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Consonant correspondences of Burmese, Rakhine and Marma with initial implications for historical relationships

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CONSONANT CORRESPONDENCES OF BURMESE, RAKHINE AND MARMA WITH INITIAL IMPLICATIONS FOR HISTORICAL RELATIONSHIPS

by

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This thesis, submitted by Heidi A. Davis in partial fulfillment of the requirements for the Degree of Master of Arts from the University of North Dakota, has been read by the Faculty Advisory Committee under whom the work has been done and is hereby approved.

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This thesis meets the standards for appearance, conforms to the style and format requirements of the School of Graduate Studies of the University of North Dakota, and is hereby approved.

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Wayne Swisher,
Dean of the School of Graduate Studies

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Heidi A. Davis

July 17, 2014

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ABBREVIATIONS

*	Reconstructed for proto-language
1sg	First person singular
C	Consonant
CHT	Chittagong Hill Tracts
F	Female
impol.	Impolite
IPA	International Phonetic Alphabet
L1	First language
L2	Second language
LB	Lolo-Burmese
LWC	Language of wider communication
M	Male
OB	Old Burmese/Archaic Burmese
P-	Prefix
PLB	Proto-Lolo-Burmese
pol.	Polite
PTB	Proto-Tibeto-Burman/Proto-Tibeto-Burmese
SB	Modern spoken Burmese
TB	Tibeto-Burman/Tibeto-Burmese
WB	Written Burmese

ABSTRACT

This thesis provides a consonantal comparison of the Burmese, Rakhine and Marma languages of Myanmar and Bangladesh, with primary focus on initial and medial consonants. Its main purposes are to provide new data from the Rakhine and Marma languages of Bangladesh and to make some initial observations about the historical relationship between the three languages based on compiled consonant correspondences.

Although much literature is available on the Burmese language as the primary representative of the Southern Burmish languages, little information is available on Rakhine and Marma. This thesis thus extends previous work on the family tree to these two close relatives. It compares new Rakhine and Marma wordlist data from Bangladesh to previously-collected Burmese and Rakhine data from Myanmar. It identifies cognate forms and regular sound correspondences, as well as exceptions, with reference to previously documented Burmese sound changes.

Marma is more conservative than Burmese or Rakhine in retaining the pronunciation indicated by Written Burmese orthography; in some cases, this is a direct reflex of reconstructed Proto-Tibeto-Burman. Burmese and Rakhine share two innovations that are not found in Marma ([ʧ] < PTB *kj; [s] < PTB *ʧ/*ʦ). These innovations may indicate that modern Burmese and Rakhine are a subgroup of the branch containing Marma, although some similarities of Rakhine and Burmese may instead be due to geographic and sociolinguistic factors, or borrowings from Burmese into Rakhine. The Rakhine

variety of Bangladesh differs somewhat from the Rakhine of Myanmar, which bears a few more superficial similarities to Spoken Burmese.

CHAPTER 1

LINGUISTIC AND SOCIAL BACKGROUND

In this thesis, I compare sound correspondence sets of the consonants of Burmese, Rakhine and Marma. Burmese is a Tibeto-Burman (TB), Lolo-Burmese,[1] South Burmish language (Sprigg 1963; DeLancey 1992; Matisoff et al. 1996; Thurgood 2003; LaPolla 2005). Hill (2013:333) lists Rakhine as part of the Burmish language family on his "working Stammbaum of the Burmish language family". Though it is not mentioned by Hill, Marma also belongs to the Southern Burmish language family; Wheatley (2003:195) lists both Rakhine and Marma as dialects of Burmese. Figure 1 is an adaptation of Hill's diagram. The ISO 639-3 standard identifies these speech varieties as Burmese [mya], Rakhine [rki] and Marma [rmz] (Lewis et al. 2014). All three are spoken primarily in Myanmar and Bangladesh; Burmese is the most well-known language of the Southern Burmish branch. While much has been documented and written about Burmese, there is not much information available about Rakhine and Marma.

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[1] Lolo-Burmese is also referred to as Burmese-Lolo (Benedict 1972), Burmese-Yiish (Wheatley 2003) and Ngwi-Burmese (Bradley 2007). Lolo was the name used before 1950 for the Yi Branch from China, the largest nationality speaking various languages in this subgroup of Tibeto-Burman. Many people in China now consider the term "Lolo" pejorative, thus Bradley recommends using the label "Ngwi" for this branch instead, referring to Lolo-Burmese as Ngwi-Burmese (Bradley 2007:358). I use "Lolo-Burmese" for this branch as this term is firmly entrenched in the literature without a general consensus on a replacement term, and the proto-language is referred to as Proto-Lolo-Burmese (PLB).

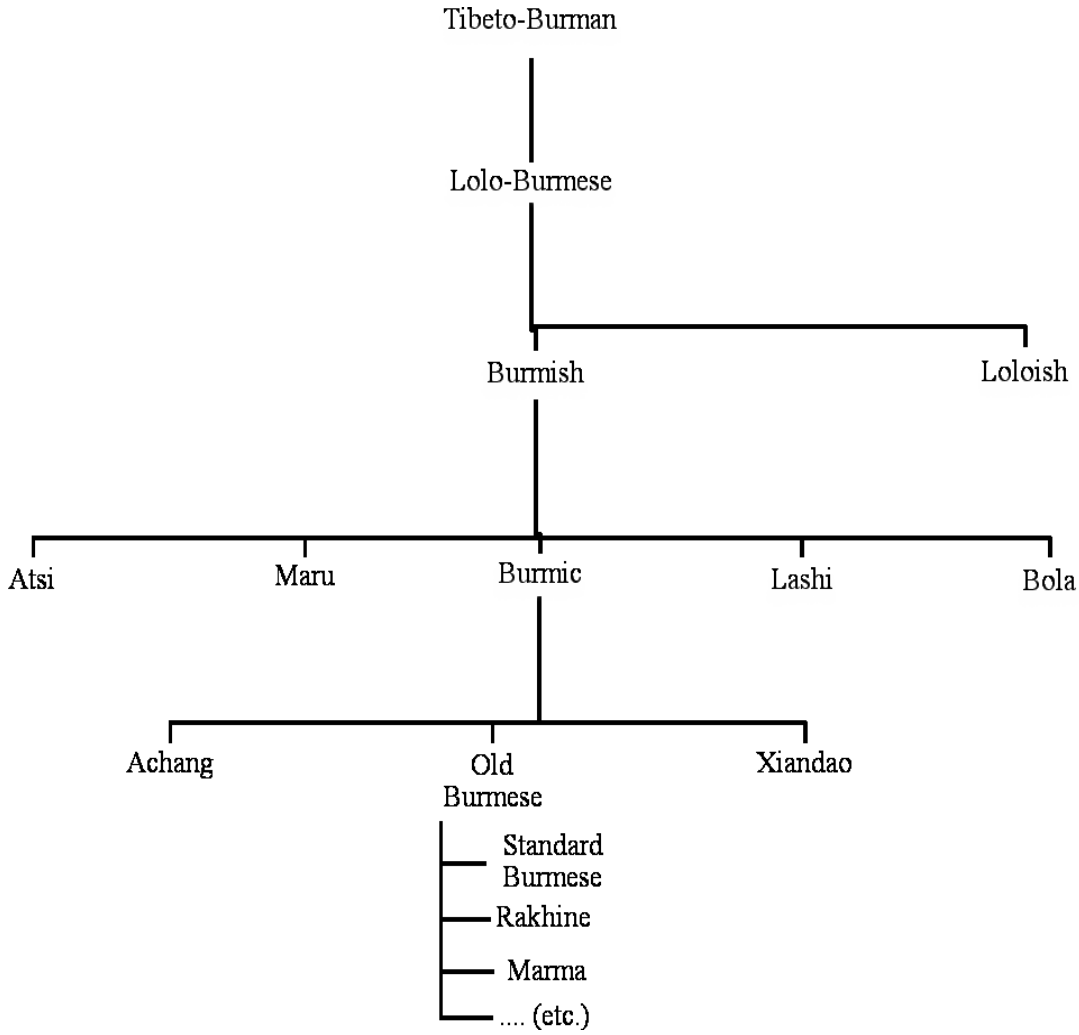

Figure 1. The Burmish language family

The goal of this thesis is to provide previously-unavailable data on the Rakhine and Marma languages of Bangladesh, and to make some initial observations about the historical relationship between Burmese, Rakhine and Marma. Much literature is available on the Burmese language as the primary representative of the Southern Burmish languages, yet there is little literature available on Rakhine and Marma. In this thesis, I extend previous work on the family tree to these two close relatives of Burmese and provide new Rakhine and Marma wordlist data from Bangladesh which I compare to

previously-collected Burmese and Rakhine data from Myanmar. I identify cognate forms and regular sound correspondences, as well as exceptions, for consonants of these languages. Based on these sound correspondences and the shared innovations they demonstrate, I discuss the initial implications for the historical relationship between Burmese, Rakhine and Marma.

