan Southern Min

研究生：許淨涵 撰

Student：Ching-Han Hsu

中華民國一百年七月

July, 2011

An OT Approach to Reduplication in Taiwan Southern Min

BY

Ching-Han Hsu

A Thesis Submitted to the
Graduate Institute of Linguistics
in Partial Fulfillment of the
Requirements for the Degree of
Master of Arts

July, 2011

The members of the Committee approve the thesis of Ching-Han Hsu

defended on May 25th, 2011

Professor Yuchau E. Hsiao

Advisor

Professor Chin-wei Wu

Committee Member

Professor Hui-shan Lin

Committee Member

Approved :

Kawai Chui, Director, Graduate Institute of Linguistics

Acknowledgements

時光飛逝，畢業不是結束，而是開始，準備邁入新階段，迎接下一個挑戰。

首先，我要感謝我的指導教授蕭宇超老師，感謝您這三年的照顧，在學業上，您總是鼓勵我積極投稿，給予我許多寶貴的意見，更讓我學會從不同的角度分析問題，非常感謝您每次撥空為我修改摘要、修改論文、寫推薦信，您總是耐心的為我指點迷津；在生活上，您總是教導我做人處事的道理也勉勵我隨時要保持樂觀、愉悅的心情，您爽朗的笑聲是音韻理論工作室充滿活力的泉源！

同時，我要感謝我的口試委員台師大英語系林蕙珊老師、台師大國文系吳瑾瑋老師在百忙之中撥冗擔任口試委員，感謝兩位老師對於論文計劃書答辯以及論文答辯時指出盲點並提供許多寶貴的意見與看法，使我的論文能更臻完美，真的太感謝你們了！

接著我要感謝求學時的所有師長，感謝徐嘉慧所長，感謝您讓我擔任您國科會計畫助理;感謝學富五車的莫建清老師、才華洋溢的何萬順老師、溫柔高雅的黃瓊之老師、美麗大方的萬依萍老師、教學認真的鍾曉芳老師，謝謝您們在課堂上的指導並傳授寶貴的知識與人生經驗，使我的學術生涯更為精進、充實;在此也要特別感謝惠鈴助教學姊在論文答辯當天鼓勵我、替我加油，每當所上有任何問題，您都可以馬上為大家解決。

我也要感謝大學求學時的語言學啟蒙者忻愛莉老師、澤田深雪老師、楊玲琨老師、王本瑛老師，感謝您們的諄諄教誨並撥空我寫推薦信。感謝一路上一直關心我論文進度的大學同學、小學同學，能夠認識你們是我的榮幸！

接下來我要感謝音韻理論工作室的夥伴：綠茜學姊、啟美、雯琪、子權，每當遇到困難，因為有大家的互相勉勵與陪伴，所有的困難都能迎刃而解，懷念每週一聚的日子，懷念一起去泰國、美國參加研討會的點點滴滴，也感謝音韻理論工作室的所有學長姐、學弟妹有你們的存在讓我的研究生涯充滿歡笑聲!感謝明德學姊、芮華學姊、旺楨學姊、復真學姊、麗婷學姊在論文計畫口試前為我加油打氣，讓我能順利通過口試！我也要感謝碩班三年的同班同學，能跟你們同班真的很幸福!

最後，我要感謝生命中最重要的家人：父親許三寶先生、母親周清虹女士、以及可愛的妹妹許款鈞。感謝你們無時無刻默默支持我、鼓勵我、一路栽培我，並且給予生活上與經濟上的支持，讓我能夠全心投入課業。在此也要感謝男友何俊昇先生一直在身旁陪伴我、照顧我，常常帶給我歡笑，讓我可以短暫忘卻完成論文的壓力。碩班三年，要感謝的人真的太多太多了!這本論文是屬於大家的!

TABLE OF CONTENTS

國 立 政 治 大 學 研 究 所 碩 士 論 文 提 要

研究所別：語言學研究所

論文名稱：從優選理論分析台灣閩南語的重疊構詞

指導教授：蕭宇超

研究生：許淨涵

論文提要內容：(共一冊，17,391 字，分五章十五節)

本文以優選理論為框架探討台灣閩南語三字組及四字組重疊構詞，三字組及四字組重疊構詞可分成完全重疊與部分重疊，重疊詞要緊鄰其對應詞基越好，此外，對於四字組部分重疊構詞有對整方向不一致的體現，筆者認為不同的制約排序會產生不同的重疊規則，並採用音韻共存理論(Cophonology Theory)來解釋閩南語多元的重疊構詞策略是由多個次語法運作的結果。在三字組重疊構詞，根據句法結構判斷主重音的位置，主重音的分佈影響重疊的規則，但有語意強調某成份時，主重音會轉移且會使原成份之本調喪失變成輕聲，有主重音的音節才可進行重疊構詞，同時，重疊詞要越緊鄰其對應詞基。在四字組完全重疊構詞，語意的強調與弱化影響詞基音節以及音步的重疊運作，音節與音步制約層級不同可解釋不同的重疊規則；在四字組部分重疊構詞，不同於過去研究以單一方向對整制約論證，筆者提出雙向的對整制約來解釋四字組部分重疊構詞。簡言之，本篇論文藉由優選理論的觀點，首度就閩南語重疊構詞提出一個整體分析。

Abstract

This thesis examines the derivation of the reduplication in Taiwan Southern Min under the framework of Optimality Theory. Reduplication can be divided into two categories. One is trisyllabic reduplication and the other is quadrisyllabic reduplication. Besides, each type of the trisyllabic and quadrisyllabic reduplication has both partial and full reduplication. This thesis adopts Cophonology Theory to account for the subgrammar of the divergent reduplications. Based on Locality Generalization, the reduplicant should be adjacent to its corresponding base. In trisyllabic reduplication, from the perspective of syntactic relation, stress affects the derivation of the reduplication. The primary stressed syllable is the only syllable which can be reduplicated. This thesis proposes constraint *RED(W) to require this condition. In quadrisyllabic reduplication, given the base is disyllable AB, semantic weakness and stress closely relate to the full reduplication AABB and ABAB. The different ranking of the Adjacency-BR-by-syllable and Adjacency-BR-by-foot explains the full reduplication. In quadrisyllabic partial reduplication, this thesis proposes the different edges alignment constraint Align(RED, R; Rightmost Monosyllabic Morpheme, L) and Align(RED, L; Leftmost Monosyllabic Morpheme, R) to explain ABAC and ABCB, respectively. In summary, based on the constraint-based theory, and the interaction of Nonhead stress, Focal stress, *RED(W), alignment, anchoring, adjacency, and contiguity constraint, this thesis has given a general explanation of the reduplication in Taiwan Southern Min.

Chapter 1

Introduction

1. Introduction

This thesis adopts Optimality Theory (Prince and Smolensky 1993/2004; McCarthy and Prince 1993, 1994/2003, among others) to investigate trisyllabic and quadrisyllabic reduplication in Taiwanese. In the previous studies of reduplication in Taiwanese, Chiang (1992) argued that only suffixation (not prefixation) is involved in all reduplications. In the case of quadrisyllabic reduplication, Chiang (1992) and Lu (1999) adopted prosodic morphology to governed reduplication. The prosodic template confined the size of the reduplication to the limited template. This thesis provides a non-derivational approach, OT, to examine reduplication in Taiwanese. Following Chiang's argument that suffixation is involved in Taiwanese reduplication, this thesis proposes the related constraints to examine the derivation of reduplication.

This thesis takes Optimality Theory as the framework to examine reduplication, in particular trisyllabic and quadrisyllabic reduplication. Trisyllabic and quadrisyllabic reduplication has a close relation to phonology, morphology, semantic, and syntax. From the disyllable AB base, A is reduplicated to form AAB or B is reduplicated to form ABB to differentiate the meaning. In AAB, for example, *hian55 khui0* 'open' which is a focus reading → *hian33 hian55 khui0* 'open' (emphasis on the verb *hian55* 'uncover'). In ABB, *hian33 khiu55* 'open' which is a regular reading → *hian33 khiu33 khiu55* 'open' (emphasis on the resultative *khui55* 'open').

Quadrisyllabic reduplication includes full reduplication and partial reduplication. In full reduplication, the disyllable AB reduplicates fully to form AABB or ABAB. AABB is a strong form, and ABAB is a weak form. In AABB, for example, *tshing khi* 'clean' → *tshing tshing khi khi* 'very clean'. In ABAB, for example, *tshing khi* 'clean' → *tshing khi tshing khi* 'a bit clean'. In partial reduplication, the trisyllable base ABC reduplicates syllable A or B to form ABAC or ABCB which has an emphatic function. In ABAC, for example, *bo li iu* 'without any reason' → *bo li bo iu* 'without any reason' (emphatic meaning). In ABCB, for instance, *kha tshiu nng* 'legs and hands are exhausted' → *kha nng tshiu nng* 'legs and hands are exhausted' (emphatic meaning).

This thesis examines the reduplication based on following questions. First, what is the direction of the reduplication? Second, what is the motivation to decide which syllable should be reduplicated in the disyllable? Third, where is the reduplicant located? Fourth, is it right reduplicated or left reduplicated? Fifth, how does adjacency relation between the reduplicant and the corresponding base exist in quadrisyllabic reduplication? Besides, in full reduplication, how does the same base undergo two reduplications? For example, in *tshing khi* 'clean' → *tshing tshing khi khi* 'very clean' and *tshing khi tshing khi* 'a bit clean'. The last one, in partial reduplication, for example, do *bo li iu* 'without any reason'→ *bo li bo iu* 'without any reason' (emphatic meaning), and *kha tshiu nng* 'legs and hands are exhausted' → *kha nng tshiu nng* 'legs and hands are exhausted' (emphatic meaning), follow the same or different direction in reduplication?

The organization of the thesis is given below. Chapter 1 gives a brief introduction of the research issues and describes the trisyllabic and quadrisyllabic reduplication of Taiwan Southern Min. Chapter 2 reviews some related theoretical backgrounds, some previous studies about how reduplication is undergone, and how the neutral tone affect the stress and semantic. Chapter 3 and Chapter 4 adopt

Optimality Theory to examine trisyllabic reduplication and quadrisyllabic reduplication in Taiwan Southern Min, respectively. Chapter 5 concludes this thesis.

Chapter 2

Literature Review

2.1 Introduction

This chapter comprises three sections. Section 2.2 gives an overview of the related theoretical background including Optimality Theory (hereafter OT) (Prince and Smolensky 1993/2004; McCarthy and Prince 1993, 1994/2003; McCarthy 2008), Correspondence Theory (McCarthy and Prince 1995), and Cophonology (as proposed by Anttila and Cho 1998, Inkelas and Zoll 2007, among others), an alternative version of OT. Section 2.3 reviews some previous studies on reduplication. Section 2.4 describes the previous studies on how stress and neutral tone influence reduplication in Taiwanese. Section 2.5 is the summary of this chapter.

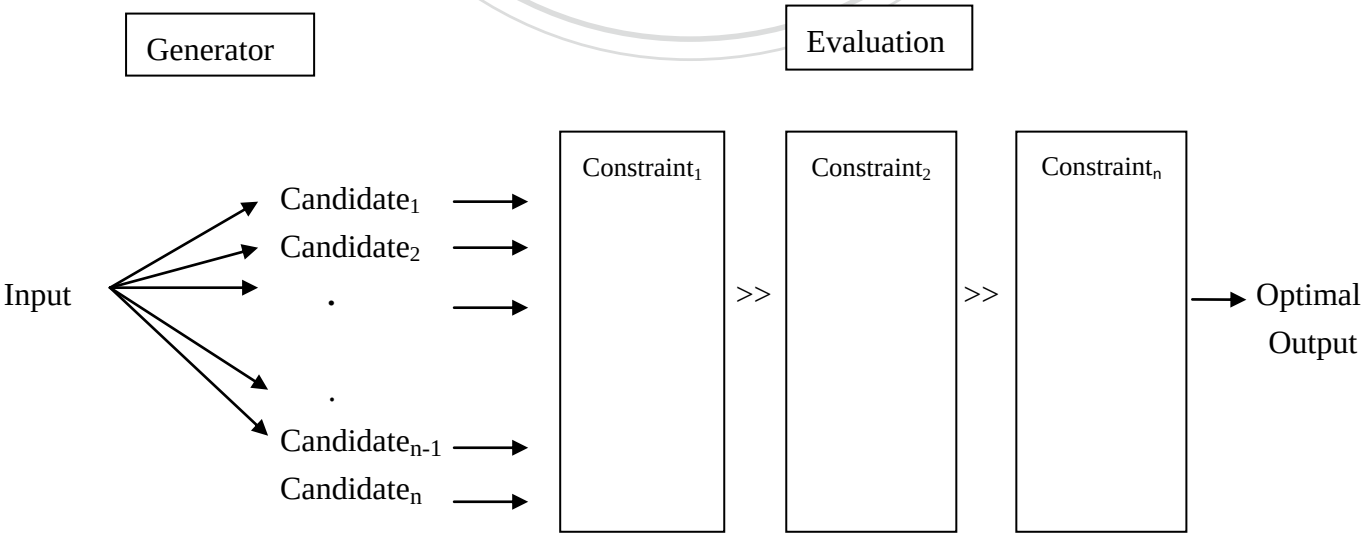
2.2 Theoretical Background

2.2.1 Optimality Theory

Prince and Smolensky (1993/2004), McCarthy and Prince (1993, 1994/2003), and McCarthy (2008) proposed Optimality Theory to highlight the interaction between constraints. These constraints are prevalent in the universal grammar. Under the framework of Optimality Theory, the universal constraints experience a ranking arrangement to reveal diverse types of language phenomena. In generative grammar,

it is forbidden to violate the universal grammar. In contrast, in Optimality Theory, constraints (universal grammar) are violable. The violation of the constraint depends on the ranking of the specific languages. The higher the ranking constraint, the less it can be violated, the lower the ranking, the more it can be violated. The distinction between Optimality Theory and traditional generative grammar is that Optimality Theory stresses the process of the evaluation of the surface form under the constraint ranking. Optimality Theory does not emphasize the process of serial derivation which the generative grammar focuses on. Since Optimality Theory is nonderivational, the evaluation of the ranking constraint is parallel. The operation is displayed as in the following chart (1). The operation undergoes two steps, Generator (GEN) and Evaluator (EVAL). An input in the GEN can create unlimited output candidates which are the potential surface forms. And then, the set of candidates enters another mechanism, EVAL. The EVAL is composed of the ranking constraints which are the universal grammars. These constraints are in conflict, and different languages have their own constraint ranking. In the process of EVAL, the candidate which violates the higher ranking constraints the least is the optimal candidate called optimal output.

