CHAPTER 5

PROTO CHIN

5.0 Introduction

This chapter is a description of Proto Chin based on the reconstruction in Chapter 4. The discussion is divided into a general description of the language and a proposal for the language family. The general description of the language is structured according to syllable structure, consonants, vowels and segment distribution. Tone is not reconstructed. An initial stammbaum of the Chin language family based on shared phonological development is then proposed.

5.1 General description of Proto Chin

This section considers the general description of Proto Chin as to its syllable structure, consonant inventory, vowels, segment distribution and tones. This reconstruction is assumed to be the picture of Chin languages based on Tedim, Mizo, Hakha, Mara, Khumi and Kaang.

5.1.1 Syllable structure

The syllable canon of Proto Chin can be generalized as $(C_1)(C_2)V_1(V_2)(C_3)T$. The parentheses show optional elements. The optional initial consonant (C_1) can be clustered with the medial (C_2). The nucleus is composed of either a monophthong V_1 or the diphthong $V_1(V_2)$. The final consonant (C_3) is also optional. T represents tone. The potential syllable types are V, VV, VC, CV, CCV, CVC, CVV, CVVC, CCVC, and CCVVC. Examples of different syllable sharps are provided in Table 118.

Ref. No.	English gloss	Proto Chin	Syllable type
437	elder bro. of m	*uː	Vː
081	dog	*ui	VV
099	chicken	*aːr	VːC
002	sun	*ni	CV
212	fire	*mei	CVV
266	itch	*tʰak	CVC
003	moon	*kʰraː	CCVː
287	flow	*luaŋ	CVVC
121	brain	*kʰruak	CCVVC
035	mountain	*kraŋ	CCVC

Table 118. Examples of syllable types in Proto Chin

5.1.2 Consonant inventory

Table 119 provides the consonant inventory for Proto Chin (repeated form Table 100). The consonant inventory is symmetrical. Proto Chin has a voiceless stop series, a voiced stop series and a aspirated voiceless stop series. Nasal and liquid series have voiceless counterparts but the voiced and voiceless features for fricatives are present only for coronals. There is a voiceless glottal fricative.

	Labial	Coronal	Dorsal	Glottal
Voiceless stops	*p	*t	*k	[*ʔ]
Voiceless Aspirated stops	*pʰ	*tʰ	*kʰ	
Voiced stops	*b	*d	*g	
Voiced Nasals	*m	*n	*ŋ	
Voiceless nasals	*m̥	*n̥	*ŋ̊	
Voiced Trill		*r		
Voiceless trill		*r̥		
Voiceless alveolar affricate		*ts		
Voiceless aspirated alveolar affricate		*tʃʰ		
Voiceless Fricatives		*s		*h
Voiced fricatives		*z		
Voiced Lateral approximant		*l		
Voiceless lateral approximant		*l̥		

Table 119. Proto Chin consonant inventory

5.1.3 Vowels

Proto Chin vowel inventory is shown in Table 120.

	Front	Back
Close	*i	*u
Close mid	*e	*o
Open	*a	

Table 120. Proto Chin vowel inventory

There are five cardinal vowels composed of the close unrounded front vowel *i, the close rounded back vowel *u, the close mid unrounded front vowel *e, the close mid rounded back vowel *o and the open vowel *a. They constitute a symmetrical vowel inventory.

5.1.4 Segment distribution

The distribution of Proto Chin segments can be summarized as follows. All consonants can appear in the initial consonant (C_1) position. However, the second consonant (C_2) is limited to /r/. Whenever a consonant cluster occurs, the first consonant is restricted to the voiceless aspirated or unaspirated velar stop. All vowels can appear in V_1 monophthong position, but V_2 in diphthongs is restricted to either the open vowel /a/, the close unrounded front vowel /i/ or the close rounded back vowel /u/. The set of reconstructed diphthongs is shown in Table 121.