The rest of Chapter 1 provides the linguistic and social backgrounds of these three languages. It gives an overview of the locations, population, names and dialects of Burmese, Rakhine and Marma, with a few comments on language contact. Chapter 2 discusses methodology, including the selection and background of language consultants and the procedures used for collecting, editing, transcribing and analyzing wordlist data. Chapter 2 concludes with a discussion of the data and the conventions used in sound correspondence tables, a list of initial PTB consonants and invariant consonant correspondences of Burmese, Rakhine and Marma. Chapters 3 through 5 list consonant correspondence sets; Chapter 3 contains most stop correspondences (bilabial, alveolar and velar, except for certain coronals), Chapter 4 lists resonant and nasal correspondence sets and Chapter 5 concludes with an interrelated group of coronal correspondence sets. Chapter 6 presents a summary of correspondences from Chapters 3-5, a relative chronology of Burmese sound changes and a discussion of the historical relationship of Burmese, Rakhine and Marma. The thesis ends with a summary and conclusions in Chapter 7. Appendix A provides an English translation of the demographic questions answered by consultants; a complete table of the wordlist data is listed in Appendix B.

1.1 Burmese

Burmese is the national language of Myanmar (formerly Burma[2]) the largest country in mainland Southeast Asia; Yangon (formerly Rangoon) is the capital and largest city (Shiwaruangrote 2000:1). There are around 30 million first language (L1) speakers of Burmese, and around 10 million second language (L2) speakers spread throughout the country (Lewis et al. 2014). Burmese is spoken throughout most of Myanmar, and is widely used in central Myanmar. Bradley (2007:352) suggests Burmans moved to the valley of Upper Burma around 960 AD after being displaced as a result of the conquest of the Pye by the Nanzhao.

"Myanmar" is also the official language name of Burmese. Burmese people use "Bama" as an ethnonym for ethnic Burmans and "Myanmar" as an ethnonym to refer to all groups that comprise a part of the country of Myanmar (Shiwaruangrote 2000:6). The spoken form of Burmese is called "Bama" and the written form is called "Myanma" (or Myanmar); in English, both forms of the language are called Burmese (Thompson 2013). The Ethnologue (Lewis et al. 2014) lists the dialects of Burmese as Beik (also called Merguese or Mergui), Mandalay Burmese, Yangon Burmese and Yaw; Bomang is a version spoken in Bangladesh. The dialect of Yangon Burmese is considered standard (spoken) Burmese (Shiwaruangrote 2000:1). The government uses the High or literary version of Burmese which is older and dissimilar to the spoken Low version; school

[2] The government changed the name of the country from Burma to Myanmar in June 1989 under the Adaptation of Expressions Law; under the same law, "Rangoon" was changed to "Yangon" and "Arakan" and "Arakanese" were changed to "Rakhine" (Watkins 2007:274-5).

textbooks are also written in High Burmese. Burmese is written using Myanmar (Burmese) script (Bradley 2007:387; Lewis et al. 2014).

1.2 Rakhine

The Rakhine people live mainly in western Myanmar and in southeastern Bangladesh. In Myanmar, they live in Rakhine State and in Chin State. In Rakhine State, Rakhine people live as far south as Gwa, in Thandwe, on the islands of Ramree and Man Aung and extending north up through Sittwe and Mrauk-U to the southeastern border of Bangladesh (Yaw and Statezni 2012:1). In Chin State, they live in Paletwa Township (Lewis et al. 2014). The location of Rakhine and Chin States within Myanmar is shown in Figure 2.

Rakhine also live in southeastern Bangladesh (Lewis et al. 2014). In the 18th century, many Rakhine migrated from their homes in Rakhine (Arakan) State, Burma, due to political turmoil; they settled in southeastern Bangladesh and southern Tripura in India (Bradley 2007:351, 359). Maggard et al. (2007:5) state the majority of Rakhine in Bangladesh live in Cox's Bazar, Patuakhali and Barguna districts. Figure 3 shows these locations in Bangladesh.

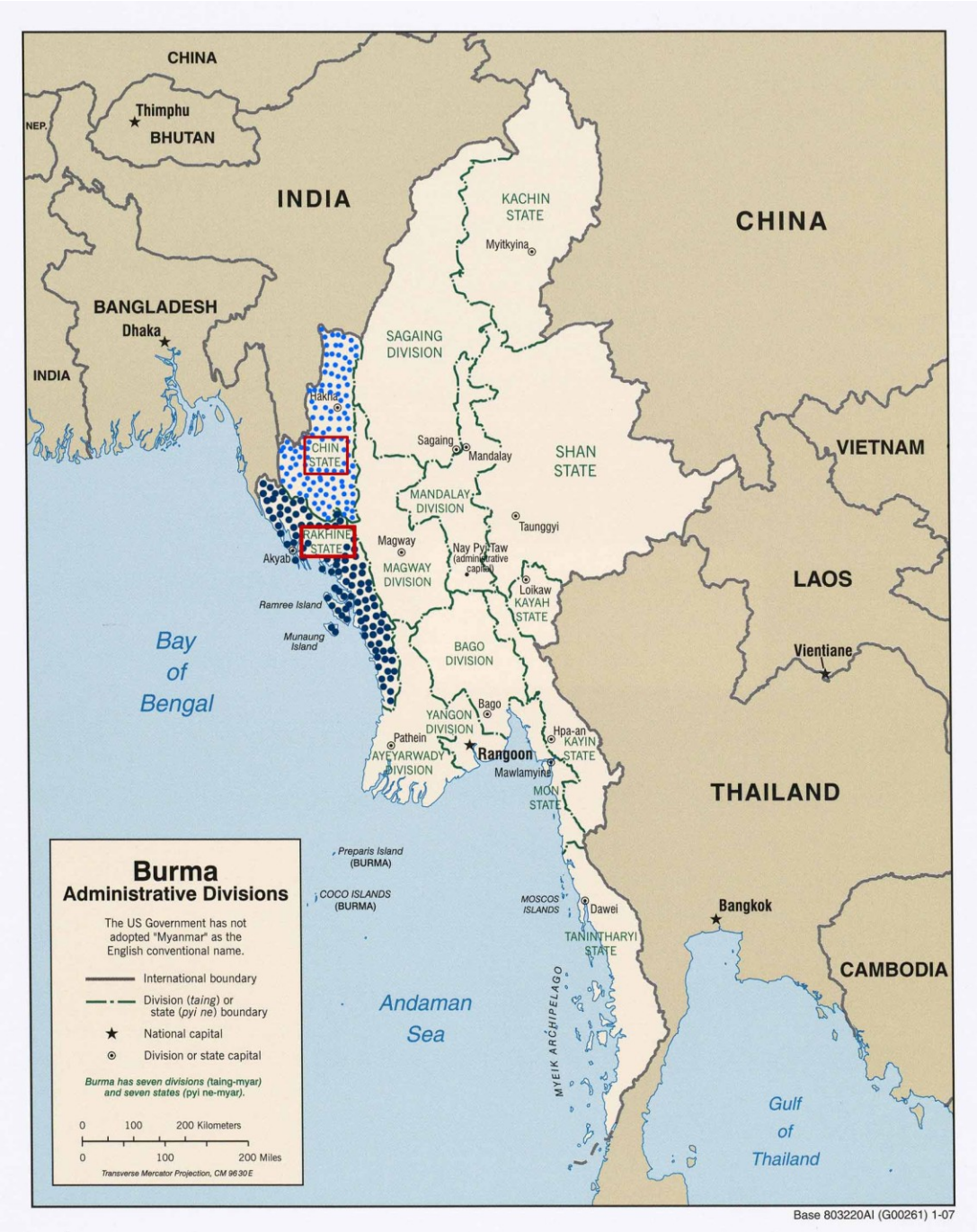

Figure 2. Myanmar, showing Rakhine State and Chin State[3]