(1)



(2)

Input	Constraint A	Constraint B	Constraint C	Constraint D
☞ Candidate1			*	
Candidate2	* !			*
Candidate3		* !		

Optimality Theory is displayed with the tableau as shown above in (2). This tableau is divided into two parts. In the left column, the upper left is the input and the other columns show the candidates. In the right column, the ranking constraints are ranked lower from left to right. From this tableau, it can be seen that the Constraint A which is on the furthest left is inviolable, and Constraints C and D are the lowest ranking constraint. The dash line between Constraint C and Constraint D means that Constraint C and Constraint D are at the same level in the ranking. The shadow in the tableaux means whether the constraint violated is or not is undecided. When the candidate violates the constraint, it gains an asterisk * (violation mark). When the candidate violates a higher ranking constraint, it gains an exclamation mark (!) which means fatal and the candidate is ruled out. According to tableau (2), Candidate2 violates Constraint A, the highest ranking constraint, so Candidate2 is ruled out. Candidate3 violates Constraint B, and Candidate1 violates Constraint C. In this tableau, Constraint B is ranked higher than Constraint C and Candidate3 is ruled out. Candidate 1 is the optimal output which is indicated by a pointed finger ☞.

Prince (2000a) introduced a different tableaux format, the comparative tableaux. The traditional tableaux focused on constraint violations, the comparative tableaux stresses favoring relations. For each losing candidate in the tableaux, the constraint chooses whether it favors the winner over the loser, or favors the loser over the winner, or favors neither. An example is given below.

(3) Comparative tableau

/bad/	*Voiced	IDENT([voice])
a. ☞ bat	*	*
b. bad	**W	L

In tableau (3), *Voiced is ranked higher than IDENT([voice]). *Voiced favors the winner over the loser since [bad] violates *Voiced twice. IDENT([voice]) favors the loser over the winner since the loser [bad] do not violate IDENT([voice]). From the ranking argument, the optimal candidate is candidate a.

2.2.2 Correspondence Theory

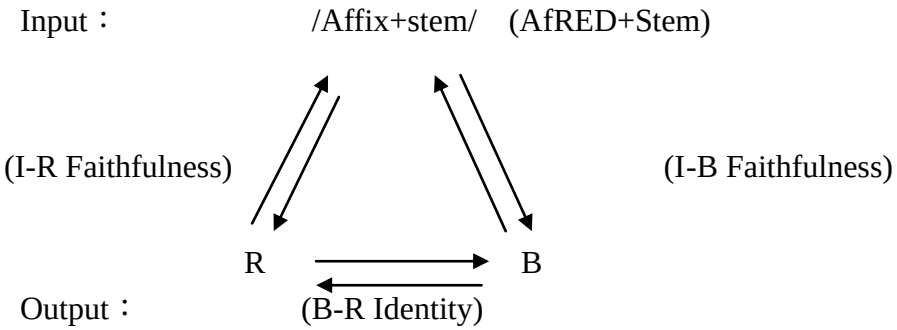
Correspondence Theory (McCarthy and Prince 1995) is used to examine the identification between two language representations, such as between input and output or between output and output. The schema of Correspondence is given in (4).

(4) Correspondence (McCarthy and Prince 1995:262)

Given two strings S1 and S2, correspondence is a relation R from the elements of S1 to those of S2. Element $\alpha \in$ S1 and $\beta \in$ S2 are referred to as correspondence of one another when $\alpha R \beta$.

To investigate reduplication, Output-Output Correspondence Theory is proposed to examine the output base and the reduplicant. The model proposed by McCarthy and Prince (1995) is illustrated below.

(5) (McCarthy and Prince 1995:252)



Correspondence Theory consists of three identifications. The first is input-reduplicant faithfulness to examine the identification between stem (input) and the reduplicant (output). The second is input-base to check the identification between input (stem) and output base. The third is B-R faithfulness to check the identification between output (base) and output (reduplicant). This thesis will examine the identification between the output base and the reduplicant in Taiwanese.

2.2.3 Generalized Alignment Constraint

McCarthy and Prince (1993a) proposed the alignment constraint to capture the syntax and phonology sharing the same edge, as discussed in Selkirk (1986) and the morphology and the phonology sharing the same edge, as discussed in Inkelas (1989). In addition, the alignment constraint summarizes the whole grammatical categories such as prosodic or syntactic categories adapting the sharing edge.

(6) Generalized Alignment (McCarthy & Prince 1993a)

Align (Cat1, Edge1, Cat2, Edge2) = def

$\forall$ Cat1 $\exists$ Cat2 such that Edge1 of Cat1 and Edge2 of Cat2 coincide.

Where Cat1, Cat2 $\in$ ProsCat $\cup$ GramCat

Edge1, Edge2 {Right, Left}

GramCat：{Word, Stem, Root, Affix…}

ProsCat：{Prwd, foot, syllable, Mora…}

ProsCat and GramCat in the above refer to any kind of prosodic and grammatical categories. This schema explains that a designated edge of each morphological or prosodic constituent in Cat1 coincides with a designated edge of another morphological or prosodic constituent in Cat2. Alignment constraint is proposed to account for the relation between different categories in linguistics. This thesis will examine the reduplication of Taiwanese through Alignment constraints.

2.2.4 Alignment of Different Edges

McCarthy (1993a) proposed Align(σ, L, σ, R) which captures much of the perspective of the Peripherality Condition on extraprosodicity (Harris 1983, Hayes 1980, 1991). If the left edge of each syllable must coincide with the right edge of another syllable, then the syllables should come one after the other in a chain uninterrupted by any free-standing non-syllabified elements. Labrune (2002), in examining the simple abbreviated loanword in Japanese under the constraint-based framework, proposed the constraints that govern the prosodic organization and the length of the abbreviated form. Labrune argued that the length of the abbreviated loanword can be predicted from the prosodic structure of the base.

Labrune (2002) proposed constraint ALIGN (A, Right, HeadFoot of B, Left) to describe the relation between the simple abbreviated loanword and the head foot (accented mora).

(7)

ALIGN (A, Right, HeadFoot of B, Left)：The right edge of the abbreviated word (A) coincides with the left edge of the head (accented) foot of the base (B).

ALIGN (A, Right, HeadFoot of B, Left) is an output-to-output correspondence constraint demanding the alignment of the right edge of the abbreviated word (A) with the left edge of the head (accented) foot of the base (B). This different edges alignment ensures that the site of the truncation coincides with the left edge of the head foot of the base, i.e., the accented mora.

The right edge of A and the left edge of the head foot of B coincide in way similar to the two halves of a broken plate, as in {kosume}+{tikku} < kosumetíkku "cosmetic", where the alignment constraint ALIGN (A, Right, HeadFoot of B, Left) is satisfied. Bonet and Lloret (2003) proposed two cross alignment constraints to account for the peripheral position of the epenthesis vowel in the clitics.

(8) Bonet and Lloret (2003)

a. Align(V-CL): Align the right edge of V(erb) [-tense] with the left edge of a pronominal clitic.

b. Align(CL-V): Align the left edge of V(erb) [+tense] with the right edge of a pronominal clitic.

These two constraints account for the position of clitics according to the verb. For example, in /tiɾɛm#nə/ → [tiɾɛmn̪ə] 'let's throw some', [tiɾɛm] is 'throw' and

[nə̲] is ‘some’. The right edge of V(erb) coincides with the left edge of the pronominal clitic. In /n#tiɾə/ → [ə̲n#tiɾə] ‘S/he throws some’. The left edge of V(erb) coincides with the right edge of the pronominal clitic. In order to examine the partial reduplication ABAC and ABCB in Taiwanese, chapter four will propose different edges alignment constraints to account for the partial reduplication, the reduplication of which is not adjacent to its corresponding base.

2.2.5 Anchoring Constraint

Anchor constraints (McCarthy & Prince 1993a, 1995a, b) are used to determine which edge of the base of the reduplication will be in correspondence with the reduplicative morpheme. Anchoring emphasizes the positional faithfulness between the reduplicant and the corresponding base. If it is a suffix, the constraint ranking will be Anchor-BR-right >> Anchor-BR-left. In contrast, if it is a prefix, the constraint ranking will be Anchor-BR-left >> Anchor-BR-right. The definition of anchor-BR is given in (9).

(9) Anchor-BR-Left/Right McCarthy and Prince (1999)

The left (right) peripheral element of R corresponds to the left (right) peripheral element of B, if R is to the left (right) of B.

(10)

a. l o - R
| |
l o f a B

b. – g u l u R
| | | |
k u g u l u B

Anchor-BR explains the relative direction of the reduplicant in the base. In the examples above, (10a) exhibits the left anchor, and (10b) the right anchor.

Nelson (2003) assumed that, rather than positing mirror anchoring constraints in the grammar, that is, right anchor or left anchor, only the left edge can be targeted. Under the Positional Anchoring view (11), anchoring then targets only "privileged" positions.

(11) Positional Anchoring: (Nelson 2003)

a. Anchoring can target the *initial* position (important for root access).

b. Anchoring can target a *stressed* position (acoustically prominent).

c. The right edge does not qualify as a target for anchoring.

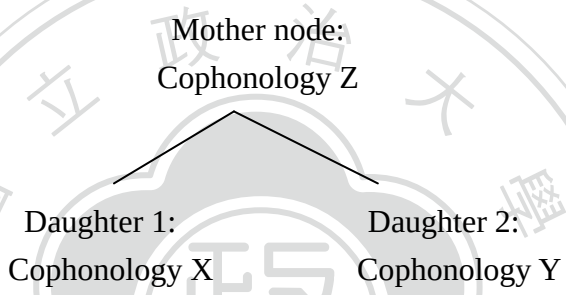
Nelson proposed a privilege position, that is, only the left edge is targeted for anchoring. However, in Taiwanese reduplication, Anchor-BR-L and Anchor-BR-R coexist.

2.2.6 Cophonology

Cophonolgoy approach (Inkelas and Zoll 2007; Antilla and Cho, 1998; Orgun, 1996) accounts for the co-existing distinct subgrammars if the language shows diverse phonological patterns. Cophonologies within a language have been motivated independently in morphologically conditioned phonology to handle variation (Anttila 1997/2002). In cophonology, reduplication is viewed as the double occurrence of a morphological constituent meeting a particular morphosemantic description. Cophonology departs from previous theories in which the reduplication is treated as an abstract morpheme, RED, whose substance is provided by phonological copying. In cophonology, reduplication and base are both generated by the morphology as part of a construction which also embodies semantic and phonological generalizations

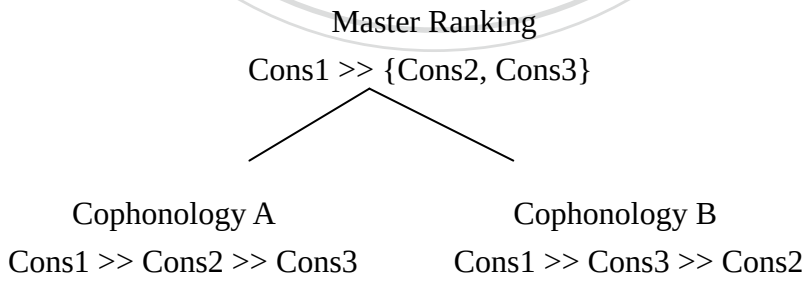
about the output of reduplication (Inkelas 2005). Three morphological constituents play a role in the cophonology to undergo reduplication: the two daughters and the mother. The daughters are stem-forming constructions that independently generate two semantically identical stems; the mother is the reduplication construction itself, which puts the two stems together and associates the result with a particular meaning. Each constituent in the construction is associated with a cophonology:

(12) (Inkelas 2005：76)



The core concept of Cophonology can be display by the grammar lattice below.

(13) A grammar lattice of language L (Inkelas and Zoll 2007)



In this grammar lattice, the core grammar of Language L is located in the superordinate node, the “Master Ranking”. Constraints in the core grammar are partially ranked. That is, Cons1 dominates Cons2 and Cons3, but the ranking of

Cons2 and Cons3 is not specified. Such specification is determined in the two subgrammars in Language L which is composed of Cophonology A and Cophonology B. In Cophonolgoy A, Cons2 dominates Cons3, while in CophonologyB, Cons3 dominates Cons2. The perspective of Cophonology can account for the quardrisyllabic reduplication in Taiwanese such as where *tshing khi* ‘clean’ becomes *tshing tshing khi khi* ‘very clean’ and *tshing khi tshing khi* ‘a bit clean’. The same mother produces different daughters.

2.3 Previous Studies on Reduplication

2.3.1 Adjacency Constraint

Lunden (2004) proposed adjacency constraint to emphasize the adjacent relation between the reduplicant and the corresponding base. In addition, Lunden (2004) proposed the notion of locality generalization which means the reduplicant should be as close to the corresponding base as possible. In the previous studies of reduplication, the direction of alignment and anchoring should be the same so that the reduplicant is adjacent to the base and it can be predicted correctly. When it is a prefix, the constraint ranking will be Align(RED, Prwd)-Left >> Align(RED, Prwd)-Right and Anchor-BR-left >> Anchor-BR-right. However, Lunden (2004) proposed adjacency constraint to solve the different direction of the alignment and anchoring so that the reduplicant can be predicted correctly. When the adjacency is ranked higher than the alignment or anchoring, the output will be consistent with the notion of locality generalization (14) and the reduplicant is adjacent to the corresponding base. But when the adjacency is ranked lower than the alignment or anchoring, the output will violate locality generalization. This thesis will examine the reduplication in Taiwan Southern Min among the interaction between alignment, anchoring, and adjacency.

Lunden (2004) considered the adjacency a family constraint as given in (13).

(14) Locality Generalization：

Reduplicants tend to be adjacent to their correspondent base.