	Front	Back
Close	*ia	*ua *ui
Close mid	*ei *eu	*oi *o
Open	*au *ai	

Table 121. Proto Chin vowel distribution of diphthongs

The final consonant (C_3) in closed syllables is restricted to voiceless stops, nasals, and liquids as shown in Table 122.

	Labial	Coronal	Dorsal	Glottal
Voiceless stops	*p	*t	*k	[ʔ]
Nasals	*m	*n	*ŋ	
Trill		*r		
Lateral approximant		*l		

Table 122. Proto Chin final consonants

5.2 The Chin language family

The subgrouping of Chin languages in previous literature was described in Chapter 2. In Chapter 3, a preliminary subgrouping of Chin languages was also proposed from a lexicostatistic analysis of 100 core words.

This section considers the relationship of Chin languages based on the phonological reconstruction in Chapter 4. The phonological relationships among Chin languages are used as a basis for proposing a subgrouping of these languages.

5.2.1 Shared phonological rules

A Chin Stammbaum can be reconstructed based on shared phonological rules. There are 43 phonological rules identified in this phonological reconstruction. Table 123 presents a summary of the phonological rules that have applied in the development of each language.

The first column from the left is number of phonological sound change rules as it appear in the text and followed by names of rules. Third column to the end from the left is names of languages effected by the respective sound change rules. The symbol (*) shows the generalized rules.

Rule No	Name of Rules	Languages applied to respective the rules					
Rule 1	Voicing	Tedim					
Rule 2	Voicing	Tedim					
Rule 3	Velarization	Tedim					
Rule 4	Strengthening	Tedim					
Rule 5	Lenition	Tedim				Khumi	
Rule 6	Palatalization					Khumi	Kaang
Rule 7	Deaffrication	Tedim				Khumi	Kaang
Rule 8	Spirantization	Tedim				Khumi	Kaang
Rule 9	Voicing	Tedim					
Rule 10	Deletion	Tedim					
Rule 11	Sporadic		Mizo	Hakha	Mara		
Rule 12	Assimilation		Mizo	Hakha	Mara		
Rule 13	Merging		Mizo	Hakha			
Rule 14	Fronting or Centralization						Kaang
Rule 15	Fronting or Centralization						Kaang
Rule 16	Raising and Centralization						Kaang
Rule 17	*Centralization						Kaang
Rule 18	Raising				Mara		
Rule 19	Diphthongization				Mara		
Rule 20	Lowering					Khumi	
Rule 21	Coalescence				Mara		
Rule 22	Fusion			Hakha	Mara		
Rule 23	Fusion				Mara		
Rule 24	Coalescence					Khumi	Kaang
Rule 25	Monophthongization				Mara		
Rule 26	Coalescence				Mara		
Rule 27	Monophthongization					Khumi	Kaang
Rule 28	Alveolarization					Khumi	
Rule 29	Deletion				Mara		
Rule 30	Deletion				Mara		
Rule 31	Deletion				Mara		
Rule 32	*Deletion				Mara		
Rule 33	Devoicing	Tedim					
Rule 34	Deletion				Mara	Khumi	Kaang
Rule 35	Deletion				Mara	Khumi	
Rule 36	Deletion				Mara	Khumi	
Rule 37	Deletion				Mara		
Rule 38	*Deletion				Mara		
Rule 39	Deletion				Mara	Khumi	Kaang
Rule 40	Spirantization	Tedim	Mizo	Hakha	Mara	Khumi	Kaang
Rule 41	Labialization	Tedim	Mizo	Hakha	Mara	Khumi	Kaang
Rule 42	Voicing	Tedim					
Rule 43	*Voicing	Tedim					

Table 123. Summary of the phonological rules

To convert the information in Table 123 into a similarity matrix and tree diagram, we may calculate the Jaccard coefficient of similarity for each pair of languages according to the following formula (Grimes 1995).

$$\text{Jaccard } [i,j] = \frac{a}{b+c} ,$$

where **a** is the number of phonological rules shared by language **i** and **j**, **b** is the number of rules that apply to languges **i** but not to language **j**, and **c** is the number of rules that apply to language **j** but not to language **i**. (Rules which apply to neither language are assumed not to be relevant).