[3] Public Domain. "University of Texas Libraries" scanned image. http://www.lib.utexas.edu/maps/middle_east_and_asia/txu-oclc-124072555-burma_admin_2007.jpg

Figure 3. Bangladesh: location of Rakhine in Cox's Bazar, Patuakhali, and Barguna districts[4]

Rakhine is considered a regional dialect of Burmese by many researchers (e.g. Jarernponganarn 1997; Wheatley 2003) while others claim it is sufficiently different from

[4] The map in Figure 3 is open source, based on UN map Bangladesh, no. 3711, Rev.2, January 2004 http://upload.wikimedia.org/wikipedia/commons/b/be/Un-bangladesh.png

standard Burmese to be a separate language (e.g. Okell 1995; Watkins 2007). Okell (1995:4) says that the Rakhine people have "preserved a strong sense of separateness" from the Burmese. Many Rakhine "continue to self-identify themselves by their relationship to the early modern Arakanese kingdom" and feel a distinct separateness from the Burmese (Charney 2002:215, as quoted in Yaw and Statezni 2012:5). Rakhine pronunciation corresponds more to Written Burmese (WB) than does modern spoken Burmese (SB). One example of this is in Rakhine's preservation of /ɹ/ which in SB has merged with /j/ (Okell 1995:2).

Rakhine is one of the officially-recognized large minority groups in Myanmar; it has the second-largest number of speakers there and is used by about 4.4% of Myanmar's total population (Yaw and Statezni 2012:2). It is spoken as L1 by around 800,000 in Myanmar and 200,000 in Bangladesh; there are around 1,020,000 Rakhine L2 speakers in Myanmar, as Rakhine is a language of wider communication (LWC) throughout Rakhine State and in Paletwa Township, Chin State, Myanmar (Lewis et al. 2014).

In the past, Rakhine were known as Arakanese but since 1989 those in Myanmar are referred to as "Rakhine" (Watkins 2007:275). This group has also been called Rakhain, Rakhaing and Rakkhaine in the scholarly literature (Matisoff et al. 1996; Lewis et al. 2014). In Bangladesh, "Arakanese" who live in the coastal areas are called Rakhine (Kilgo and Moore 1993, as quoted in Maggard et al. 2007:1). From the 17th to early in the 20th century, Rakhine speakers in Bangladesh were called Mogh, but this term is no longer used (Ghosh 1960:17, 19; Bradley 2007:358-359; see quote under 1.3 Marma below). Rakhine dialects in Myanmar are Chaungtha, Kyaukphyu, Man Aung (Chebuda Island), Mrauk-U, Sittwe (Akyab), and Yangbye (Rambree, Yanbe, Yanbye, Yangbye)

(Lewis et al. 2014). The dialect spoken in Thandwe Township, in the south of Rakhine State, is more like SB than the dialects spoken in the north Rakhine State townships (Yaw and Statezni 2012:31). The Sittwe dialect of Rakhine is considered the most prestigious (likely partly due to the fact that Sittwe City is the largest city and the center of trade); the intelligibility of the Sittwe dialect seems high throughout Rakhine State and it is also understood in Bangladesh (Yaw and Statezni 2012:1, 8; Lewis et al. 2014).

Rakhine is used in all but formal domains in Rakhine State; school books are in written Burmese, but children are taught by Rakhine teachers using Rakhine pronunciation (Yaw and Statezni 2012:7). Most Rakhine there speak Burmese as L2; the Rohingya language[5] is used as L2 in Buthidaung and Maungdaw townships. In Bangladesh, many Rakhine men use Bengali as L2; other L2s for Rakhine in Bangladesh are Burmese and Chittagonian. In Myanmar, Rakhine is written using Myanmar (Burmese) script, however the script is not standardized and is used informally (Lewis et al. 2014). A small number of Rakhine speakers in Bangladesh are literate in Burmese script; most Rakhine in Bangladesh are literate only in Bengali. Rakhine children from several communities are becoming literate in Burmese script through their use of Rakhine kindergarten primers.

[5] Muslims living in the north Rakhine State of Myanmar are called "Rohingya"; the Rohingya language is classified as a member of the Bengali-Assamese branch of Indo-Aryan, and is similar to Chittagonian, spoken in Bangladesh (Ekeh and Smith 2007:4; Lewis et al. 2014).

1.3 Marma

Marma is the second largest ethnic minority group in Bangladesh; most Marma live in the Rangamati, Bandarban and Khagrachari hill districts of the Chittagong Division (Maggard et al. 2007:4). In 2007, around 150,000 Marma lived in Bangladesh; in the 2001 Indian census, 30,600 Marma lived in the Mizoram and Tripura areas of India (Lewis et al. 2014). The locations of the Marma in Bangladesh are shown in Figure 4.

Marma have been known as Mawrma, Marama and Mrama (the Burmese form of "Mrama" is Mramargyi); though they live mainly in Bangladesh there are some Marma in India and Myanmar (Lewis et al. 2014). Bradley (2007:359) says that the "Mrama are a remnant of the Arakanese court who fled over 200 years ago when the Burmans seized Arakan." In Bangladesh, "Arakanese" who live in the Chittagong Hill Tracts (CHT) are called Marma. In much of the literature Marma is considered a dialect of Burmese virtually identical to Rakhine (Matisoff et al. 1996:60). In the past, "Mogh" was used for Marma speakers as well as for Rakhine, but it is no longer used, as it is a pejorative term. Kilgo and Moore (1993, as quoted in Maggard et al. 2007:3) write about the term Mogh:

> In the literature and through the years the Arakanese in Bangladesh have been given many different names including Mogh, Magh, Mugh, etc. For the Bengalis the word Magh (and its various forms) historically signifies a race of pirates who left a bitter memory of plunder and persecution. It is reported that for this reason in the Census sheets of 1951 the "Maghs" requested that they be referred to as Marma...

Figure 4. Bangladesh: location of Marma in Chittagong, Bandarban, Rangamati and Khagrachari districts[6]

[6] The map in Figure 4 is open source, based on UN map Bangladesh, no. 3711, Rev.2, January 2004 http://upload.wikimedia.org/wikipedia/commons/b/be/Un-bangladesh.png

The Marma are one of the largest and earliest language groups to settle in the CHT (Bangladesh 2014; Marma 2014). Marma is used as a LWC in the Cox's Bazar and Bandarban districts by several other language groups. In Bangladesh, Marma speak Bengali and Chittagonian as L2; in Rangamati and Khagrachari districts, the Chak language is an L2 of some Marma (Lewis et al. 2014). As with Rakhine speakers in Bangladesh, most Marma speakers are only literate in Bengali; literacy in Burmese script among the Marma is also increasing through the use of Marma kindergarten primers.

CHAPTER 2

METHODOLOGY

In this chapter, I discuss the selection and background of my Rakhine and Marma language consultants from Bangladesh. I describe the procedures used for collecting wordlist data and for editing and transcribing them. I then describe data collected by others on Rakhine and Burmese, including an overview of the procedure I use for analyzing the data. I discuss the data and conventions I use in sound correspondences tables. I then list an inventory of PTB consonants and discuss invariant consonant correspondences of Burmese, Rakhine and Marma. I conclude with an overview of the consonant correspondence sets presented in Chapters 3 through 5.