(15) Adjacency-BR constraint family

a. Adjacency-BR-BY-SEG：Every segment in the reduplicant is next to its correspondent base.

b. Adjacency-BR-BY-σ：Every syllable in the reduplicant is next to its correspondent base.

c. Adjacency-BR-BY-Foot：Every foot in the reduplicant is next to its correspondent base.

Adjacency-BR-by-syllable is a bridge between the anchoring constraint and alignment constraint. The anchoring constraint is a positional faithfulness constraint which requires the element in a specific position in the input to appear in the output. The alignment constraint is a placement constraint which requires the element should be placed in the pointed position to obey the language rule. The adjacency constraint combines the positional faithfulness and the placement. In reduplication, the reduplicant should be adjacent to its corresponding base. This argument justifies the positional faithfulness and placement between the reduplicant and its corresponding base as shown below (16).

(16) (Lunden 2004：13)

/RED+gabadu/	Anchor-BR- Left	Adjacency-BR	Align(RED, Prwd)-Right
☞a. ga-gabadu			*
b. gabadu-du	*!		
c. gabadu-ga		*!	

According to the locality generalization, the reduplicant should be adjacent to its corresponding base. Even though there is a different direction of anchoring and alignment, adjacency has its function to produce the most appropriate output. In this tableau, Candidate b. violates the highest constraint Anchor-BR-Left and is ruled out. Candidate c. violates adjacency-BR since -ga is not adjacent to the corresponding base. Candidate a. violates the lowest ranked constraint Align(RED, Prwd)-Right. Candidate a. is the optimal output.

2.3.2 Chiang (1992)

Chiang (1992) examined the reduplication of Chinese dialects along the prosodic morphology which has the constraint template to the reduplication. In presenting phonological, morphological, and semantic arguments, Chiang (1992) proposed that the reduplication of Chinese dialect is suffixation, which means right spread from the base to the reduplicant template. Her argument is first based on the changes in grammatical category since in some cases monosyllabic reduplication changes the grammatical category of the original word. The examples are given below.

(17) a. tsui $_{N}$ → [tsui tsui]$_{Adj}$

water

'juicy, watery'

b. mo$_{N}$ → [mo mo]$_{Adj}$

fur

'furry'

The second argument for suffixation is neutral tone. Suffixes in some Chinese languages, especially in the Mandarin family, are often distressed and surface with neutral tones. However, prefixed reduplicatioin are never subject to such reduction. Chiang notes that it is possible in Linzi Mandarin for the X_1X_2 form to have two pronunciations, one with regular tones for both of the syllables X_1 and X_2, and the other with the sandhi tone in X_1 and the neutral tone in X_2, as shown in (18a) and (18b), respectively.

(18)

a. po53 → po53 po 13

thin

'thin'

b. po53 → po 13 po

thin

'thin'

The third argument is the reduplication of noun and verb. In some Chinese languages, the meaning of a reduplicated noun XX is identical to that of the form including a monosyllabic X and a diminutive suffix 'zi', as exemplified in the Wuhan language below (19a). In Mandarin, the evidence supports the argument that the

origin of the suffixation lies in the phonological properties of the second syllable of the monosyllabic reduplicated verb. This syllable bears a neutral tone which implies it is a suffix, as in (19b).

(19)

a. Tshuan tshuan = tshuan zi
   Circle circle suf
   'circle'

b. wo xiang qu zou zou
   I think go walk walk
   'I want to go walking for a while.'

In summary, Chiang (1992) proposed that suffixation reduplication in Chinese dialects may occur through three conditions. First, the reduplication may change the syntactic category. Second, the tone of the reduplicant may lose its base tone and became a neutral tone. Third, the reduplication could be replaced by the diminutive.

In quadrisyllabic reduplication, the prosodic plays a crucial role. There are a few conditions that should be considered to derive the quadrisyllabic coordinate compound, that (a), there exists a four syllable template $\sigma_\alpha\sigma_\alpha\sigma_\beta\sigma_\beta$, where (i) $\alpha \neq \beta$; (ii) α and β need not be specified as particular grammatical category but only serve as indexes for association lines linking morphemes and the prosodic template, that (b), $A_\alpha B_\beta$ and $X_\alpha Y_\beta$ occupy two different tiers, that (c), the word on each tier undergoes left-to-right mapping, and that (d) the unassociated morpheme fills in the remaining slots. When only one morpheme occurs on a tier, a spreading rule applies to create a doubly linked structure. An example is given below, as (20).

(20)

a. *tian* *di* word

σ_α σ_β σ_α σ_β

bian word

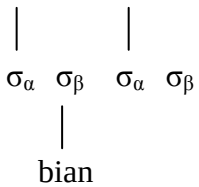
Type：AXBX

$tian_N$ $bian_V$ di_N $bian_V$

sky change earth change

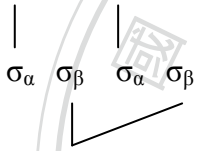
'totally change'

b. tian di word



bian word

c. tian di word



bian word

Chiang emphasizes the function of the template in that the target is to achieve the requirement specified in the template, no matter how the quadrisyllabic coordinate words are formed. Unlike Chiang, this thesis adopts OT (Smolensky and Prince 1993/2004) which is a non-derivational approach to examine the quadrisyllabic reduplication.

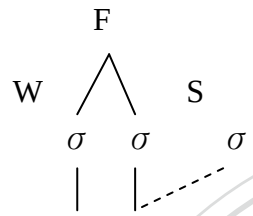
2.3.3 Lu (1999)

Lu (1999) followed prosodic morphology to examine trisyllabic reduplication. He saw Taiwanese as being with a prosodic foot, that is, with an iambic foot and a trochaic foot. In the syllable AB, it is the iambic foot when A is the sandhi tone and B is the base tone. In contrast, it is trochaic foot when A is the base tone, and B is the

neutral tone. The iambic foot associates from left to right and the trochaic foot associates from right to left. Examples are given below as (21a) and (21b).

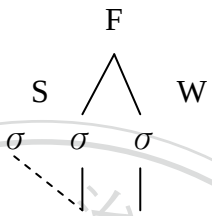
(21)

a.



tsiah liau ‘eat all’

b.

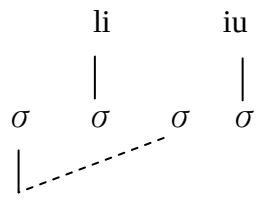


tsiah liau ‘eat all’

Lu (1999) also examined the quadrisyllabic reduplication along the prosodic morphology. There are two kinds of partial reduplication. One is ABAC, the other is ABCB. When the reduplicant is the first syllable, it right spread in the template, and when the reduplicant is the last syllable, it left spread in the template. The order of the reduplication is given below.

(22)

a.

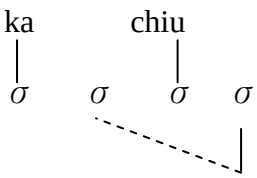


bo ‘reasons’

‘without’

bo li bo iu
no reason no reason
‘without any reasons’

b.



‘legs and hands’

nng ‘exhausted’

ka nng chiu nng

legs soft hands soft

‘hands and legs are exhausted’

The quadrisyllabic template is set up according to the prosodic template. The disyllabic compound associated first to the template, and the single reduplicant associated to the template and right spread when the reduplicant occurs before the compound (22a). When the reduplicant occurs after the compound, the single syllable associated to the template and left spread (22b).

2.4. Stress and Neutral Tone in Reduplication

2.4.1 Duanmu (1990)

Following Halle & Verguaud (1987) and Halle (1989) who proposed that stress may be sensitive to phonological entities and syntactic entities, Duanmu proposed a non-head stress rule based on the syntactic information. As Chen (1987) said, phonology cannot be syntax-blind but must make much more use of syntactic information. According to Duanmu’s (1990) “Nonhead Stress Rule”, in a syntactic head-nonhead or a nonhead-head relation, the nonhead has greater stress than the head. The relation between head and non-head is defined as follows:

(23)

In X^{n+1} Y is the non-head and X^n is the head.

Y X^n (Y = any projection) (Duanmu 1990)

Following this definition, the head is any projection of X and the non-head covers modifier, complement, etc. The non-head stress (NHS) is a syntactic head-nonhead relation, and the stress is assigned to the non-head. The NHS is given below.

(24) In a head-nonhead structure, stress the non-head.

To illustrate the rule, Duanmu exemplified from the Chengdu dialect. Consider the stress patterns in NPs (boldface = main stress)

(25) NP：[**niu** nai] [**chao** fan] [**ji** dan]

cow milk fry ice chicken egg

cow's milk fried rice chicken's egg

(26) Verb： [**hong** shao] [**qing** duen] [**shou** xie]

red cook plain stew hand write

to red-cook to plain-stew to hand-write

(27) Adj：[**bing** leng] [**shen** lu]

ice old dark green

This thesis utilizes the non-head stress rule to examine trisyllabic reduplication in Taiwanese.

2.4.2 R. Cheng (1994)

Neutralization can be accounted for under the framework of Lexical Diffusion (Wang 1969). The neutral tone has the function to describe the syntactic relation and the semantic focus. There are two conditions under the neutralization rule: 1) a neutralized syllable can only appear at the end of the VP, NP, IP, 2) neutralize the numeral and pronoun when they are not the semantic focus. An example of neutralization is given below. (The neutral tone is in bold.)

1. Mark the boundary of syntactic constituent NP, VP, and IP

(28) NP
tan35 ***sian0 sinn0*** ‘Mr. Chen’
*****tan35 sian33 sinn55* ‘Mr. Chen’

(29) VP
kiann35 ***tshut0 lai0*** ‘walk outside’
* *kiann35 tshut33 lai35* ‘walk outside’

(30) IP
mng35 ka33 so51 ***le0*** ‘lock the door’
***** *mng35 ka33 so51 le55* ‘lock the door’

The neutral tone can only occur at the end of the syntactic constituent; therefore, the neutral tone is a sign to mark the end of the syntactic constituent.

2. Mark the semantic focus

(31) ***be51*** *nng0 pun0* ‘ buy some books’ (semantic focus on the verb)
kau55 a51 ***khan51*** *wa0* ‘the dog looked at me’ (focus on the verb)

(32) *be55* ***nng33 pun51*** ‘buy two books’ (semantic focus on the numeral)
kau55a51 khan51 ***wa51*** ‘the dog looked at me’ (focus on the pronoun)

The semantic focus cannot bear a neutral tone in discourse; in contrast, the unstressed can bear a neutral tone. In addition to the two functions of neutralized tone mentioned above, the simplification of the phonetic is another factor in neutralization. Cheng states that the reason for neutralization is due to the frequent usage of the function word to cause the fast of speech. The third function of the neutral tone is given below.

3. Discriminate internal structural

(33) VO (O cannot be neutralized)
kiann33 si51 ‘be afraid of being dead’
afraid death
(34) VR (R can be neutralized)
kiann33 si0 ‘scared’
afraid death

The structural neutral tone *has* semantic distinction. For instance, *kiann33 si51* ‘be afraid of being dead’ has two syntactic structures. In the VO syntactic relation, *si51* ‘dead’ is a base tone; in the VR syntactic relation, *si0* is a neutral tone. The

meaning *kiann33 si51* in VO is ‘afraid of being dead’, and the meaning *kiann33 si0* in VR is ‘scary’. In VO, only the numeral and pronoun can be neutralized. In VR, it depends on the resultative whether the R is neutralized or not.

The function of the neutral tone is to contrast the stressed and unstressed. Therefore, the stressed cannot be neutralized. The main purpose of the neutral tone is to bear semantic distinction, that is, to emphasize or to weaken the meaning. In reduplication, the primary stressed syllable undergoes reduplication, and the weaker syllable cannot be reduplicated. This thesis will propose the related constraints to examine the trisyllabic reduplication.

2.4.3 R. Cheng (1997)

Stress has the trait to demonstrate syntactic relation, lexicon, semantic, and phonological rules. In the tone language, stress consists of four characteristics (a) a prominent syllable, (b) a stressed syllable bearing a base tone, (c) an unstressed syllable to render no tonal contrast, that is, a neutral tone, which can be divided into two categories, the lexical neutral tone and the structural neutral tone, and (d) a stressed syllable which can spread tone to an unstressed syllable. The distinction between the lexical neutral tone and the structural neutral tone is that the lexical neutral tone is lexically determined; in contrast, the structural neutral tone can be easily predicted from the syntactic structure and lexical item such as function word or lexical word. This thesis focuses on the structural neutral tone which consists of aspects, directional verbs, resultatives, etc. Examples are shown below.

(35) Aspect markers

kui33 ***le0*** ‘kneel down’

(36) Directional verbs

khan55 ***lai0*** ‘to lead here’

(37) Resultatives

khui55 khui0 ‘open’

According to Cheng (1997), nouns, pronouns, directional markers, auxiliaries, resultatives, and complements of degree are in the structural neutral tone. This exhibits that stress has a close relation with syntactic relation, semantic, and phonological rules. This thesis proposes that stress has a close relation to the process of reduplication. Stress is the key to decide which syllable undergoes reduplication, that is, only the primary stressed syllable can be reduplicated, while the weaker syllable cannot be reduplicated.

2.5 Summary

In summary, reduplication has been investigated with the derivational approach in recent years. Nevertheless, few researchers have given a systematic explanation for the process of reduplication such as partial reduplication and full reduplication in Taiwan Southern Min. Following this discussion, the thesis will propose some related constraint under the framework of Optimality Theory (McCarthy and Prince 1993/2004) to provide the possible variation in reduplication. Chapter 3 and Chapter 4 will demonstrate how OT and Cophonology account for the trisyllabic reduplication and quadrisyllabic reduplication, respectively.

Chapter 3

ABB and AAB Reduplication in Taiwan Southern Min

This chapter adopts Optimality Theory (Prince and Smolensky 1993/2004; McCarthy and Prince 1993, 1994/2003; McCarthy 2008) to investigate reduplication in Taiwan Southern Min. This chapter examines the trisyllabic reduplication ABB and AAB, which has a disyllable base AB. If A is semantically emphasized, A receives a stress. If B is semantically emphasized, B receives a stress. The first question is how the interaction between stress and semantic emphasis may affect reduplication. Second, what constraints may account for the reduplication of ABB? Third, what constraints may account for the reduplication of AAB? This chapter is organized as follows. Section 3.1 is a brief introduction of trisyllabic reduplication. Section 3.2 is an analysis of how the stress and semantic emphasis affect the reduplication of ABB. Section 3.3 is an analysis of AAB reduplication. Section 3.4 is the summary of this chapter.