Tables 124, 125, 126 presents the a, b and c values, respectively for each pair of languages.

Tedim					
2	Mizo				
2	5	Hakha			
2	4	5	Mara		
5	2	2	5	Khumi	
4	2	2	2	9	Kaang

Table 124. Count of shared phonological rules.

Tedim					
11	Mizo				
11	0	Hakha			
11	1	1	Mara		
8	3	4	1	Khumi	
9	3	4	4	9	Kaang

Table 125. Count of phonological rules shared by
language **i** but not by language **j**

Tedim					
3	Mizo				
4	1	Hakha			
18	16	15	Mara		
8	11	11	15	Khumi	
8	10	10	11	3	Kaang

Table 126. Count of phonological rules shared by

language j but not by language i

Table 127 gives the Jaccard coefficient of similarity value.

Tedim					
0.13	Mizo				
0.12	0.13	Hakha			
0.06	0.19	0.24	Mara		
0.24	0.13	0.12	0.22	Khumi	
0.19	0.13	0.12	0.14	0.56	Kaang

Table 127. Jaccard coefficient of similarity value

The Jaccard coefficients is turned into tree as shown in Figure 15 by running the Unweighted Paired Group Method with Arithmetic Average (UPGMA, or average link method)[25] as shown Table 128.

-- Analysis: Average Link -- Correlation (r) = 0.986	
83.0	Mizo, Hakha
56.0	Khumi, Kaang
21.5	Mizo, Hakha, Mara
21.5	Tedim, Khumi, Kaang
13.1	Tedim, Khumi, Kaang, Mizo, Hakha, Mara

Table 128. UPGMA grouping of representative Chin languages by Jaccard coefficient

values for shared phonological rules.

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[25] This program was run by Dr. J. F. Bennett.

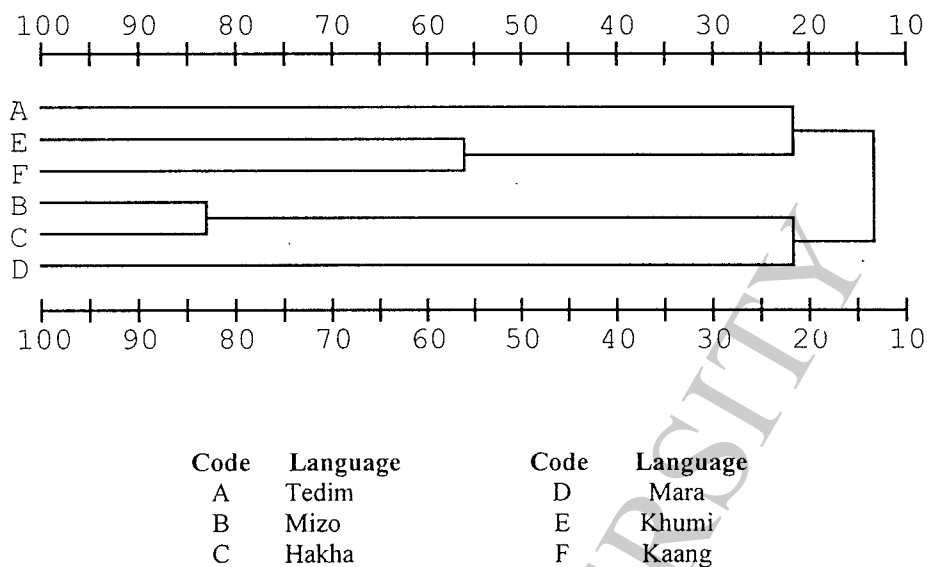| Code	Language	Code	Language
A	Tedim	D	Mara
B	Mizo	E	Khumi
C	Hakha	F	Kaang