2.1 Language consultants

Three language consultants (hereafter "consultants") were selected, one of whom speaks Rakhine and two of whom speak Marma. The Rakhine consultant, to whom I will refer as RB (Rakhine Bangladesh), is a male between 35 and 40 years of age. The Marma consultants, to whom I will refer as M1 and M2, are female; M1 is between 55 and 60 years of age and M2 is between 25 and 30 years of age.

RB currently lives outside of, but in close proximity to, a Rakhine-speaking area. RB spent his early childhood and adolescence in Rakhine-speaking areas, but left for reasons of education. He returned to live in Rakhine areas at various times. RB mainly speaks

Bengali at work; he has occasional interaction with Marma speakers, conversing with them in Rakhine or Bengali. RB uses Rakhine on occasion for his job and speaks Rakhine in his household.

Since I was recording outside of the Marma-speaking area, consultant selection was limited. Although they currently live outside of Marma areas, both M1 and M2 speak Marma in their houses. Both had spent childhood through adolescence in Marma areas. M1 left her Marma area after high school for employment. She speaks mainly Bengali at work, but uses Marma to communicate with Rakhine speakers; as part of her job, she occasionally travels to Marma-speaking areas. As a result of having lived outside a Marma-speaking area for a longer period of time, M1 conferred with family members about less common lexical items. M2 left her Marma area less than a year ago because of her husband's employment; she uses mainly Marma on a daily basis but uses Bengali for shopping. M2 did not have contact with Rakhine speakers before moving to her present location, where she lives closer to Rakhine-speaking areas than Marma areas. M2 conferred with her husband on some lexical items for her Marma wordlist.

Table 1. General Information about Bangladesh Consultants

	Gender	**Age**	**First language/ mother tongue**	**Language area of childhood/ adolescence**	**Language area of current residence**	**Language spoken in household**	**Main work/ shopping language**	**Other language(s) used at work**	**Recording location(s)**
RB	M	35-40	Rakhine	Rakhine	Bengali	Rakhine	Bengali	Rakhine	office
M1	F	55-60	Marma	Marma	Bengali	Marma	Bengali	Marma	residence
M2	F	25-30	Marma	Marma	Bengali	Marma	Bengali	n/a	office and residence

2.2 Recording procedure

For each consultant, I recorded[7] their responses for a 462-item wordlist[8] which has been used by language surveyors throughout Myanmar (Yaw and Statezni 2012:14). The original wordlist is in English and Burmese but I translated it into Bengali and had it checked by a Bengali speaker who understands Burmese.

Recording took place at Malumghat and Chabagan, in Cox's Bazar District, Bangladesh. The recording of RB's wordlist and part of M2's wordlist took place in my office. The second part of M2's wordlist recording took place in her residence. The recording of M1's wordlist took place in her residence. In all three locations, some background noise intruded on the recordings, causing occasional difficulties later for transcription, especially with M2's wordlist.

I recorded in WAV format with a Zoom H1 digital recorder using 24-bit, 96 kHz sampling. I used the Zoom H1's internal microphones (which have a 20 kHz frequency response) with a tripod to better position the digital recorder in relation to the consultant.

I showed each consultant the equipment and explained the procedure. Before beginning the recording session, I gave each consultant a consent form to read and sign. I answered any questions concerning the consent form before they signed.

Before collecting the wordlist, I asked the consultants some basic demographic questions (included in Appendix A) to ensure that they were representative of their

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[7] All data were collected under IRB- 201304-293 of the University of North Dakota Institutional Review Board.

[8] The 462-item wordlist is an adaptation of the 2002 SIL Southeast Asia 436 word list which is in English, Northern Thai, Central Thai and Burmese (SIL MSEAG 2002).

respective speech variety. The wordlist was recorded in sections; the consultants looked at one section at a time and wrote down words to remember for the recording. Wordlist elicitation took place in standard spoken Bengali. Consultants were asked to pronounce each item in the wordlist three times.

2.3 Editing and transcription procedure

I edited each consultant's wordlist to delete false starts, long pauses and noises such as coughs from the recordings. I then reduced the background noise of the sound files by subtractive filtering and normalized the volume levels.

After editing the sound files, I used ELAN (MPI 2003)[9] to demarcate the tokens of each word from the wordlists and transcribed these words using the International Phonetic Alphabet (IPA). When using ELAN, it is important to do any editing on the sound files before annotating them as the timing of ELAN's information is thrown off if the sound file is subsequently edited in any way that changes the recording's timing.

I experienced some difficulties with my recordings of the wordlists. Intermittent noise (animal noises, talking, traffic) obscured some tokens on each of the three consultant's wordlists. Because I recorded three tokens for each word of the wordlist, I used the clearer tokens as a basis for my transcription. At times, consultants provided more than one word for an item or had more than one pronunciation in the three tokens for a wordlist item; when this occurred, I transcribed both words or pronunciations.

[9] ELAN is a free, multimodal annotation tool for digital audio and video media.

On the recording, it was sometimes difficult to distinguish the exact sound used by the consultant. It would have been better to make video recordings also and synchronize them with the audio recordings. In addition, it would have been better to check my transcriptions with the consultants at a later time (impossible because of time constraints) as this would have helped ensure a more accurate transcription of the data. Still, I am confident that they are sufficiently accurate representations of Rakhine and Marma for analysis.

2.4 Other data sources used

2.4.1 Rakhine data from Sittwe District, Rakhine State, Myanmar

Yaw and Statezni (2012) conducted a sociolinguistic survey of Rakhine varieties spoken in Rakhine State, Myanmar. The survey team collected wordlists in eight villages in eight townships across Rakhine State. The wordlist they used is the same one I used with Marma and Rakhine consultants in Bangladesh. Wordlist elicitation took place in standard spoken Burmese.

One of the villages from which a wordlist was collected was Set Yone Su, Sittwe Township, Sittwe District. The Sittwe variety of Rakhine is generally regarded as the standard for Rakhine in Myanmar. Therefore, I chose the Sittwe wordlist data for my analysis as a representative of Myanmar Rakhine. The Rakhine consultant from Sittwe, to whom I will refer as RS (Rakhine Sittwe), was a male between 30 to 50 years of age who spent the majority of his life in the Sittwe area.

The published survey report itself includes the transcriptions for only the 100 core items that the authors selected to compute the lexical similarity of the Rakhine wordlists

(Yaw and Statezni 2012:14). I received the transcriptions and recordings of the complete 462-item wordlist from Carey Statezni; according to Statezni (personal communication), the transcriptions had not been checked and were in a rough draft form. I checked the Sittwe wordlist transcriptions using the recordings and adjusted the RS transcriptions accordingly. I changed the transcription of [r] to [ɹ] to match the transcription conventions used for data I collected. I omitted tone markings from the spreadsheet I used for analysis since it was not the object of my study.

2.4.2 Jarernponganarn's data from Sittwe City, Rakhine State, Myanmar

Jarernponganarn (1997) also provides transcriptions of many Rakhine words from Sittwe City; I compared her data to the 462-item Rakhine and Marma wordlists, identifying words by the English gloss. I adjusted Jarernponganarn's transcriptions, to which I will refer as RT (Rakhine thesis), to match the transcription conventions I used for data I collected, based on her list of consonant phonemes (Jarernponganarn 1997:58). As such, they accurately represent her data while also being readily comparable to the data I collected. The consonants adjusted in transcriptions are shown in Table 2.

Table 2. RT consonants adjusted in transcriptions

RT original transcription	**Adjusted transcription**
/ph/	[pʰ]
/th/	[tʰ]
/kh/	[kʰ]
/tɕ/	[ʧ]
/tɕh/	[ʧʰ]
/dz/	[ʤ]
/ɕ/	[ʃ]
/sh/	[sʰ]

Again, I omitted tone in the re-transcription.