3.1 Trisyllabic Reduplication

In trisyllabic reduplication, AB is the base for forming ABB and AAB. Consider the verb-resultative forms below:

(1a) *hian33* ***khui55*** ‘open’
uncover open

(1b) ***hian55*** *khui0* ‘open’
uncover open

From the syntactic information, in (1a), the verb-resultative *hian33 khui55* ‘open’, the resultative *khiu55* ‘open’ is the non-head, and the verb *hian33* ‘uncover’ is the head. According to Duanmu’s (1990) “Non-head stress rule”, in the syntactic relation, the non-head has greater stress than the head. In (1a), the resultative *khiu55* ‘open’ is stressed, and the verb *hian33* ‘uncover’ is an unstressed or a non-primary stressed syllable, that is, *hian33* ‘uncover’ is a weaker syllable, and *hian33 khui55* ‘open’ is a regular reading. In contrast, in (1b), the focused reading where the semantic focus is on the verb *hian55* ‘uncover’, the resultative *khui55* ‘open’ loses its base tone and bears the neutral tone to be *khui0* ‘open’.

The semantic distinction between (1a) *hian33* ***khui****55* ‘open’ (***khui****55* is full tone) and (1b) *hian55 khui0* ‘open’ (*khui0* is neutral tone) has been described above. In (1a), *hian33 khui55* ‘open’ (*khui55* ‘open’ is full tone), the primary stress is on the non-head, that is, the modifier. In contrast, in (1b), *hian55 khui0* ‘open’ (*khui0 ‘open’* is neutral tone), the primary stress is on the verb *hian55* ‘uncover’ which is the head in the syntactic structure. When it is focused reading, the primary stress is on the verb and the weaker syllable is on the resultative.

The intrinsic difference between (1a) *hian33 khui55* ‘open’ (***khui****55* ‘open’ is full tone) and (1b) *hian55 khui0* ‘open’ (*khui0* is neutral tone) is due to the semantic focus. Similar examples are provided below.

(2a) *ian55* ***to51*** ‘overturn’

overturn down

(2b) ***ian51*** *to0* ‘overturn’

overturn down

(3a) *tsiah3* ***liau51*** ‘eat all’

eat finish

(3b) ***tsiah5*** *liau0* ‘eat all’

eat finish

(4a) *long31* ***phainn51*** ‘bump so that that object is broken’

bump broken

(4b) ***long51*** *phainn0* ‘bump so that that object is broken’

bump broken

(5a) *siu33* ***ho51*** ‘store something well’

store well

(5b) ***siu55*** *ho0* ‘store something well’

store well

In these examples, when B of disyllable AB undergoes reduplication such as in (2a), (3a), (4a), (5a), B is the primary stressed syllable and it is reduplicated to form ABB. In contrast, in (2b), (3b), (4b), (5b), A is primary stressed syllable, B is neutral

tone and A is reduplicated to form AAB. In ABB such as in (6), (7), (8), and (9) and AAB such as in (33) and (34) adjective reduplication, AB cannot exist and have no meaning. Similarly, in the other type of AAB verb reduplication such as (30), (31), and (32), the AB base has no meaning. To examine the AAB and ABB reduplication, this chapter will give a brief OT analysis of full reduplication, that is, ABB adjective, AAB verb and AAB adjective, and will then focus on the analysis of partial reduplication ABB verb and AAB verb under the framework of OT.

3.2 ABB Reduplication

3.2.1 ABB Adjective Full Reduplication

In ABB adjective, when disyllable AB cannot exist, AB does not have any meaning, as in the example shown below. The syllable B should reduplicate first to form BB and attach to the syllable A to become ABB. In this situation, the BB form is the modifier to modify the syllable A. Examples are given below.

(6) *sio kun kun* 'very hot' * *sio kun*
hot boiled boiled

(7) *ling ki ki* 'very cold' * *ling ki ki*
cold freezing freezing

(8) *ang ki ki* 'very red' * *ang ki*
red spot spot

(9) *chau konn konn* 'very smelly' * *chau konn*
smelly odor odor

According to Daunmu's "non-head stress rule" (1990), the non-head syllable is

the primary stressed syllable, and the head is the weak syllable. When AB cannot exist, the derivation of the AAB does not obey the non-head stress rule since A is a morpheme and B is another morpheme existing independently.

3.2.2 OT Analysis of ABB Full Reduplication

By following Chiang's argument, the derivation of reduplication in Chinese dialects is suffixation. The constraint Align(RED, IMP)-Right requires that the reduplicant coincide with the right edge of the idiom phrase (IMP). This idiom phrase is a lexicalized word or a fixed expression. The definition is given below.

(10)

Align(RED, IMP)-Right: Assign one violation mark to every reduplicant which does not coincide with the right edge of the idiom phrase.

(11)

/RED+ ki/	Align(RED, IMP)-R
☞ a. ki <u>ki</u>	
b. <u>ki</u> ki	*W

In tableau (11), Align(RED, IMP)-R favors the winner *ki* <u>*ki*</u> over candidate b. <u>*ki*</u> *ki* since Align(RED, IMP)-R, requires that the reduplicant coincide with the right edge of the idiom phrase. Candidate b. <u>*ki*</u> *ki* violates Align(RED, IMP)-R once since the reduplicant *ki* 'freezing' is not at the end of the idiom phrase. The optimal output is candidate a. *ki* <u>*ki*</u>. In ABB adjective, the syllable B is reduplicated first to form BB

and to modify the state of A. This thesis focuses on the derivation of AAB and ABB verb partial reduplication; this thesis also gives a brief analysis of ABB adjective full reduplication; however, ABB adjective full reduplication is more complex and is a residual problem for the further research.

3.2.3 Stress on ABB and ABB Verb Partial Reduplication

Partial reduplication ABB and AAB is formed from the disyllable base AB. The question is when syllable A is reduplicated and when syllable B is reduplicated. In this section, I propose that stress decides which part of the base is reduplicated. One is syntactic stress based on the 'Non-head stress rule' developed in Duanmu (1990), and the other is semantic stress, i.e., the focus stress. This thesis proposes two constraints, Nonhead stress (NonHStress) and Focal stress (FocStress) to govern the assignment of primary stress The definitions are given below.

(12) Nonhead Stress：Assign one violation mark for every primary stressed syllable which is not the nonhead in the syntactic structure.

(13) Focal Stress：Assign one violation mark for every primary stressed syllable which is not semantically focused.

The following tableau gives an OT analysis.

(14) (**boldface** is the primary stressed syllable)

/ hian33 khui55 /	Focal Stress	Nonhead Stress
☞ a. hian33 **khui55**		
b. **hian33** khui55		*W

The constraint ranking is Focal Stress >> Nonhead Stress. In tableau (14),

candidate a. is regular reading (not focus on the verb). Since candidate a. hian33 khui55 is a regular reading, constraint Focal Stress is irrelevant and inactive.

(15) (**boldface** is the primary stressed syllable)

/ hian55 khui0 /	Focal Stress	Nonhead Stress
☞ a. **hian55** khui0		*
b. hian55 **khui0**	*W	L

In tableau (15), candidate a. is the focus reading (focus on verb), and the constraint ranking is Focal Stress >> Nonhead Stress. The focused verb bears the base tone and makes the resultative loses its base tone and bear a neutral tone. This focused reading is different from the regular reading since in the focused reading stress the verb and weaken the resultative. Form the ranking argumentation, the stress pattern of the AB is explained.

Section 3.2.4 provides an analysis of ABB verb partial reduplication and section 3.3.3 gives an analysis of AAB verb partial reduplication. ABB is reduplicated from the disyllable base AB in which A is the verb and B is the resultative. AB is a resultative compound and AB is a morpheme. The examples of ABB verb partial reduplication are given below.

(16) *ian55* ***to51*** ‘overturn’

spill down

(17) *ian55* ***to55 to51*** ‘overturn’

spill down down

(18) *long31* ***phainn51*** ‘bump into broken’

bump broken

(19) *long31* ***phainn55 phainn51*** ‘bump something so that that is broken’

bump broken broken

(20) *tsiah5* ***liau51*** ‘eat all’

eat finish

(21) *tsiah5* ***liau55 liau51*** ‘eat all’

eat finish finish

(22) *hian33* ***khui55*** ‘open’

uncover open

(23) *hian33* ***khui33 khui55*** ‘open’

uncover open open

From these examples, the primary stressed syllable B based on the nonhead stress rule is reduplicated from the disyllable AB to form ABB. This shows how stress affects the reduplication in Taiwan Southern Min.

3.2.4 OT Analysis of ABB Partial Reduplication

ABB verb reduplication is reduplicated from the disyllable base AB. When syllable B is a full tone which is the primary stressed syllable, syllable B focuses the meaning on the modifier B; this follows Duanmu’s (1990) “non-head stress rule”. This shows that the resultative, which is the primary stressed syllable, is reduplicated. This infers in the syntactic relation the head which is the weaker syllable should not be reduplicated.

The positional faithfulness constraint Anchor-BR-Right and Anchor-BR-Left (McCarthy and Prince 1999) restrict the faithful relation between the base and the reduplicant. This chapter proposes constraint *RED (W) to regulate the weaker syllable cannot be reduplicated. The constraint Adjacency-BR-by-syllable is motivated by the idea that each syllable of the reduplicant wants to be as close as possible to its correspondent syllable in the base (Lunden 2004). The constraint is given below.

(24) Anchor-BR-R: Assign one violation mark for every syllable at the rightmost of the base that has no correspondent at the rightmost of the reduplicant.

(25) Anchor-BR-L: Assign one violation mark for every syllable at the leftmost of the base that has no correspondent at the leftmost of the reduplicant.

(26) Adjacency-BR-by-syllable: Assign one violation mark for every syllable in the reduplicant that is not next to its correspondent base. (Lunden 2004)

(27) *RED(W)：Assign one violation mark for every weaker syllable (unstressed or with non-primary stress) is reduplicated.

The fact that trisyllable ABB is from the disyllable AB base. The constraint Anchor-BR-R should be ranked higher than Anchor-BR-L to prevent from surfacing AAB. *RED(W) prevents the weaker syllable from being reduplicated. Following the perspective of Lunden (2004), base and reduplicant should be as close to each other as possible in the reduplication. Therefore, Adjacency-BR-by-syllable should be ranked

higher. The ranking argument is given below.

(28)

/RED+hian33khui55 /	*RED (W)	Anchor-BR-R	Adjacency-BR-by-syllable	Anchor-BR-L
☞ a. hian33 khui33 <u>khui55</u>				*
? b. hian33 <u>khui33</u> khui55				*
c. <u>khui33</u> hian33 khui55			*W	*
d. <u>hian33</u> hian33 khui55	*W	*W		L
e. hian33 khui33 <u>hian55</u>	*W	*W	*W	L
f. hian33 <u>hian33</u> khui55	*W	*W		L

In tableau (28), the constraint *RED(W) favors the winner over candidates d., e., and f. since, from the perspective of syntactic relation, a weak syllable cannot be reduplicated, and the weaker syllable in candidate d. *<u>hian33</u> hian33 khui55* ‘open’, candidate e. *hian33 khui33 <u>hian55</u>* ‘open’, and candidate f. *hian33 <u>hian33</u> khui55* ‘open’ are reduplicated. Candidates d., e., and f. are ruled out. Anchor-BR-R favors the winner *hian33 khui33 <u>khui55</u>* ‘open’ over candidates d., e., and f., since in d., e., and f. the syllable of the reduplicant does not have a correspondent at the rightmost edge of the base. Adjacency-BR-by-syllable favors the winner over candidate c. *<u>khui33</u> hian33 khui55* since the reduplicant *khui33* ‘open’ is not next to its correspondent base. Therefore, Candidate c. is ruled out. In order to rule out candidate b., this thesis proposes Align(RED, IMP)-Right to make the reduplicant coincide with the right edge of the trisyllabic prosodic word in the output. This argument supports Chiang’s (1992) prediction of the derivation of reduplication is suffixation in Chinese dialects. This argument makes the reduplicant right spread from the corresponding base. To rule out Candidate b., *hian33 <u>khui33</u> khui55,* whose reduplicant is not in the end of the idiom phrase, the constraint Align(RED, IMP)-Right is needed to rule it out as in tableau (29).

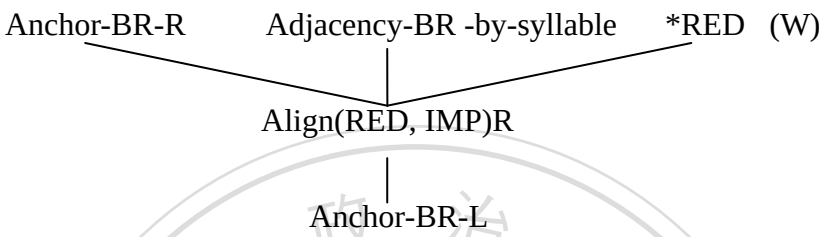
(29)

/RED+hian33khui55 /	*RED (W)	Anchor-BR-R	Adjacency-BR-by-syllable	Align(RED, IMP)R	Anchor-BR-L
☞ a. hian33 khui33 <u>khui55</u>					*
b. hian33 <u>khui33</u> khui55				*W	*
c. <u>khui33</u> hian33 khui55			*W	**W	*
d. <u>hian33</u> hian33 khui55	*W	*W		**W	L
e. hian33 khui33 <u>hian55</u>	*W	*W	*W		L
f. hian33 <u>hian33</u> khui55	*W	*W			L

In this tableau (29), candidate b. is ruled out since the reduplicant *khui33* ‘open’ does not share the same edge with the idiom phrase in the output. Align(RED, IMP)R favors the winner over candidate b. *hian33* <u>*khui33*</u> *khui55* ‘open’. Candidate c. <u>*khui33*</u> *hian33 khui55* ‘open’ violates Adjacency-BR-by-syllable and Align(RED, IMP)-R. Adjacency-BR-by-syllable requires that the reduplicant should be as close as possible to its corresponding base. The reduplicant *khui33* ‘open’ in candidate c. is not next to its corresponding base. Adjacency-BR-by-syllable and Align(RED, IMP) R favor the winner over candidate c.; therefore, Candidate c. is ruled out. Anchor-BR-R favors the winner over Candidates d., e., and f., since the syllable of the reduplicant does not correspond to the rightmost edge of the base. Candidates d. <u>*hian33*</u> *hian33 khui55*, e. *hian33 khui33*<u>*hian55*</u>, and f. hian33 <u>hian33</u> khui55, are ruled out. The constraint *RED(W) favors the winner over candidates d., e., and f. since the weaker syllable in candidate d., e., and f. are reduplicated. Candidate d., e., and f. are ruled out. From the ranking argument, the optimal candidate is candidate a. In ABB, the constraint *RED(W) restricts the weaker syllable in the syntactic structure from being reduplicated and prevents from surfacing quadrisyllabic reduplication *hian33 hian33*

khui33 *khui55*. In ABB reduplication, the constraint ranking is Anchor-BR-R, Adjacency-BR-by-syllable, *RED(W) >> Align(RED, IMP)-R >> Anchor-BR-L, as in (30).