Figure 15. Chin language tree based on shared phonological changes

The sound change rules depict the phonological relationship of the Chin languages and trace their decent from the parent language as shown in Figure 16.
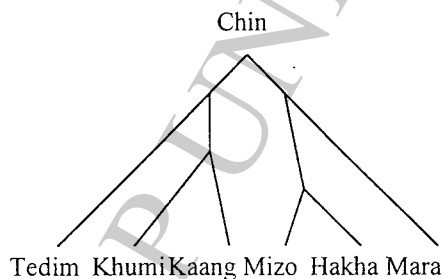

Figure 16. Subgrouping based on shared phonological rules

This subgrouping based on shared phonological rules is different from both traditional classifications and the preliminary subgrouping based on lexicostatistic analysis. Tedim is grouped together with Khumi and Kaang that is, traditional Northern Chin is phonologically closer to traditional Southern languages than the Central languages.

5.2.2 Phonological vs lexicostatistic groupings

The lexicostatistic subgrouping in Figure 17 (repeated from Figure 13) shows that there are two main Chin language groups: a Northern group (traditionally Central and Northern) and a Southern groups. The Northern languages are closely related each other but the Southern groups are far from the Northern group and from each other.

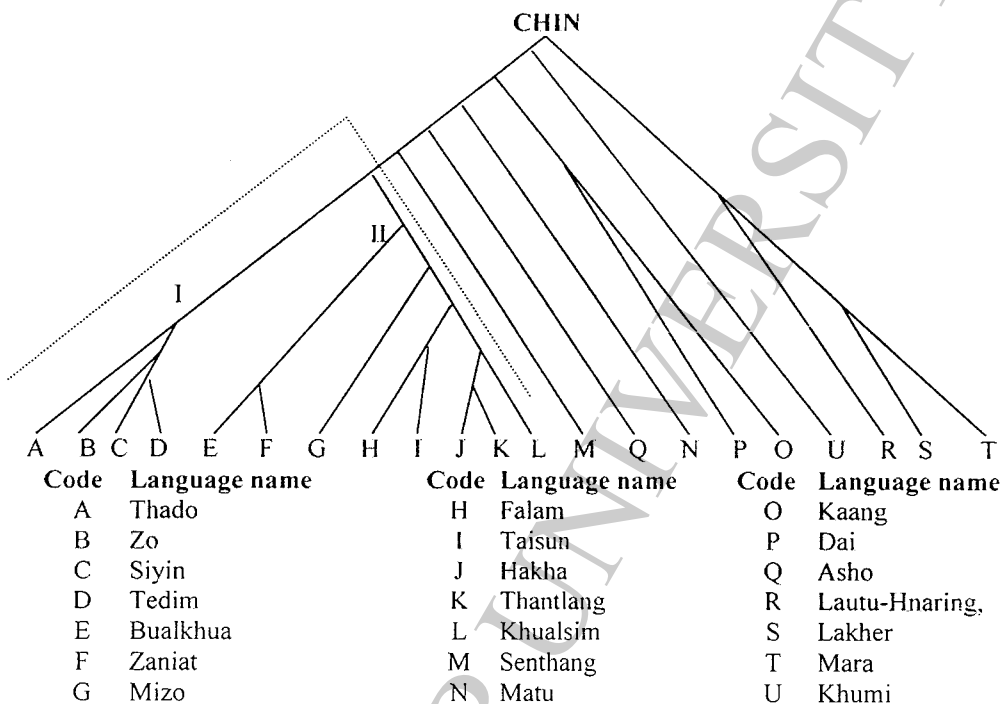| Code	Language name	Code	Language name	Code	Language name
A	Thado	H	Falam	O	Kaang
B	Zo	I	Taisun	P	Dai
C	Siyin	J	Hakha	Q	Asho
D	Tedim	K	Thantlang	R	Lautu-Hnaring,
E	Bualkhua	L	Khualsim	S	Lakher
F	Zaniat	M	Senthang	T	Mara
G	Mizo	N	Matu	U	Khumi

Figure 17. Preliminary subgrouping of Chin languages

The northern languages can be subdivided in to two subgroups: I (Thado, Zo, Siyin and Tedim) and II (Bualkhua, Zaniat, Mizo, Falam, Taisun, Hakha, Thangtlang, Senthang and Khualsim). In comparative analysis Tedim represents subgroup I and Hakha and Mizo represent subgroup II.