2.4.3 Burmese data from Yangon, Myanmar

For spoken Burmese, I used transcriptions from Shiwaruangrote (2000). I identified corresponding words by the English gloss and verified their correspondence by a comparison of the Burmese orthography of his data and that of the original 462-item wordlist from Myanmar. I adjusted Shiwaruangrote's transcriptions, to which I will refer as BT (Burmese thesis), to match the transcription conventions I used for data I collected. These adjusted transcriptions accurately represent his data as they are based on his consonant phoneme chart (Shiwaruangrote 2000:56). Table 3 shows the consonants adjusted in transcriptions. As before, tone markings were excluded from transcriptions.

I also adapted the data by omitting the epenthetic final consonants added to presyllables ([Ca]) and syllables with nasal vowels when they are followed by another syllable; these final consonants are added in fast speech, but are absent in careful pronunciation (Shiwaruangrote 2000:108-112). The epenthetic final consonants of presyllables are identical, or homorganic, to the initial consonant of the following syllable, while syllables with nasal vowels epenthesize an appropriate nasal or liquid which is homorganic to the initial consonant of the following syllable.[10] Epenthetic final consonants are a low-level phonetic detail, and are easily ignored. In addition, by omitting the epenthetic final consonants, data from Shiwaruangrote is more visually comparable to the data I collected, which only has syllable-final nasals.

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[10] Examples of original transcription with epenthesis and adjusted transcriptions: ['ʔaj^{33}.'jeɪ^{454ʔ}] > [ʔajeɪʔ] 'shadow'; ['tɔ̃:m^{32}.'p̆ã:^{32}] > [tɔ̃:bã:] 'wing'; ['man^{33}.'nɛ^{454ʔ}] > [manɛʔ] 'morning'; ['pĩl^{32}.'lɛ:^{33}] > [pĩlɛ:] 'sea'

Table 3. BT consonants adjusted in transcriptions

BT original transcription	Adjusted transcription
/ph/	[pʰ]
/b/ [p̆]	[b]
/ŧ/ [t̪]	[t̪]
/ȡ/ [t̪̆]	[d̪]
/th/	[tʰ]
/d/ [t̆] ([t̪])	[d]
/kh/	[kʰ]
/g/ [k̆]	[g]
/sh/	[sʰ]
/z/ [s̪]	[z]
/ɕ/, [ɕ]	[ʃ]
/c/ [tɕ]	[ʧ]
/ch/ [tɕʰ]	[ʧʰ]
/j/ [t̆ɕ] ([t̆ɕ])	[ʤ]
/hm/	[m̥]
/hn/	[n̥]
/hɲ/ [ɲ]	[ɲ̊]
/hŋ/ [ŋ̊]	[ŋ̊]
/y/ [j][a]	[j][b]
/hl/	[l̥]
/r/[c]	[ɾ]

[a] "In the case of free variation of consonants [j~ɛ̆] only [j] is transcribed" (Shiwaruangrote 2000:8).

[b] /y/ is realized as [j] when it is the second element of an initial cluster; elsewhere it varies freely with [ɛ̆] (Shiwaruangrote 2000:66).

[c] Found only in loan words, most of which are from Pali, Sanskrit and English (Shiwaruangrote 2000:66).

I also received transcriptions of Yangon Burmese from Lisa Cooper. Cooper (personal communication) based her transcriptions, to which I will refer as BC (Burmese Cooper), on the pronunciation guide of a dictionary created by the Burmese central government's language department and on her consultations with a native Burmese speaker regarding standard Burmese pronunciation. I used Cooper's notes on the symbols

used in her transcription to adjust her transcriptions; these adjustments are shown below in Table 4.

Table 4. BC consonants adjusted in transcriptions

BC original transcription	Adjusted transcription
[b̥][a]	[p]
[d̥]	[t]
[τ]	[t̪]
[ȶ]	[ʧ]
[ȶʰ]	[ʧʰ]
[ȡ]	[ʤ]
[ʑ][b]	[j]
[ʑ̥]	[j]

[a] "Obstruents [b, d, g, ȡ] are voiceless word initially and after glottal stop. They are indistinguishable from their [p t k ȶ] counterparts except for being shorter in closure length and causing a lower pitch on the vowel" (Cooper, p.c.).

[b] "All [ʑ] consonants are most often realized as voiceless fricatives when in an emphasized context or at the beginning of a breath group, but voiced approximants at other times" (Cooper, p.c.).

2.5 Analysis procedure

I exported the transcriptions of the three wordlists from ELAN into an Excel worksheet. I then added the data from RS, RT, BT and BC to the worksheet, with adjustments in transcription conventions as described above. I used the Excel spreadsheet to identify sound correspondences in the data by examining each word and creating a list of consonant correspondences of the different varieties. I then used these correspondences, along with superficial similarity of phonetic forms, to identify potential cognates.

2.6 Overview of consonant correspondence sets

2.6.1 Concerning the data and conventions in correspondence tables

A phonetic transcription represents a speech sound or segment based on its detailed articulatory and acoustic properties while a phonemic transcription represents a more abstract form of a segment which does not reflect conditioned ("allophonic") variation. My data consist of phonetic transcriptions; I have not done a complete analysis of phonological contrasts in the data. Because the transcriptions are phonetic, some data and the resulting comparative analyses probably include non-contrastive detail which is the result of synchronic allophonic rules.

I concentrate on syllable-initial consonants in the data (including consonant clusters), which appear word-initially and word-medially. Benedict (1972:37) states that TB consonant clusters are only root-initial; following the pattern of Benedict (1972) and Matisoff (2003), I refer to the second consonant in a cluster as "medial". I did not analyze syllable-final nasals, the only syllable-final consonants in the data. A word with a syllable-final nasal in one speech variety of the data occasionally corresponds to a syllable-final nasalized vowel of another speech variety, but due to vagueness in the way such data is described, it is difficult to know whether a syllable-final nasal represents an actual nasal consonant or simply nasalization on the preceding vowel. Nasals in final position interact with the vowel sometimes causing nasalization; this interaction complicates a phonetic comparison of final nasals. Because of these complexities, I did not attempt to analyze syllable-final nasals.

I organize correspondence tables with Burmese data listed first (BT, BC). I list the Rakhine data next, with varieties of Myanmar Rakhine (RT, RS) preceding Bangladesh

Rakhine (RB); Marma (M1, M2) data is listed last. This geographic organization of the varieties helps more clearly identify differences common to a geographical area.

RB and M1 had free variation between [pʰ] and [ɸ] in some words; I list only [pʰ] for these segments in the correspondence charts as they use this pronunciation more often.

I include all words provided by a consultant or source in the table; they are separated by '/'. I include both Marma forms when M1 and M2's words are not identical; these are also separated by '/'. I provide whole words in tables but my focus in on the stems; morpheme breaks, created by the addition of suffixes or clitics usually for verbal inflection, are indicated by '-'. Burmese verbal inflections often differ from those of Rakhine and Marma; also, I did not get consistent verbal inflections in my Rakhine and Marma wordlists. BC and RT data do not include verbal inflections but are simple verbal stems.

I include only words that contain the segment in focus; blank cells indicate there is no word in the data for that variety or the word in the data is a separate, unrelated lexical item (complete wordlist data are given in Appendix B). I enclose segments that exemplify a given correspondence with '{}' and enclose exceptional segments with '«»'.

Unless otherwise marked, reconstructions are from Proto-Tibeto-Burman (PTB), which are based on reconstructions given in Benedict (1972) and Matisoff (2003). Proto-Lolo-Burmese (PLB) forms in correspondence sets are based on reconstructions provided by Matisoff (1969 & 2003); I do not include the tonal notations of PLB lexical forms. I follow the conventions of Benedict (1972) in my proto-form representations. I enclose optional segments with '( )' and use '~' to indicate a segmental alternation of proto-forms. I use '=' to connect synonymous representations of proto-forms.