(30) ABB



3.3 AAB Reduplication

In order to examine AAB reduplication, the following section provides an analysis of the reduplication of the AAB verb and AAB adjective. This kind of verb, and adjective, the disyllable AB, which is not a word, but two separate morphemes should reduplicate A to form AA first and plus B to form AAB such as *kim kim khuann* ‘look at something carefully’. In AAB adjective reduplication, AB does not exist independently, and should reduplicate A to form AA first and plus B to become AAB such as *lo lo tng* ‘very long’.

3.3.1 AAB Verb and AAB Adjective Full Reduplication

In AAB verb 1 and AAB adjective, when the disyllable AB cannot exist, AB has no meaning. The syllable A should reduplicate first to form AA and attach to the syllable B to become AAB. In this situation, the AA form acts as the modifier to modify the state of B. The examples of AAB verb full reduplication and AAB

adjective full reduplication are given below.

Verb

(31) *kim kim khuann* ‘look (at) something carefully’
gold gold look

(32) *ko ko tinn* ‘wait (for) someone patiently’
patient patient wait

(33) *khuh khuh sau* ‘cough (in a) sickly (way)’
cough cough cough

Adjective

(34) *bi bi kng* ‘slightly light’
slight slight light

(35) *ka ka kun* ‘noisy’
noisy nosiy boiled

According to Daunmu’s “non-head stress rule” (1990), the non-head is a primary stressed syllable, and the head is the weaker syllable. When AB cannot exist, the derivation of the AAB does not obey the non-head stress rule since A is a morpheme and B is another morpheme existing independently. The situation of AAB verb and AAB adjective is the same as with the ABB adjective. In the ABB adjective, B is reduplicated to form BB first and attaches to A. In AAB verb and AAB adjective, A is reduplicated first to form AA to modify the state of B. The constraint Align(RED, IMP)-R requires that the reduplicant coincide with the right edge of the idiom phrase.

(36) AAB verb

/RED+ kim/	Align(RED, IMP)-Right
☞ a. kim <u>kim</u>	
b. <u>kim</u> kim	*W

In tableau (36), Align(RED, IMP)-R favors the winner *kim* <u>*kim*</u> over candidate b. <u>*kim*</u> *kim* since Align(RED, IMP)-R, requires that the reduplicant coincide with the right edge of the idiom phrase. Candidate b. violates Align(RED, IMP)-R since the reduplicant <u>*kim*</u> 'golden' is in the initial of the idiom phrase. The winner is candidate a. *kim* <u>*kim*</u>.

(37) AAB adjective

/RED+bi/	Align(RED, IMP)-Right
☞ a. bi <u>bi</u>	
b. <u>bi</u> bi	*W

In this tableau (37), Align(RED, IMP)-R favors the winner over candidate b. <u>*bi*</u> *bi* 'slightly' since Align(RED, IMP)R requires that the reduplicant coincide with the right edge of the idiom phrase. Candidate b. <u>*bi*</u> *bi* violates Align(RED, IMP)-R since the reduplicant <u>*bi*</u> 'slightly' is in the initial of the idiom phrase. The optimal output is candidate a. *bi* <u>*bi*</u>.

In AAB verb and AAB adjective, AB does not exist. A and B are separate

morphemes. B is reduplicated first to become BB to modify the state of syllable A. This thesis gives a brief analysis of AAB adjective and verb full reduplication; AAB adjective and verb full reduplication is more complex and is a residual problem for the further research. This thesis focuses on the derivation of AAB and ABB verb partial reduplication.

3.3.2 AAB Verb Partial Reduplication

AAB verb partial reduplication is different from AAB verb and AAB adjective full reduplication. The verb in syllable A is semantically stressed to bear the base tone and the resultative, that is, syllable B loses its base tone and bears a neutral tone such as *hian55 khui0* ‘open’. This reduplication is different from ABB verb reduplication which is composed of a verb and a resultative without placing any emphatic meaning on the verb. In the base AB of AAB verb reduplication, the verb has emphatic meaning. These examples of emphatic meaning are given below.

(38) ***ian51*** *to0* ‘overturn’

overturn down

(39) *ian55 ian51 to0*‘overturn’

overturn overturn down

(40) ***hian55*** *khui0* ‘open’

uncover open

(41) *hian33 hian55 khui0* ‘open’

uncover uncover open

In verb-resultative, the verb receives the focus so that the verb remains the base tone and the resultatives loses its base tone and bears a neutral tone.

3.3.3 OT Analysis of AAB Partial Reduplication

AAB reduplication is from the disyllable base AB when the focus is on the action; syllable A gains a primary stressed syllable and syllable B loses its tone value to surface with a neutral tone, that is, a weaker syllable. In AAB, A which is a primary stressed syllable in the base AB, is reduplicated. The constraint *RED(W) regulates a weaker syllable that should not be reduplicated. The constraint Adjacency-BR-by-syllable has effect on the reduplicant to be as close as possible to its correspondent base. In AAB, the reduplicant A is reduplicated from the disyllable AB base. The ranking of Anchor-BR-L is ranked higher than Anchor-BR-R to prevent from surfacing unfaithful reduplicant. The constraint ranking is given below.

(42)

/RED+ hian55 khui0/	*RED(W)	Anchor-BR-L	Adjacency-BR-by-syllable	Anchor-BR-R
☞ a. hian33 <u>hian55</u> khui0				*
? b. <u>hian33</u> hian55 khui0				*
c. hian55 khui0 <u>hian55</u>			*W	*
d. <u>khui0</u> hian55 khui0	*W	*W	*W	L
e. hian55<u>khui0</u> khui0	*W	*W		L
f. hian55 khui0 <u>khui0</u>	*W	*W		L

In this tableau (42), the ranking argument is *RED(W), Anchor-BR-L, Adjacency-BR-by-syllable >> Anchor-BR-R. The constraint *RED(W) favors the winner *hian33 <u>hian55</u> khui0* ‘open’ over the candidate d. *<u>khui0</u> hian55 khui0* ‘open’,

candidate e. *hian55 <u>khui0</u> khui0* ‘open’, and candidate f. *hian55 khui0 <u>khui0</u>* ‘open’ since the weaker syllable in candidate d., e., and f. are reduplicated. Therefore, candidate d., e., and f., are ruled out. The constraint Anchor-BR-L favors the winner over candidates d., e., and f. since the syllable of the reduplicant does not correspond to the leftmost edge of the base. Therefore, candidates d., e., and f. are ruled out. Adjacency-BR-by-syllable favors the winner and candidate b. over candidate c. *hian55 khui0 <u>hian55</u>* since the reduplicant *<u>hian55</u>* ‘uncover’ is not adjacent to its corresponding base. Therefore, candidate c. is ruled out. Constraint Anchor-BR-R favors the candidate d., e., and f., over the candidate a., b., and c since the right edge of reduplicants in candidate a., b., and c do not have correspondent in the right edge of the base. However, Anchor-BR-R is lower ranked and is violable. In order to rule out Candidate b., the constraint Align(RED, IMP)-Right is needed to regulate the right edge of the reduplicant to coincide with the right edge of the idiom phrase. The constraint ranking is shown below.

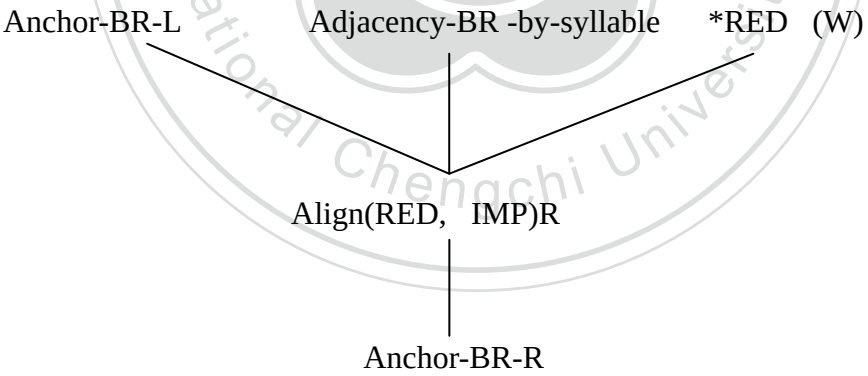
(43)

/RED+ hian55 khui0/	*RED(W)	Anchor -BR-L	Adjacency-BR -by-syllable	Align(RED, IMP)R	Anchor-BR-R
☞ a. hian33 <u>hian55</u> khui0				*	*
b. <u>hian33</u> hian55 khui0				**W	*
c. hian55 khui0 <u>hian55</u>			*W	L	*
d. <u>khui0</u> hian55 khui0	*W	*W	*W	**W	L
e. hian55<u>khui0</u> khui0	*W	*W		*	L
f. hian55 khui0 <u>khui0</u>	*W	*W		L	L

In tableau (43), the ranking argument is *RED(W), Anchor-BR-L, Adjacency-BR-by-syllable >> Align(RED, IMP) >> Anchor-BR-R. The winner is *hian33 <u>hian55</u> khui0* ‘open’. Align(RED, IMP)-R, which requires that the reduplicant should coincide with the right edge of the idiom phrase, favors the winner *hian33*

hian55 khui0 ‘open’ over candidate b. *hian33 hian55 khui0* ‘open’ since in candidate b. the reduplicant *hian33* ‘uncover’ is in the initial of the idiom phrase AAB. Hence, candidate b. is ruled out. Adjacency-BR-by-syllable favors the winner over candidate c. *hian55 khui0 hian55* since the reduplicant *hian55* ‘uncover’ is not adjacent to its corresponding base. Candidate d. *khui0 hian55 khui0* ‘open’ is the worst candidate since it violates Anchor-BR-L. The constraint *RED(W) favors the winner over candidates d., e., and f. since the weaker syllable *khui0* ‘open’ is reduplicated. The optimal output is candidate a. *hian33 hian55 khui0* ‘open’. In AAB, *RED(W) avoids the weaker syllable in the syntactic structure from being reduplicated and prevent to surface *hian33 hian55 khui0 khui0*. In AAB partial reduplication, the ranking argument is Anchor-BR-L, Adjacency-BR-by-syllable, *RED(W) >> Align(RED, IMP)-R >> Anchor-BR-R, as in (44).

(44) AAB



3.4 Summary

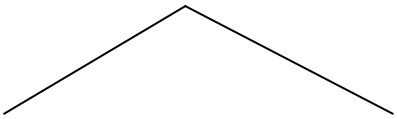
This chapter has examined the ABB and AAB reduplication of verbs and adjectives in Taiwan Southern Min. From the syntactic information, when the disyllable AB is a compound and bears the meaning itself, the head is a weaker stressed syllable and the non-head is the primary stressed syllable. According to the

non-head stress rule (Duanmu 1990), in the disyllable AB, B is the primary stressed syllable, and A is a weaker syllable. In the structure of verb-resultative AB, A is the head, and B is the resultative morpheme, that is, the non-head. However, if A is semantically focused, B will be a neutral tone and A becomes the stressed syllable. When AB undergoes reduplication, the stressed syllable is reduplicated; that is, the weaker syllable cannot be reduplicated. The result shows that stress and semantic emphasis play a crucial role in reduplications. In ABB verb partial reduplication, this chapter proposes the constraint ranking "Anchor-BR-R, Adjacency-BR-by-syllable, *RED(W) >> Align(RED, IMP)R >> Anchor-BR-L" to account for the ABB verb partial reduplication. In cases like (19), B is primary stressed and reduplicated to form ABB. In AAB verb reduplication, which is a partial reduplication, this chapter proposes the constraint ranking "Anchor-BR-L, Adjacency-BR-by-syllable, *RED(W) >> Align(RED, IMP)R >> Anchor-BR-R" to account for the derivation of AAB verb partial reduplication. In cases like (40), the syllable A which is semantically focused is a primary stressed syllable and reduplicated to form AAB. The full reduplication is ABB adjective, AAB verb and AAB adjective reduplication. When the disyllable AB cannot exist and cannot bear meaning, the non-head stress rule will not apply. In this situation, A and B are two distinct morphemes. By following Chiang's (1990) argument that the reduplication in Chinese dialects is suffixation, and the constraint Align(RED, IMP)R make the reduplicant coincide with the right edge of the idiom phrase which is a lexicalized word or a fixed expression. The derivations of ABB and ABB reduplication show the close relation between stress, semantic focus and morphology. The cophonology of ABB and AAB is given below (45).