There can be at least three subgroups among Southern languages such as Lautu-Hnaring, Lakher and Mara (represented by Mara); Asho, Matu, Dai and Kaang (represented by Kaang); and Khumi.

The subgrouping based on shared phonological rules also shows two main Chin language groups. In this grouping, however, Tedim, traditionally a Northern language is grouped together with the traditional Southern languages Khumi and Kaang; that is, Tedim is closer to the traditional Southern languages in terms of its phonological developments than it is to the Central languages. The traditional Central languages are clustered together with Mara. as shown in Figure 18 (repeated from Figure 16).

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                         Chin
                          /|\
                        / / \ \
                       / /   \ \
                      / /     \ \
                     / /       \ \
        Tedim   Khumi  Kaang   Mizo  Hakha Mara
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Figure 18. Subgrouping based on shared phonological rules
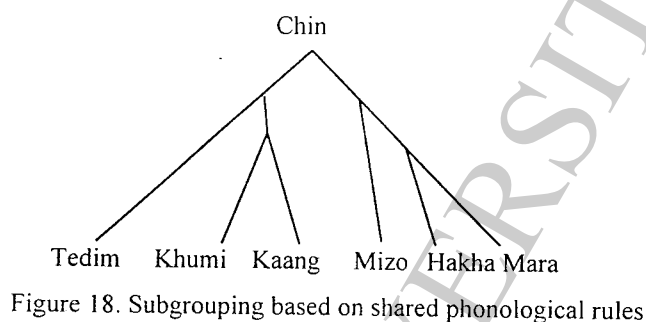
It should be noted that the relationship between Tedim and the southern languages of Khumi and Kaang is extremely weak compared to the relationship between Hakha and Mizo, or even between Khumi and Kaang. It should also be noted that Hakha and Mizo, traditionally Central Chin languages, are grouped together with Mara, which is listed under "Other Chin Groups" by Bradley (1997). Interestingly, Mara is the most innovative and Hakha and Mizo are the most conservative languages phonologically.

In sum, the lexicostatistic subgrouping and the phonological subgrouping are not entirely congruent. However, they agree in having two Chin language groups which challenges the traditional classification. Hakha and Mizo are in one group in both subgrouping. Khumi and Kaang also remain one group in both subgroupings.

However, there are differences in the components of the groups. Tedim is together with Hakha and Mizo in the lexicostatistic subgrouping, whereas it groups together with Khumi and Kaang in the phonological subgrouping. In the same manner, Mara is

together with Khumi and Kaang in the lexicostatistic subgrouping, but it groups together with Mizo and Hakha in the phonological subgrouping.

Therefore it is worth noting that the phonological grouping and lexicostatistic grouping differ at points, although not across the whole family.

5.3 Summary

The Proto Chin consonant inventory is symmetrical. It has voiceless stop, voiced stop and voiceless aspirated stop series. Liquids and nasals have their voiceless counterparts. Voicing contrast for fricatives appear only at the alveolar point of articulation. The vowel inventory is also symmetric with a typical five-vowel system. The syllable can be generalized as $(C_1)(C_2)V_1(V_2)(C_3)T$.

The subgrouping based on this phonological reconstruction challenges the traditional subgrouping. There are only two main groups in the Chin language family with the traditional Northern Chin and Southern Chin groups placed together in one group. This is similar to Peterson's (2000) proposed division of Chin languages with "Central" and "Peripheral" groups. In addition, the traditional Central Chin group is merged with Mara, which Bradley classifies among "Other Chin Groups".