2.6.2 Inventory of PTB Consonants

PTB proto-forms are essential to the discussion of consonant correspondence sets; changes from the proto-form in a variety are indications of an innovation in that language. Table 5 shows a summary of Benedict's (1972:17-18) inventory of PTB simple initial consonants, adapted as per Matisoff (2003:15).

Table 5. Inventory of PTB simple initial consonants

	Labial	**Alveolar**	**Palatal**	**Velar**	**Glottal**
Stops: Voiceless	*p	*t		*k	(*ʔ)[11]
Voiced	*b	*d		*g	
Fricatives: Voiceless		*s	*sj [*ʃ]		*h
Voiced		*z	*zj [*ʒ]		
Affricates: Voiceless		*ʦ	*ʦj [*ʧ]		
Voiced		*ʣ	*ʣj [*ʤ]		
Nasals	*m	*n	*nj [*ɲ]	*ŋ	
Liquids		*l *r			
Glides/ semivowels	*w		*j		

Benedict does not list the reconstructed palatal fricatives, affricates, or nasal in his original chart; however, he includes them in his listing of TB consonant clusters as palatalized alveolars (Benedict 1972:37-38). Recognizing a separate palatal series makes a contrast with palatalized dentals possible since TB languages have different reflexes of the proto-forms, as explained in note 122 (Benedict 1972:37). According to Matisoff (2003:30), though the contrast between alveolar and palatal sibilants and affricates does

[11] Benedict does not include the glottal stop in his list of initial consonants; I follow this convention and do not discuss correspondences of the glottal stop in Burmese, Rakhine and Marma.

not exist or is shaky in many TB languages, such as Burmese, it still must be reconstructed for PLB; the importance of this was demonstrated in Matisoff 1969 and cited previously in Benedict (1972:53). Rakhine and Marma sometimes use different alveolar and palatal sibilants and affricates than does Burmese.

TB also has consonant clusters; these are found only in root-initial position. According to Benedict (1972:37), there are two types of consonant clusters: a stop or nasal plus a liquid (r, l) and a consonant (or cluster as previously described) plus a semivowel (w, j). All TB medial consonants in consonant clusters are liquids or semivowels.

2.6.3 Invariant Correspondences

Some Burmese, Rakhine and Marma consonants correspond to each other in a systematic, regular way. They are as follows: bilabial stops [p, p^h, b], alveolar stops [t, t^h, d], alveolar fricative [ʃ], velar stops [k, k^h, g], glottal fricative [h], semivowels [w, j], voiced nasals [m, n, ɲ, ŋ], and voiced liquid [l]. Benedict (1972) does not include the glottal stop in his inventory of PTB initial consonants; I follow this convention and do not consider glottal stop correspondences. Both [h] and [w] are completely regular and systematic in the correspondence of the Burmese, Rakhine and Marma cognates; as there are no exceptions in my data, I do not list [h] or [w] correspondence sets.

2.6.4 Outline of goals of chapters 3-5

Consonant correspondence sets are listed in Chapters 3-5. In Chapter 3, I list invariant correspondence sets of most bilabial, alveolar and velar stops (including [kw]). I discuss invariant correspondences of voiced nasals, liquids and the semivowel [j] in

Chapter 4 in conjunction with voiceless nasals, liquids and correspondences of [j]. The correspondences involving certain coronals, however, are more complex or are interrelated, so I reserve discussion of them to Chapter 5, including palatal-alveolar affricates (along with their corresponding velar consonant clusters of [kɪ] and [kj]), alveolar and interdental fricatives and dental stops. When possible, I include the proto-form(s) from which I believe that each correspondence is derived.

CHAPTER 3

STOP CORRESPONDENCES

This chapter begins with a list of bilabial stop correspondence sets of Burmese, Rakhine and Marma, including a description of exceptions to the correspondences. It then lists alveolar stop correspondence sets, including a description of exceptions. The chapter concludes with a list of most velar stop correspondences, including the consonant cluster [kw][12], and their exceptions. Velar consonant clusters with [j] or [ɹ] are listed in Chapter 5 since they correspond to [ʤ] or [ʤ]. When possible, correspondence sets include the proto-form(s) from which the correspondence is derived.

3.1 Bilabial Stop Correspondences

*3.1.1 Correspondences of [p] (PTB *b, *p)*

Burmese, Rakhine and Marma show invariant correspondence in their usage of [p]; these correspondences are reflexes of PTB *b and *p. Alternation of root initial consonants is a general morphological process in TB according to Benedict (1972:124). Words with [p] in most or all varieties are shown in Table 6.

[12] It is unclear whether medial [w] is functioning as a semivowel in a consonant cluster, or as a glide in a diphthong. In either case, the correspondences of [kw] do not vary among the languages; therefore, I list [kw] along with the velar stops.

Table 6. Correspondences of [p]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	flower	{p}ã:	{p}æ̃:	{p}ɛ̃	{p}aiŋ	{p}ɛ:	{p}aiboʔ/{p}ai	*ba:r	49
B	to give	{p}e:-d̪i:		{p}i	{p}i-ɹe	{p}i-ɹe	{p}i-ɹe/{p}i-ʧwa	*bij	329
C	bee	{p}ja:		{p}ja	{p}ja	{p}ja	{p}ja	PLB *bja	133
D	to boil	{p}joʊ-t̪i:	{p}jouʔ		{p}ɹɔ-de	{p}ɹo-kʰɹaŋ	{p}ɹo-pʰo/{p}ɹo-ʧwa	*prjo	82a
E	tree	ʔa{p}ĩ:/t̪ɹ{p}ĩ:	t̪ɹʔ{p}ĩ	ʔa{p}ɔ̃	θai{p}aŋ	a{p}aŋ	a{p}aŋ/θoi{p}a	*bul ~ *pul ‘tree’	43
F	butterfly	leɪ{p}ja:		la{p}ɹa	ləʔ{p}ɹa	lə{p}ɹa	lei{p}ɹa/loi{p}ɹa		135
G	soy bean	{p}ɛ:’bean’	{p}ɛ:{p}ouʔ	{p}ɛ ‘bean’	{p}e«b»o			*be	65
H	cockroach	{p}o:haʔ		{p}aheʔ	{p}uhɛʔ	{p}ohe	«b»ahaiʔ/«b»ahaimaʔ	*buw = *bəw ‘insect’	130
I	to kill				θəʔ-«b»əlaiʔ-de	θɛ-{p}lai-te	θai-«b»loi-te/bo-{p}loi-te		349
J	to be hot (water)	{p}u:-d̪ɔ:	{p}u	ni{p}u ‘hot’	{p}u-de	a{p}u	ɹi«b»u/ɹə«b»u		23
K	to run	{p}je:-d̪i:		«b»ɹi	«b»ɹi-ɹe	«b»ɹi-ɹe	«b»ɹi-ɹe	*ploŋ	315
L	to shoot	{p}jɪ-t̪i:		{p}eiʔ	{p}ai -te	θəne «b»ai-te	boli «b»oi-te/θan̥ai «b»oite		347
M	to throw	{p}jɪ-t̪i:		{p}aiʔ	{p}aiʔlaiʔ-de	«b»ai-te	«b»oi-te/«b»oi-ʧwa	*bwa or *(b-)rim	323
N	to be full	{p}je:-d̪ɔ:		{p}ɹe ‘full’	{p}ɹini-ɹe	a«b»ɹe	a«b»ɹe	*bliŋ ~ *pliŋ	390
O	to be soft	{p}jɔ:{p}jɔ̃:-d̪ɔ:			{p}ə{p}jɔʔ-ʃe		{p}ə«b»e	*prjo	422a
P	rice seedling		zəba:{p}jo:«b»ĩ		səba{p}ju«b»aŋ		ʧɛbaa{p}aŋʃjɛ		73
Q	shoulder	«b»akʰõ:		{p}akʰo	{p}akʰɔŋ	{p}aukʰuŋ	{p}akʰuŋ		161
R	mouth	«b»azaʔ	{p}ǎz̪æʔ	{p}azeʔ	{p}əzaʔ	{p}aza	{p}adʒa	PLB *ba’cheek’	152
S	pestle	dʒa«b»weʔ		ʧa{p}wɛʔ					238
T	wing	tɔ̃:«b»ã:	taũ{p}æ̃						110
U	to float	«b»ɔ:lɔ:{p}ɔ:-d̪i:		«pʰ»ɔ	ɹitʰaʔma{p}ala{p}ɔ-ɹe			*pjaw	326a
V	neck	lɛ:«b»ĩ:		lãĩ«pʰ»ɔ̃	lai«pʰ»əuŋ	lei«pʰ»a	loi{p}a/loi«pʰ»a		160
W	insect	{p}o:n̥wa:		{p}ogãũ	{p}omwa	{p}oʔ	a«pʰ»o/a{p}o/{p}o:-ʃjɛ	*buw; PLB *bəw	124

There is a regular correspondence with [p] word-initial in all of the varieties; this correspondence is illustrated in A-D of Table 6. Items E and F illustrate word-medial [p] in all varieties. Items G-W illustrate exceptions to this correspondence.