(45)

Trisyllabic Reduplication

{ Anchor-BR-R, Anchor-BR-L, Adj-BR-by-syllable, *RED(W) >> Align(RED, IMP)R }



Cophonology A: ABB	**Cophonology B: AAB**
Anchor-BR-R, Adj-BR-by-syllable,*RED(W) >> Align(RED, IMP)R >> Anchor-BR-L	Anchor-BR-L, Adj-BR-by-syllable, * RED(W) >> Align(RED, IMP)R >> Anchor-BR-R

Chapter 4

Quadrisyllabic Reduplication in Taiwan Southern Min

This chapter adopts Optimality Theory (Prince and Smolensky 1993/2004; McCarthy and Prince 1993, 1994/2003; McCarthy 2008) to investigate adjective reduplication in Taiwan Southern Min. This chapter examines quadrisyllabic reduplication including full reduplication AABB and ABAB and partial reduplication ABAC and ABCB. In full reduplication, AABB such as *tshing tshing khi khi* 'very clean' and ABAB *tshing khi tshing khi* 'a bit clean' have a disyllable base AB. The position of the reduplication is closely related to the semantic function. AABB displays an emphatic function, and ABAB exhibits a weakening function. In partial reduplication, as in ABAC and ABCB, the reduplicant interrupts the original trisyllabic base. The first type of partial reduplication in quadrisyllabic reduplication is trisyllable ABC reduplicating the first single syllable forming ABAC such as *bo su bo ian* 'neither lose nor win', and the second type is ABCB such as *ka nng tshiu nng* 'legs and hands are exhausted'. This chapter examines the partial reduplication which of them is left reduplicated or right reduplicated, that is, the directionality of the reduplication. In addition, the locality of the reduplicant and the adjacency relation between the reduplicant and the corresponding base is also examined. The first question is how semantic emphasis and weakness may affect reduplication. Second,

what constraints may account for the reduplication of AABB? Third, what constraints may account for the reduplication of ABAB? Fourth, what constraints may account for ABAC and ABCB reduplication? This chapter is organized as follows. Section 4.1 is a brief introduction of quadrisyllabic reduplication. Section 4.1.1 and 4.1.2 is an analysis of how semantic emphasis and semantic weakness affect the reduplication of AABB and ABAB. Section 4.2 is an analysis of how the Adjacency-BR-by-syllable constraints and different edge alignment constraints may interact in partial reduplication ABAC and ABCB. Section 4.3 is the summary.

4.1 Full Reduplication

In Mandarin, most disyllabic adjectives can take the form AABB. In Taiwanese only a limited number of those disyllabic adjectives that share the same etymons with Mandarin can take such form. It should be noted that the productive pattern of disyllabic adjectives in Taiwanese is ABAB.

In quadrisyllabic full reduplication, AB is the base to form AABB and ABAB. Consider the adjective forms below:

(1) *tshing tshing khi khi* ‘ very clean ’

dry dry clean clean

(2) *tshing khi tshing khi* ‘ a bit clean’

dry clean dry clean

The quadrisyllabic string in (1) displays an emphatic function, meaning ‘very clean’, whereas that in (2) shows a weakening function, meaning ‘a bit clean’. In other words, given AB (*tshing khi* ‘clean’) as the base, the reduplicated AABB is a

semantically strong form, while the reduplicated ABAB is a semantically weak form.

In terms of Optimality Theory (Prince and Smolensky 1993/2004; McCarthy and Prince 1993, 1994/2003; McCarthy 2008), this chapter adopts a set of constraints to account for theses variations; in particular, Adjacency-BR-by-syllable, which requires that the reduplicant in the syllable to be adjacent to its corresponding base and Adjacency-BR-by-foot, which requires that the reduplicant in the foot be adjacent to its corresponding base (Lunden 2004). Following Chiang's argument that reduplication is suffixation in Chinese dialects, the constraint Align(RED, IMP)-Right, which requires that the right edge of the reduplicant coincide with the right edge of the idiom phrase is proposed to account for the full reduplication in Taiwan Southern Min.

To examine the application of the reduplication of AABB and ABAB which are from the base AB in the input, this chapter proposes the relevant constraints as follows:

(3) Adjacency-BR-by-syllable: Assign one violation mark for every syllable in the reduplicant that is not next to its correspondent base. (Lunden 2004)

(4) Adjacency-BR-by-foot: Assign one violation mark for every foot in the reduplicant that is not next to its correspondent base. (Lunden 2004)

(5) Align(RED, IMP)-Right: Assign one violation mark for every reduplicant which does not coincide with the right edge of the idiom phrase.

(6) Contiguity-Base：Assign one violation mark for every base is interrupted by other syllable.

(7) Contiguity-RED：Assign one violation mark for every reduplicant is interrupted by other syllable.

In AABB, the reduplicant in the syllable is adjacent to its corresponding base. In ABAB, the reduplicant in the foot is adjacent to its corresponding base. Align(RED, IMP)-R requires the reduplicant to be the rightmost syllable in the idiom phrase. Cophonologies (as proposed by Anttila and Cho 1998, Inkelas and Zoll 2007) are found in these quadrisyllabic reduplications, as listed below.

(8) In AABB, Cophonology A : Adjacency-BR-by-syllable >> Align(RED, IMP)-R, Adjacency-BR-by-foot >> Contiguity-RED >> Contiguity-Base.

(9) In ABAB, Cophonology B : Align(RED, IMP)-R, Adjacency-BR-by-foot >> Adjacency-BR-by-syllable >> Contiguity-RED >> Contiguity-Base.

Cophonology A applies to the strong form, deriving AABB, while Cophonology B operates in the weak form, deriving ABAB.

4.1.1 AABB Reduplication

AABB reduplication is reduplicated from the disyllable base AB. AABB exhibits an emphatic function, that is, AABB is a semantically strong form. Examples are given below.

(10) *cheng cheng tong tong* ‘ very square and upright ’

straight straight appropriate appropriate

(11) *ho ho to to* ‘ very muddle-headed ’

confused confused muddles muddles

(12) *lo lo so so* ‘ very elaborate ’

chattered chattered babbled babbled

(13) *tshing tshing tshoo tshoo* ‘ very clear ’

clean clean clear clear

(14) *kui kui ki ki* ‘ very straight and square ’

regulatd regulated obedient obedient

The constraint adjacency-BR-by-syllable is motivated by the idea that each syllable of the reduplicant wants to be as close as possible to its correspondent syllable in the base. The constraint adjacency-BR-by-foot requires every foot in the reduplicant to be adjacent to its corresponding base. The constraint Align(RED, IMP)-R requires that the right edge of the reduplicant coincide with the right edge of the idiom phrase. In AABB, the reduplicant in the syllable is adjacent to its corresponding base. The ranking of the constraint Adjacency-BR-by-syllable is higher than Adjacency-BR-by-foot and Align (RED, IMP)-R. The ranking argument is Adjacency-BR-by-syllable >> Align(RED, IMP)-Right, Adjacency-BR-by-foot >> Contiguity-RED >> Contiguity-Base.

(15)

/RED+ tshing khi/	Adjacency-BR-by-syllable	Align(RED, IMP)-R	Adjacency-BR-by-foot	Contiguity-RED	Contiguity-Base
☞ a. tshing tshing khi khi				*	*
b. tshing tshing khi khi		*W		*	*
c. tshing tshing khi khi		*W			**W
d. tshing tshing khi khi				** W	L
e. tshing khi tshing khi	**W				L
f. tshing khi tshing khi	**W	*W			L
g. tshing khi tshing khi	**W	*W	**W		**W
h. tshing khi tshing khi	**W		*W	**	L

In tableau (15), the constraint adjacency-BR-by-syllable favors the winner *tshing tshing khi khi* 'very clean' over candidates e. *tshing khi tshing khi*, candidate f. *tshing khi tshing khi*, candidate g. *tshing khi tshing khi*, and candidate h. *tshing khi tshing khi*. Candidates e., f., g., h., violate the highest constraint adjacency-BR-by-syllable twice since the reduplicants which are underlined in candidate e., f., g., and h. are not next to the correspondent base. Therefore, candidates e., f., g., h., are ruled out. The constraint Align(RED, IMP)-R favors the winner over candidate b. *tshing tshing khi khi* and candidates c. *tshing tshing khi khi* which violate the constraint Align(RED, IMP)-R since the right edge of the reduplicant does not coincide with the right edge of the idiom phrase. Therefore, candidates b. and c. are ruled out. Align(RED, IMP)-R favors the winner over the candidate f. *tshing khi tshing khi* and candidate g. *tshing khi tshing khi* since reduplicant violates Align(RED, IMP)-R; therefore, candidate f. and g. are ruled out. Adjacency-BR-by-foot restricts the size and the position of the reduplicant and the corresponding base. In AABB, the constraint Adjacency-BR-by-foot favors the winner over Candidate g. *tshing khi tshing khi* and Candidate h. *tshing khi tshing khi* since the reduplicants which are underlined are not

adjacent to their corresponding base. Constraint Contiguity-Base favors the candidate d., e., f., h., over the winner since the base in the winner is interrupted by other syllable; however, constraint Contiguity-Base is violable. Contiguity-RED favors the winner over candidate d. *tshing tshing khi khi* since the reduplicant is interrupted by *tshing khi*; therefore, candidate d. is ruled out. The optimal output is candidate a. *tshing tshing khi khi* 'very clean'. This chapter adopts Align(RED, IMP)-Right to restrict the reduplicant to coincide with the right edge of the quadrisyllabic idiom phrase in the output. This argument supports Chiang's (1992) prediction of the reduplication in Chinese dialects. The reduplication is a sort of suffixation. In AABB, the constraint ranking is Adjacency-BR-by-syllable >> Align(RED, IMP)-Right, Adjacency-BR-by-foot >> Contiguity-RED >> Contiguity-Base.

4.1.2 ABAB Reduplication

ABAB reduplication is reduplicated from the disyllable base AB. ABAB exhibits a weakening function, that is, ABAB is a semantically weak form. Examples are given below.

(16) *cheng tong cheng tong* ' a bit square and upright '

straight appropriate straight appropriate

(17) *ho to ho to* ' a bit muddle-headed'

confused muddles confused muddles

(18) *lo so lo so* ' a bit elaborate'

chattered babbled chatter babbled

(19) *tshing tshoo tshing tshoo* ‘ a bit clear ’

clean clear clean clear

(20) *kui ki kui ki* ‘ a bit straight and square ’

regulated obedient regulated obedient

In ABAB, the base is fully reduplicated. The constraint Adjacency-BR-by-foot requires that the foot in the reduplicant to be as close as possible to its corresponding base. The constraint adjacency-BR-by-syllable is motivated by the perspective that each syllable of the reduplicant wants to be as close as possible to its correspondent syllable in the base. The constraint Align(RED, IMP)-R requires that the right edge of the reduplicant coincides with the right edge of the idiom phrase. In ABAB, the syllable in the reduplicant is not adjacent to its corresponding base, and the foot in the reduplicant is adjacent to its corresponding base. Therefore, Adjacency-BR-by-foot >> Adjacency-BR-by-syllable. The constraint ranking is Align(RED, IMP)-R, Adjacency-BR-by-foot >> Adjacency-BR-by-syllable >> Contiguity-RED >> Contiguity-Base. The ranking argument is given below.

(21)

/RED+ tshing khi /	Align(RED, IMP)-R	Adjacency-BR-by-foot	Adjacency-BR-by-syllable	Contiguity-RED	Contiguity-Base
☞ a. tshing khi <u>tshing</u> <u>khi</u>			*		
b. tshing <u>tshing</u> khi <u>khi</u>		*W	L	*W	*W

In tableau (21), the essence of AABB and ABAB is the size of the reduplicant. ABAB reduplicate the foot but AABB reduplicate the syllable. Tableau (21) focus the

interaction between Adjacency-BR-by-syllable and Adjacency-BR-by-foot, and the minor candidates are ruled out in tableau (15). In tableau (21), the constraint Adjacency-BR-by-foot favors the winner over candidates b. *tshing* <u>*tshing*</u> *khi* <u>*khi*</u> since the foot in the reduplicant is not adjacent to its corresponding base. The constraint Adjacency-BR-by-syllable favors Candidates b. over the winner *tshing khi* <u>*tshing*</u> <u>*khi*</u> 'a bit clean' since the syllable in the reduplicant is not adjacent to its corresponding base; however, Adjacency-BR-by-syllable is the violable constraint. Contiguity-RED and Contiguity-Base favors the winner over the candidate b. *tshing* <u>*tshing*</u> *khi* <u>*khi*</u> since the reduplicant and the base in candidate b. are interrupted by other syllables. Therefore, candidate a. is the optimal candidate. From the perspective of the syntactic relation, the head and non-head relation is unclear in the disyllable AB which is a kind of coordinate compound and there is no focus reading; therefore, the function of stress or weakening is inactive, hence, the constraint *RED(W) in AABB and ABAB is omitted. The re-ranking is found in AABB and ABAB. This section proposes Cophonology A to derive AABB and Cophonology B to derive ABAB.

(22) Cophonology of AABB and ABAB

Master Ranking

{Adjacency-BR-by-syllale, Adjacency-BR-by-foot, Align(RED, IMP)R >> Contiguity-RED >> Contiguity-Base}

Cophonology A: AABB	**Cophonology B: ABAB**
Adj-syllable >> Align(RED, IMP)R, Adj-foot >> Contiguity-RED >> Contiguity-Base	Align(RED, IMP), Adj -foot >>Adj-syllable >> Contiguity-RED >> Contiguity-Base

4.2 Partial Reduplication

4.2.1 ABAC Reduplication

In partial reduplication ABAC, the base is ABC and A is reduplicated to form ABAC. Examples are given below.

(23) bo + li iu ‘no reason’ → *bo li <u>bo</u> iu*

(24) bo + cing ki ‘no evidence’ → *bo cing <u>bo</u> ki*

(25) bo + huann hi ‘unhappy’ → *bo huann <u>bo</u> hi*

(26) bo + iau kin ‘doesn’t matter’ → *bo iau <u>bo</u> kin*

(27) be + tin tang ‘cannot move’ → *be tin <u>be</u> tang*

(28) kong + tang sai ‘say something’ → *kong tang <u>kong</u> sai*

(29) kiann + chut jip ‘walk back and forth’ → *kiann chut <u>kiann</u> jip*

(30) siunn + lai khi ‘think a lot’ → *siunn lai <u>siunn</u> khi*

(31) ho + kha chiu ‘healthy’ → *ho kha <u>ho</u> chiu*

A generalized description of ABAC is, first, the reduplicant and the corresponding base should be adjacent to each other in full reduplication except when in partial reduplication. Adjacency-BR-by-syllable is lower ranked. Second, when the corresponding base is on the left side, the reduplicant is inserted between the final monosyllabic morpheme and second monosyllabic morpheme of the base. That is, the right edge of the reduplicant aligned with the left edge of the rightmost monosyllabic morpheme in the base. In the previous studies, the different edge alignment is proposed. Labrune (2002) proposed the constraints ALIGN (A, Right, HeadFoot of B, Left) to govern the prosodic organization and the length of the abbreviated form to examine the relation between the simple abbreviated loanword and the head foot

(accented mora). In addition, to account for the peripheral position of the epenthesis vowel in the clitics, Bonet and Lloret (2003) proposed Align(V-CL) to align the right edge of V(erb) [-tense] with the left edge of a pronominal clitic. In partial quadrisyllabic reduplication, this thesis does not follow Chiang's perspective of suffixation but proposes a different edge alignment to restrict the position of the reduplicant.

(32) Adjacency-BR-by-syllable: Assign one violation mark for every syllable in the reduplicant which is not next to its correspondent base. (Lunden 2004)

(33) Align(RED, R; Rightmost monosyllabic morpheme, L): Assign one violation mark for every reduplicant whose right edge does not coincide with the left edge of the rightmost monosyllabic morpheme (RMM) in the base.

In ABAC partial reduplication, the ranking of Adjacency-BR is lower than that of Align(RED, R; Rightmost MM, L) since the reduplicant is inserted between the second and final monosyllabic morpheme in the base. The ranking argument is Align(RED, R; Rightmost MM, L). The ranking constraint is given below.

(34)

/RED+bo li iu/	Align(RED, R; RMM, L)	Adjacency-BR
a. ☞bo li <u>bo</u> iu		*
b. bo <u>bo</u> li iu	*W	L
c. <u>bo</u> bo li iu	**W	L
d. bo li iu <u>bo</u>	*W	*

In tableau (34), the constraint Align(RED, R; RMM, L) restricts the place of the reduplicant. The distinction between full reduplication and partial reduplication lies in the relation between the reduplicant and its corresponding base. In full reduplication, the reduplicant should be as close as possible to the corresponding base. For example, *tshing khi* 'clean' → *tshing* <u>*tshing*</u> *khi* <u>*khi*</u> 'a bit clean'. In contrast, in partial reduplication, the reduplicant and its corresponding base are not next to each other but interrupted by a monosyllabic morpheme. This forces the constraint Adjacency-BR to be ranked lower than Align(RED, R; RMM, L). In tableau(34), constraint Align(RED, R; RMM, L) favors the winner *bo li* <u>*bo*</u> *iu* 'without any reason' (emphatic purpose) over candidate b. *bo* <u>*bo*</u> *li iu* since the right edge of the reduplicant which is underlined in candidate b. coincides with the left edge of the second syllable and not the final syllable in the base. Candidate b. violates Align(RED, R; RMM, L) once. Therefore, candidate b. is ruled out. The constraint Align(RED, R; RMM, L) favors the winner *bo li* <u>*bo*</u> *iu* over candidate c. <u>*bo*</u> *bo li iu* since the right edge of the reduplicant coincides with the left edge of the leftmost monosyllabic morpheme in the base. Candidate c. violates Align(RED, R; RMM, L) twice. Therefore, candidate c. is ruled out. The constraint Align(RED, R; Rightmost MM, L) favors the winner over candidate d. *bo li iu* <u>*bo*</u> since the right edge of the reduplicant which is underlined in candidate d. does not coincide with the left edge of the rightmost monosyllabic morpheme in the base. The lowest constraint Adjacency-BR-by-syllable favors candidates b. *bo* <u>*bo*</u> *li iu* and c. <u>*bo*</u> *bo li iu* over the winner and candidate d. since the reduplicant in the winner *bo li* <u>*bo*</u> *iu* and Candidate d. *bo li iu* <u>*bo*</u> are not next to their corresponding base. Constraint is violable in OT. From this tableau, the ranking argument of ABAC partial reduplication is Align(RED, R; RMM, L) >> Adjacency-BR-by-syllable. The optimal output is the winner *bo li* <u>*bo*</u> *iu* 'without any reason' (emphatic meaning). In ABAC, the ranking of constraint *RED(W) could be

the lowest or inactive since the head in stem ABC is reduplicated. This argument is different from the case of the disyllable AB base in ABB or AAB.

4.2.2 ABCB Reduplication

In partial reduplication ABCB, AC is always a coordinate compound, and B is an adjective or a verb. In addition, AC has a feature which is related to B (Hsu 2008). Examples are given below.

(35) *kha* *nng* *chiu* *nng* 'legs and hands are exhausted'
leg soft hand soft

(36) *kha* *kiann* *chiu* *kiann* 'legs and hands are healthy'
leg healthy hand healthy

(37) *kha* *bue* *chiu* *bue* 'the end of the legs and hands'
legs end hand end

(38) *chit* *ca* *peh* *ca* ' very early'
seven early eight early

(39) *chit* *lau* *peh* *lau* 'very old'
seven old eight old

(40) *chui* *chio* *bak* *chio* 'very happy'
mouth smile eye smile

(41) *kha* *lo* *chiu* *lo* 'legs and hands are very long'
leg long hand long

(42) *thau* *chio* *bin* *chio* 'very happy'
head smile face smile

(43) *thng* *tinn* *bit* *tinn* 'very sweet'
suger sweet honey sweet

A generalized description of ABCB is, first, the reduplicant and the corresponding base should be adjacent to each other in full reduplication except when in partial reduplication. Second, when the corresponding base is on the right side, the left edge of the reduplicant should coincide with the right edge of the leftmost monosyllabic morpheme in the base. This chapter proposes Align(RED, L; Leftmost monosyllabic morpheme, R) to restrict the position of the reduplicant.

(44) Align(RED, L; Leftmost monosyllabic morpheme, R): Assign one violation mark for every reduplicant whose left edge does not coincide with the right edge of the leftmost monosyllabic morpheme (LMM) in the base.

In ABCB partial reduplication, the reduplicant is not adjacent to its corresponding base and the left edge of the reduplicant coincides with the right edge of the leftmost monosyllabic morpheme in the base. The ranking of Align(RED, L; Leftmost monosyllabic morpheme, R) and Adjacency-BR-by-syllable is Align (RED, L; LMM, R) >> Adjacency-BR-by- syllable. The ranking argument is given below.

(45)

/RED+kha chiu nng/	Align(RED, L; LMM, R)	Adjacency-BR-by-syllable
a. ☞kha nng chiu nng		*
b. kha chiu nng nng	*W	L
c. kha chiu nng nng	**W	L
d. nng kha chiu nng	*W	*

In tableau (45), the constraint Align(RED, L; LMM, R) restricts the place of the

reduplicant. The distinction between full reduplication and partial reduplication lies in the relation between the reduplicant and its corresponding base. In full reduplication, the reduplicant should be as close as possible to the corresponding base. For example, *tshing khi* 'clean' → *tshing tshing khi khi* 'a bit clean'. In contrast, in partial reduplication, the reduplicant and its corresponding base are not next to each other but are interrupted with a syllable. This forces the constraint Adjacency-BR-by-syllable to be ranked lower than Align(RED, L; LMM, R). In this tableaux, constraint Align(RED, L; LMM, R) favors the winner *kha nng chiu nng* 'legs and hands are exhausted' (emphatic purpose) over candidate b. *kha chiu nng nng* since the left edge of the reduplicant which is underlined in candidate b. coincides with the right edge of the second monosyllabic morpheme and not with the leftmost monosyllabic morpheme in the base. Candidate b. violates Align(RED, L; LMM, R) once; hence, candidate b. is ruled out. The constraint Align(RED, L; LMM, R) favors the winner *kha nng chiu nng* over candidate c. *kha chiu nng nng* since the left edge of the reduplicant coincides with the right edge of the rightmost monosyllabic morpheme and not with the leftmost monosyllabic morpheme in the base. Candidate c. *kha chiu nng nng* violates Align(RED, L; LMM, R) twice; hence candidate c. is ruled out. The constraint Align(RED, L; LMM, R) favors the winner over candidate d. *nng kha chiu nng* since the left edge of the reduplicant which is underlined in candidate d. does not coincide with the right edge of the leftmost monosyllabic morpheme in the base. The lowest constraint Adjacency-BR-by-syllable favors candidate b. *kha chiu nng nng* and candidate c. *kha chiu nng nng* over the winner *kha nng chiu nng* and candidate d. *nng kha chiu nng* since the reduplicant in the winner and in candidate d. are not next to their corresponding base. Constraint is violable in OT, and Adjacency-BR-by-syllable is the lowest ranking constraint. From tableau (45), the ranking argument of ABCB partial reduplication is Align(RED, L; LMM, R) >> Adjacency-BR-by-syllable. The

optimal output is the winner *kha <u>nng</u> chiu nng* ‘legs and hands are exhausted’ (emphatic meaning). In ABCB, the ranking of constraint *RED(W) could be the lowest or inactive since the head in stem ABC is reduplicated. This argument is different from the disyllable AB base in ABB or AAB. The Hasse diagram of ABAC and ABCB is given below.

(46) ABAC

Align(RED, R; Rightmost MM, L)

|

Adjacency-BR-by-syllable

(47) ABCB

Align(RED, L; Leftmost MM, R)

|

Adjacency-BR-by-syllable

4.3 Summary

This chapter has examined the full reduplications AABB and ABAB and the partial reduplications ABAC and ABCB in Taiwan Southern Min. In AABB and ABAB, the result shows that semantic emphasis and semantic weakness have a close relation to the reduplications. In the structure of disyllable adjectives AB, AABB is the strong from, and ABAB is the weak form. According to the cophonology, the diversity in the reduplication from the same base has a semantic identity. In AABB, the reduplicant should be as close as possible to the corresponding base. In this chapter, AABB is examined by Cophonology A: Adjacency-BR-by-syllable >>

Align(RED, IMP)-Right, Adjacency-BR-by-foot >> Contiguity-RED >> Contiguity-Base. In ABAB, the right edge of the reduplicant should coincide with the right edge of the quadrisyllabic idiom phrase. In Cophonology B: Align(RED, IMP)-Right, Adjacency-BR-by-foot >> Adjacency-BR-by-syllable >> Contiguity-RED >> Contiguity-Base operates in the weak forms, deriving ABAB. AABB and ABAB show how semantic emphasis and weakness influence the derivation of reduplication.

In partial reduplication, the ABC becomes ABAC or ABCB to stress the meaning of ABC. In ABAC, the constraint ranking is Align(RED, R; Rightmost monosyllabic morpheme, L) >> Adjacency-BR-by-syllable. In ABCB, the constraint ranking is Align(RED, L; Leftmost monosyllabic morpheme, R) >> Adjacency-BR-by-syllable. In partial reduplication, the reduplicant is not adjacent to its corresponding base and the different edge alignment constraint forces the reduplicant to have a specific position. The constraint Adjacency-BR is violable and the ranking of Adjacency-BR is lower than the different edge alignment constraint. This chapter examined quadrisyllabic reduplication including full reduplication AABB and ABAB, partial reduplication ABAC and ABCB providing a general explanation about how distinct reduplications undergo and are derived in Taiwan Southern Min. The cophonologies of AABB, ABAB, ABAC, and ABCB are given below (48).

(48) **Cophonology：Quadrisyllabic Reduplication**

{ Adj-BR-by-syllale, Adj-BR-by-foot, Align(RED, IMP)R, Align(RED, R; RMM, L), Align(RED, L; LMM, R)
>> Contiguity-RED >> Contiguity-Base }

Cophonology A (Full Reduplication)
{Adj-syllable, Adj-foot, Align(RED, IMP)R >>
Contiguity-RED >> Contiguity-Base}

Cophonology B (Partial Reduplicaiton)
Align(RED, R; RMM, L), Align(RED, L; LMM, R)
>> Adj-syllable}

Cophonology C：AABB
Adj-syllable
>>Align(RED, IMP)R, Adj-foot
>> Contiguity-RED
>> Contiguity-Base

Cophonology D：ABAB
Adj –foot, Align(RED, IMP)R
>>Adj-syllable
>> Contiguity-RED
>> Contiguity-Base

Cophonology E：ABAC
Align(RED, R; RMM, L)
>> Adj-BR-by-syllable

Cophonology F：ABCB
Align(RED, L; LMM, R)
>> Adj-BR-by-syllable

Chapter 5

Conclusion

5.1 Thesis Summary

This thesis investigated trisyllabic and quadrisyllabic reduplication in Taiwan Southern Min under the framework of Optimality Theory (Prince and Smolensky 1993/2004; McCarthy and Prince 1993, 1994/2003; McCarthy 2008). Reduplication is a pervasive phenomenon in Taiwanese. The functions of reduplication can emphasize the meaning or weaken the meaning. According to the syntactic information as in Duanmu (1990), the head is the weak syllable, and the non-head is the stress syllable. From Cheng (1994), the neutral tone has diverse functions in marking the boundary of the VP, IP; in addition, the neutral tone displays a strong form and a weak form to distinguish meaning. This thesis adopted Optimality Theory to propose the related constraints used to examine how the reduplication is undergone. In Chapter Three, this thesis discussed how the disyllable AB becomes AAB or ABB. From two distinct points of view, one is the syntactic information and the other is the morpheme. In dealing with trisyllabic reduplication, this thesis adopted and proposes the related constraints as shown below.

(1) Anchor-BR-R: Assign one violation mark for every syllable at the rightmost of the base that has no correspondent at the rightmost of the reduplicant.

(2) Anchor-BR-L: Assign one violation mark for every syllable at the leftmost of the base that has no correspondent at the leftmost of the reduplicant.

(3) *RED (W): Assign one violation mark for every weaker syllable (unstressed or with non-primary stress) which is reduplicated.

(4) Adjacency-BR-by-syllable: Assign one violation mark for every syllable in the reduplicant which is not next to its correspondent base. (Lunden 2004)

(5) Align(RED, IMP)-Right: Assign one violation mark for every reduplicant which does not coincide with the right edge of the idiom phrase (IMP).