Voicing of [p] to [b] seems to be optional in Burmese. According to Shiwaruangrote (2000:107), the voiced [b] in BT R ‘mouth’ and S ‘pestle’ is due to coalescent assimilation; when two connected syllables both have initial unaspirated obstruents, with some exceptions, the two initial consonants change to their voiced counterparts. Some instances of voicing in Burmese may be due to the sound being in word-medial position; most, but not all, word-medial [p] voice to [b]. Item T ‘wing’ is an example of this variation in word-medial voicing, with voiced [b] in BT but voiceless [p] in BC.

Exceptions which I cannot account for:

- [b] instead of [p]: BT Q ‘shoulder’, T ‘wing’, U ‘to float’, V ‘neck’; RT, RS, RB, and Marma K ‘to run’; RS and one of the Marma words for I ‘to kill’; RB and Marma L ‘to shoot’, M ‘to throw’, N ‘to be full’; RS G ‘soybean’, P ‘rice seedling’; Marma H ‘cockroach’, J ‘to be hot’, O ‘to be soft’
- [p^h] instead of [p]: RT U ‘to float’; one of the Marma words for W ‘insect’; RT, RS, RB, and one of the Marma words for V ‘neck’

*3.1.2 Correspondences of [p^h] (PTB *p, *s-b)*

Benedict (1972:20) states that PTB aspiration is subphonemic, with voicing as the significant contrast in stops; the inventory of PTB consonants includes only voiced and voiceless stops. However, modern TB languages have aspirated voiceless stops; in Burmese (and other TB languages), aspiration is phonemic. According to Bradley (1972:20), Burmese voiceless stops are

often, but not always, aspirated when they are in word-initial position and are generally unaspirated after most prefixes. When the prefixes *s- or *ʔa- [or *ʔə-] precede PTB voiceless or voiced stops these become glottalized in PLB; Burmese aspiration is a reflex of both voiced and voiceless glottalized PLB proto-forms (cf. note 76, Benedict 1972:22). Words with [pʰ] in most or all varieties are shown in Table 7.

There is a regular correspondence with [pʰ] word-initial in all of the varieties; this correspondence is illustrated in A-C of Table 7. Word-medial correspondence of [pʰ] is illustrated in D-F. Items G-N show exceptions to these correspondences.

Benedict (1972:19) lists WB 'father' as *bhá, ăbhá*; the presence of /bh/[13] suggests this word is borrowed, as aspirated voiced stops only appear in borrowed words from Sanskrit or Pali (Namkung 1996:61). BT, RB and Marma have [pʰ], while RT and RS have [b] for G 'father'. Bradley (2011:54) notes that the Burmese word for 'father' varies in pronunciation between [pʰa] and [ba]. This variation between [pʰ] and [b] may be different reflexes of Sanskrit or Pali /bh/, one which retains the aspiration without voicing and one which retains voicing without aspiration. The reconstructed PTB form for 'father' is *pwa.

Exceptions which I cannot account for:

- [b] instead of [pʰ]: BT and BC H 'corn'; Marma I 'to fight', J 'to be straight'
- [p] instead of [pʰ]: RS J 'to be straight; Marma K 'dust', L 'forehead', M 'garlic', N 'gums'

[13] I assume the orthographic graphemes of Written Burmese correspond to phonemes, so I enclose WB segments with '//'; I have not done research on or verified this assumption.

Table 7. Correspondences of [pʰ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	frog	{pʰ}a:	{pʰ}a:	{pʰ}a{pʰ}ɹouʔ	{pʰ}a	{pʰ}a	{pʰ}a	*s-bal	123
B	porcupine	{pʰ}ju:	{pʰ}ju:		{pʰ}ɹu	{pʰ}ɹu	{pʰ}ɹu	*s-blu	93
C	rice husk	{pʰ}wɛ: 'rice bran'	{pʰ}wɛ:	{pʰ}we 'bran of rice'	{pʰ}we	{pʰ}wekwɛ	{pʰ}wɛmoʔ	*pwa:y	83
D	white	ʔa{pʰ}ju jɔ̃:		ʔa{pʰ}ɹu	a{pʰ}ɹu ɹɔŋ	a{pʰ}ɹu	a{pʰ}ɹu	*plu	399
E	tomorrow	manɛ{pʰ}jã:	mənɛ{pʰ}jæ̃		na{pʰ}eŋ-ka	na{pʰ}ɹɛŋ-ka	na{pʰ}ɹɛi/ nə{pʰ}ɹɛin-ka	*b-raŋ ~ *s-raŋ 'morning'	18
F	palm	lɛ{pʰ}awa:		{pʰ}awa	laʔ{pʰ}əwa			*pa = *pwa or *b-wa	171
G	father	ʔa{pʰ}e:		«b»a«b»a	«b»a«b»a	a{pʰ}a	a{pʰ}a	*pa = *pwa	195
H	corn	pjɔ̃:«b»u:	pjaũ:«b»u:		pɹau{pʰ}u				68
I	to fight	jæ̃{pʰ}jɪ-t̪i:		ɹɛ̃{pʰ}ɹɛʔ 'to quarrel'	ɹaŋ{pʰ}ɹaiʔ-de	ɹɛ̃{pʰ}ɹai-te	«b»ukwai-te/ «b»okɹai-te	*ran = *(g-)ral[14]	350
J	to be straight	{pʰ}jɔ̃:-d̪ɔ:		{pʰ}ɹãũ 'straight'	«p»ɹauŋ ni-ɹe		pə«b»ɹaŋ/ pə«b»ɹa	*bleŋ ~ *pleŋ 'straight'	393
K	dust	{pʰ}õ:	{pʰ}oũmoũ̲	{pʰ}õ	{pʰ}oŋmo	{pʰ}umu	«p»ouɹmuʔ/ «p»ouɹəmuʔ		33
L	forehead	na{pʰ}u:		na{pʰ}u	nə{pʰ}u		nə«p»udʒa	*d-pral	145
M	garlic	ʧɛt̪õ{pʰ}ju:	ʧɛʔt̪õ{pʰ}ju	kɹatwɛ̃{pʰ}ɹu	kɹaʔθuŋ{pʰ}ɹu	kɹaθɛn{pʰ}ɹu	kɹauθɛn«p»ɹu/ kɹaθwai«p»ɹu	*k-rak 'chicken' *swan 'onion' *plu 'white'	67
N	gums	t̪a{pʰ}õ:		ta{pʰ}o / θa{pʰ}o	tə{pʰ}woŋ	θə{pʰ}u	θwə«p»uŋ		156

[14] This proto-form corresponds to the first syllable of I 'to fight' (except in Marma); I was unable to find a cognate proto-form in the sources for the other syllables of this word.

*3.1.3 Correspondences of [b] (PTB *b)*

Words with [b] in most or all varieties are shown in Table 8.