The ranking for the ABB partial reduplication *hian33 khui33 khui55* ‘open’ (emphasize the degree of the modifier) is Anchor-BR-R, Adjacency-BR-by-syllable, *RED(W) >> Align(RED, IMP)Right >> Anchor-BR-L. The ranking of AAB partial reduplication, such as in *hian33 hian55 khui0* (emphasize the action of the verb) is Anchor-BR-L, Adjacency-BR-by-syllable, *RED(W) >> Align(RED, IMP)Right >> Anchor-BR-R.

Quadrisyllabic reduplication can be divided into two categories, one is full reduplication, and the other is partial reduplication. In full reduplication AABB bears an emphatic meaning and ABAB a weak meaning. In partial reduplication ABAC, ABC is composed of two morphemes, one is A, the other is the coordinate compound BC, and A is reduplicated to form ABAC. In ABCB, ABC comprises two morphemes, one is AC which is a coordinate compound, and another is B which is reduplicated to form ABCB.

In investigating quadrisyllabic reduplication, this thesis adopts and proposes the following constraints:

(6) Adjacency-BR-by-syllable: Assign one violation mark for every syllable in

the reduplicant which is not next to its correspondent base. (Lunden 2004)

(7) Adjacency-BR-by-foot: Assign one violation mark for every foot in the reduplicant which is not next to its correspondent base. (Lunden 2004)

(8) Align(RED, IMP)-Right: Assign one violation mark for every reduplicant which does not coincide with the right edge of the idiom phrase.

(9) Align(RED, R; Rightmost monosyllabic morpheme, L): Assign one violation mark for every reduplicant whose right edge does not coincide with the left edge of the rightmost monosyllabic morpheme (RMM) in the base.

(10) Align(RED, L; Leftmost monosyllabic morpheme, R): Assign one violation mark for every reduplicant whose left edge does not coincide with the right edge of the leftmost monosyllabic morpheme (LMM) in the base.

(11) Contiguity-RED：Assign one violation mark for every reduplicant is interrupted by other syllable.

(12) Contiguity-Base：Assign one violation mark for every base is interrupted by other syllable.

Following Cophonology, this thesis proposes a set of rankings to resolve the the question of the derivation of the full reduplication AABB and of ABAB.

The ranking of the full reduplication AABB is (13).

(13) Adj-BR-by-syllable >> Align(RED, IMP)-R, Adj-BR-by-foot >>

Contiguity-Base >> Contiguity-RED.

The ranking of the full reduplication ABAB is (14).

(14) Align(RED, IMP)-Right, Adj-BR-by-foot >>Adj-BR-by-syllable

Contiguity-Base >> Contiguity-RED.

The ranking of the partial reduplication ABAC is (15).

(15) Align(RED, R; RMM, L) >> Adjacency-BR-by-syllable.

The ranking of the partial reduplication ABCB is (16).

(16) Align(RED, L; LMM, R) >> Adjacency-BR-by-syllable.

This thesis examined the trisyllabic reduplication ABB and AAB, and quadrisyllabic AABB, ABAB, ABAC, and ABCB under the Optimality Theory and Cophonology. From the proposed ranking argument, this thesis provides a new vision as to how diverse reduplications undergo. The summary of the cophonology in Taiwanese reduplication is shown in (17).

5.2 Further Issues

There are some issues which were not discussed in this thesis. First, the trisyllable reduplication from the monosyllable was not analyzed under the framework of OT. For example, *ang* 'red' → *ang ang* 'a bit red' → *ang ang ang* 'very red'. Second, the quarisyllabic ABAB can be AliAB to intensify the degree. From example, *lo so lo so* 'a bit long-winded' → *lo li lo so* 'very long-winded'. In the future research, one may analyze the substitution of the element under the framework of OT. The cophonolgoy of the trisyllabic and quadrisyllabic reduplication is given below.

(17)

Master Ranking

{ Anchor-BR-R, Anchor-BR-L, Adj-BR-by-syllable, Adj-BR-by-foot,*RED(W) >> Align(RED, IMP)R, Align(RED, R; RMM, L), Align(RED, L; LMM, R), Contiguity-RED >> Contiguity-Base.}

Cophonology A：Trisyllabic Reduplicati Reduplication

{Anchor-BR-R, Anchor-BR-L, Adj-BR-syllable, *RED(W) >>Align(RED, IMP)R}

Cophonology B：Quadrisyllabic Reduplication

{ Adj-BR-by-syllale, Adj-BR-by-foot, Align(RED, IMP)R, Align(RED, R; RMM, L), Align(RED, L; LMM, R) >> Contiguity-RED >> Contiguity-Base}

Cophonology C：ABB

{Anchor-BR-R, Adj-BR-by-syllable, *RED(W) >> Align(RED, IMP)R >> Anchor-BR-R}

Cophonology D：AAB

{Anchor-BR-L, Adj-BR-by-syllable, *RED(W) >>Align(RED, IMP)R >> Anchor-BR-L}

Cophonology E (Full Reduplication)

{Adj-syllable, Adj-foot, Align(RED, IMP)R >> Contiguity-RED >> Contiguity-Base}

Cophonology F (Partial Reduplicaiton)

{Align(RED, R; RMM, L), Align(RED, L; LMM, R) >> Adj-syllable}

Cophonology G：AABB

Adj-syllable >>Align(RED, IMP)R, Adj-foot >> Contiguity-RED >> Contiguity-Base

Cophonology H：ABAB

Adj –foot, Align(RED, IMP)R >>Adj-syllable >> Contiguity-RED >> Contiguity-Base

Cophonology I：ABAC

Align(RED, R; RMM, L) >> Adj-BR-by-syllable

Cophonology J：ABCB

Align(RED, L; LMM, R) >> Adj-BR-by-syllable

References

Anttila, A. and Y.-m. Y. Cho. 1998. Variation and change in optimality theory. *Lingua* 104: 31-56.

Bonet, Eulàlia and Lloret, Maria-Rosa. More on Alignment as an alternative to domains: The syllabification of Catalan clitics". *Probus* 17:1. 37-78

Chen, M.Y. 1987. The syntax of Xiamen tone sandhi. *Phonology Yearbook 4*, 109-149.

Cheng, R. L. 1985. A comparison of Taiwanese, Taiwan Mandrain, and Peking Mandarin. *Languag* 61：352-377.

Cheng, R. L. 1987. Vivid reduplication in Mandarin and Taiwanese. In Bramkamp, A. G. et al (eds.) *Chinese-Western Encounter：Studies in Linguistics & Literature.* 113-125. Taipei：Chinese Materials Center Publications.

Cheng, R. L. 1994b "Lexical Diffusion in Syntactic Change—The Case of Taiwanese Aspect and Phase Markers" Papers in *Honor of William S-Y Wang.* ed. by M. Chen and O. Tseng 87-103.

Cheng, R. L. 1997. *Taiwanese and Mandarin Structures and Their Developmental Trends in Taiwan.* Yuan-liou Publishing Co.,LTD

Chiang, Wen-yu. 1992. *The Prosodic Morphology and Phonology of Affixation in Taiwanese and Other Chinese Languages.* Ph.D. Dissertation, University of Delaware. Ann Arbor, UMI.

Duanmu, S. 1990. *A formal study of syllable, tone, stress and domain in Chinese languages.* Doctoral dissertation, MIT, Cambridge, Mass.

Halle, M. & J.-R. Vergnaud. 1987. *A Essay on Stress*, Cambridge, MA: MIT Press.

Halle, M. 1989. *The intrinsic structure of speech sounds.* Paper presented at Conference on Features and Underspecification Theories, October 7-9, MIT.

Lu, B.-F., and S. Duanmu, 2002. Rhythm and syntax in Chinese: A case study. *Journal of the Chinese Language Teachers Association*. 37.2: 123-136.

Inkelas, Sharon. 2008. The dual theory of reduplication. *Linguistics* 46: 351-401.

Inkelas, Sharon & Zoll, Cheryl. 2005.*Reduplication*: *doubling in morphology*. Cambridge: Cambridge University Press.

Inkelas, Sharon & Zoll, Cheryl. 2007. Is grammar dependence real? A comparison between cophonological and indexed constraint approaches to morphologically conditioned phonology. *Linguistics* 45:133–171.

Katamba, Francis. 1993. *Morphology*. Houndmills: Macmillan.

Kager. René. 1999. *Optimality Theory.* Cambridge: Cambridge University Press.

Labrune, Laurence. 2002. The prosodic structure of simple abbreviated loanwords in Japanese: a constraint-based account. *Journal of the Phonetic Society of Japan*, vol.

6：1, 98-120.

Lunden, S. L. Anya. 2004. Reduplicant Placement, Anchoring and Locality. *ROA*-885, 1~57.

McCarthy, John J. and Alan Prince. 1993a. Generalized Alignment. In *Yearbook of Morphology*, ed. G.E. Booij and J. van Marle, 79-153. Kluwer.

McCarthy, Johm j. and Alan Prince. 1993b. Prosodic Morphology I：constraint interaction and satisfaction. Technical Reports of Rutgers University Center for Cognitive Science, no.3.

McCarthy, John J. and Alan Prince. 1995. Prosodic Morphology. In *The Handbook of Phonological Theory*, ed. Goldsmith et al., 318-366. Blackwell. *Non Vidi*.

McCarthy, John J. and Alan Prince. 1995. Faithfulness and reduplicative identity. *University of Massachusetts Occasional Chapters in Linguistics* UMOP 18, *eds. By* Jill Bechman et al,. 249-384. Amherst Mass.: Graduate Linguistic Student Association.

McCarthy, John J. 2008. *Doing Optimality Theory: Applying Theory to Data*. Oxford: Blackwell.

Nelson, Nicole Alice. 2003. *Asymmetric Anchoring*. Ph.D. Dissertation, Rutgers, the State University of New Jersey.

Nespor, Marina and Irene Vogel. 1986. *Prosodic Phonology.* Dordrecht: Foris Publication.

Orgun, Cemil Orhan. 1996. Sign-based morphology and phonology：With special attention to optimality theory. Berkeley, CA：University of California P

Ou, Shu-chen. 1996. *A Prosodic-Theoretic Approach to Southern Min Special Tone Sandhi.* MA Thesis. National Chengchi University.

Prince, Alan S. and Paul Smolensky. 1993/2004. *Optimality Theory: Constraint Interaction in Generative Grammar.* Oxford: Blackwell.

Qu, Y. F. 1995. Adjective reduplications in Fuchou：A morpho-phonological analysis. *Journal of East Asian Linguistics*. 4：1-27.

Selkirk, Elisabeth. 1984. *Phonology and Syntax: The Relation Between Sound and Structure.* The MIT Press.

王希杰. 1991. 論雙音節動詞的重疊性及其語用制約性.《中國語文》6：425-430。

徐淑娟. 2008. 台灣閩南語重疊式形容詞之結構分析及其變調研究. *新竹教育大學人文社會學報創刊號*：27-48

陳重瑜. 1984. 輕聲的音位結構與輕聲詞的標準. *第一屆世界華語文教學研討會論文集* 327-339. 台北：中央研究院歷史語言研究所。

黃宣範. 1988. 台灣話構詞論. 鄭良偉，黃宣範(編). 121-127. *現代台灣話研究論文集*. 台北：文鶴出版有限公司。

楊秀芳. 1992. *台灣閩南語語法初稿*. 台北：大安出版社。

鄭良偉. 1988. 台灣話動詞重疊式的語意與語法特點.《中國語文》207：439-444。
鄭謝淑娟. 1981. 台灣福建話形容詞的研究. 台北：學生書局。
鄭縈. 1995. 閩南語形容詞重疊式的一些特點與及其意義. 曹逢甫，蔡美慧(編). *第一屆台灣語言國際研討會論文選集*. 283-312. 台北：文鶴出版有限公司。
盧廣誠. 1999. *台灣閩南語詞彙研究*. 台北市：南天書局。

Vita

Education M.A in Linguistics, July 2011
National Chengchi University

B.A in English, June 2008
National Kaohsiung Normal University

Grants and Scholarships

2011 National Chengchi University Travel Grant for attending the 3rd Vienna workshop on affix order：Advances in affix order research.

2010 National Chengchi University Travel Grant for attending Western Conference on Linguistics.

2009 National Science Council Travel Grant for attending the 42nd International Conference on Sino-Tibetan Languages and Linguistics. Project No. NSC-98-2922-I-004-072

2008-2011 Theoretical Phonology Laboratory Assistantship
National Chengchi University

2009 Phonetics and Psycholinguistics Laboratory Assistantship
National Chengchi University

2008-2010 National Science Council Research Scholarship
Project No. NSC 97-2410-H-004-MY3

2009 Council for Hakka Affairs, Executive Yuan Research Scholarship

2009 The committee member of Mao Kong Forum-The First International Graduate Student Conference on Modern Phonology.

2009 The committee member of the 2nd Theoretical Phonology Conference.

Publication

Hsu, Ching-Han. 2009. Partial Reduplication Tone Sandhi in Southern Min. Paper presented in the 42nd International Conference of Sino-Tibetan Languages and Linguistics. Payap University. ChiangMai, Thailand.

Hsu, Ching-Han. 2009. An OT approach to Reduplication and Tone sandhi in Taiwan Southern Min. Paper presented in Mao Kong Forum: The First International Graduate Student Conference on Modern Phonology. National Chengchi University. Taiwan.

Hsu, Ching-Han. 2010. Interface between Phonology and Morphology in Reduplication of Taiwan Southern Min. Paper accepted in the International Conference on Phonology and Phonetics: Accent on Tone. Shanghai International Studies University.

Hsu, Ching-Han. 2010. Nonconcatenative Reduplication in Taiwan Southern Min. Paper accepted in the 43rd International Conference of Sino-Tibetan Languages and Linguistics. Lund University. Sweden.

Hsu, Ching-Han. 2010. AAB and ABB Reduplication in Taiwan Southern Min. Paper presented in the Western Conference on Linguistics. California State University, Fresno. USA.

Hsu, Ching-Han. 2010. An Optimality Theoretical Analysis of Reduplication and Tone in Taiwanese. Paper accepted in the Language and Linguistic Student Conference. University of Central Oklahoma. USA. 2010.

Hsu, Ching-Han. 2011. Quadrisyllabic Reduplication in Taiwanese. Paper presented in the 3rd Vienna workshop on affix order：Advances in affix order research. Vienna, Austria.