Table 8. Correspondences of [b]

	Gloss	**BT**	**BC**	**RT**	**RS**	**RB**	**Marma**	**PTB**	**WL**
A	drum	{b}õʊ:			{b}oŋ	{b}oŋ			247
B	paddy rice[15]	za{b}a:	zə{b}a:	sa{b}a	sə{b}a	sə{b}a	ʧɛ{b}a	PLB *ʤa 'rice'[16]	72
C	opium	{b}e:	«p»eĩ:	{b}ẽĩ	{b}aiŋ	{b}ein	{b}iŋ		60
D	comb	{b}i:	«p»i:	«pʰ»ɹi 'to comb'	gauŋ «pʰ»i	go «pʰ»ɹi	go «pʰ»ɹi/ goŋ «pʰ»ɹi	PLB *ʔ-gʷi(j)[17]	234
E	trousers	{b}õ:{b}i:			{b}auŋ{b}i	{b}o«pʰ»i	boŋ«pʰ»ɹi/ boŋ«pʰ»i		231
F	right side	ɲa:-{b}ɛ:ʔ		ɲa-«pʰ»a	ɲa-«pʰ»aʔ	ɲa-«pʰ»a	ɲa-{b}ɹauka/ ɲa-«pʰ»a[18]	PLB *ʔ-bak 'side'	391
G	left side	{b}ɛ:-{b}ɛʔ		{b}e-«pʰ»a	{b}e-«pʰ»aʔ	{b}ɛ-«pʰ»a	{b}ɛ-{b}ɹauka/ be-«pʰ»a[19]	*baj = *bway 'left' PLB *ʔ-bak 'side'	392

There is a regular correspondence with [b] word-initial in all of the varieties; this correspondence is illustrated in A of Table 8. Regular word-medial correspondence is illustrated in B, while C-G show exceptions to these correspondences.

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[15] In WB, B 'paddy rice' is written with ᴗ, commonly described as an unaspirated voiceless bilabial stop.

[16] The listed PLB form is for the initial syllable meaning 'rice'; I did not find a cognate proto-form in the sources for [ba], the second syllable of B 'paddy rice' which I assume means 'paddy' or 'field'. Matisoff (2003:56) states that "no word is attested in PLB/PTB" for an "'irrigated low land paddy field'."

[17] Matisoff (2003:25-26) says D 'comb' is a "phonologically unstable root" due to its complex initial. He lists examples of many Loloish languages with labial reflexes [p], as well as a few Yi dialects with velar reflexes [k]. He also lists a [proto-]Burmish variant *pri, reflected by WB *phi ~ phri* 'to comb, brush'.

[18] M2 wordlist glosses [ɲapʰa] as 'left side'.

[19] M2 wordlist glosses [bepʰa] as 'right side'.

The BC words for C ‘opium’ and D ‘comb’ appear to be exceptions with [p] instead of [b]. Cooper and Cooper (2013a) present an acoustic study of Burmese plosives which found that, in isolation (outside of a frame), “voiced” plosives are almost always voiceless; their transcriptions reflect these findings.

There seems to be an exception with [pʰ] instead of [b] in the Rakhine and Marma words for F ‘right side’ and G ‘left side’. However, this seems to be a case of different lexical items between Burmese and Rakhine (and possibly Marma). The Burmese word for ‘side’ is [bɛ:ʔ] in Shiwaruangrote (2000:137). Jarernponganarn (1997:99) gives [be] for ‘left’ and [bepʰa] for ‘left side’. This suggests [pʰa] is the Rakhine word for ‘side’; in this case, the Rakhine words for ‘right side’ and ‘left side’ are, in fact, not an exception to the correspondence set but simply use a lexical form different from that found in Burmese. One of the Marma forms for ‘side’ corresponds with the Rakhine [pʰa]. However, the other Marma form of ‘side’ [-bɹauka] has [b] and does not correspond with Burmese [bɛ:ʔ] ‘side’. These words for F ‘right side’ and G ‘left side’ in Marma are exceptions which I cannot account for.

Rakhine and Marma allow [b] and [pʰ] to vary freely in some words. The RT, RS, RB and Marma words for D ‘comb’ have [pʰ] instead of [b] as do the RB and Marma words for E ‘trousers’.

3.2 Alveolar Stop Correspondences

*3.2.1 Correspondences of [t] (PTB *d, *t)*

Words with [t] in most or all varieties are shown in Table 9.

Table 9. Correspondences of [t]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	one	{t}ɪʔ	{t}ɪʔ	{t}iʔ	{t}aiʔ	{t}ai	{t}aiʔ/{t}oiʔ	*ti	357
B	mountain	{t}õ:	{t}aũ	{t}õ	{t}au	{t}au	{t}oŋ/{t}oŋtʰa	*m-duŋ ~*r-duŋ	40
C	earthworm	{t}i:gõ:	{t}i	{t}i	{t}igauŋ	{t}i	{t}i	PTB *zril; PLB *di	139
D	to crawl	{t}wa:t̪wa:-d̪i:		{t}wa	{t}wabige la-ɹe		{t}wabola-ɹe/ {t}wa-ɰwa		311
E	to push	{t}o:		{t}o	{t}o-ɹe	{t}u:-ɹe	{t}u:-ɹe/{t}o-ɹe		320
F	forest	{t}ɔ:	t̪ɪʔ {t}ɔ/{t}ɔ		θai {t}ɔ	{t}wa	{t}o		42
G	wing	{t}õ:bã:	{t}aũpæ̃/ʔə{t}aũ	ʔa{t}õ	a{t}au	ŋaʔ {t}au	ŋaʔ a{t}oŋ/ ŋaʔ {t}oŋ	*duŋ	110
H	to be short	{t}o:-d̪ɔ:		{t}o	a{t}o-ʃe	a«tʰ»u	a{t}o/a{t}o-ʃɛ		378
I	to be shallow	{t}ẽɪ:-d̪ɔ:			ə{t}eiŋ-ʃe	a«tʰ»ein	a{t}iŋ		388
J	to rub/scrub			«θ»ouʔ ‘to scrub’	pweʔ «θ»ai-de	{t}u-ɹe	atiŋ {t}u-ɹe		332b
K	to be dry	{t}weʔ ‘dry’		«θ»wi ‘to get dry’			«θ»ə«θ»wi		415b
L	dry field	{t}õ:ja:	{t}aũja kʰĩ:		«θ»au				70a
M	animal	{t}aɾesʰã:	{t}ərei?sæ̃	{t}aɹeʔsʰɛ̃	«θ»əɹeisaŋ	twa {t}əɹeise			85
N	spit (noun)	«d»a«d»we:		{t}wɛ̃	{t}aŋ tʰwi	{t}wensi	{t}waiɰ̃i	*twij or *m-twa ~*s-twa	154a
O	door	«d»aga:			{t}aŋkʰa	{t}ɛŋkʰawa	{t}ɛŋkʰaboi	*m-ka (possibly *ta-mkha)	218
P	elbow	«d»a«d»õ:zɪʔ		{t}ɛ̃«d»ãũ	{t}aŋ«d»əu			*du	169
Q	sarong (M)			{t}aja ‘loincloth’	«d»əja	«d»əjoạ	«d»əja/«d»oja		229a
R	rainbow	t̪ɛ:{t}ã:	t̪ɛʔ{t}ã̠	θaʔ«θ»ɛ̃	θa{t}aŋ	θə«d»aŋɹeθa	θə«d»aŋɹɛʃo/ θə«d»aɹɛθa		8

There is a regular correspondence with [t] word-initial in all of the varieties; this correspondence is illustrated in A-E of Table 9. Some varieties in F-G illustrate a word-medial correspondence of [t]. The exceptions to these correspondences are shown in H-R.

The voicing of word-initial and word-medial [t] in both BT item N ‘spit (noun)’ and P ‘elbow’ is an example of coalescent assimilation, described in 3.1.1.

Scholars have identified voicing patterns of Burmese in which voiceless stops tend to become voiced intervocalically (Matisoff 1969:163; Benedict 1972:21; Shiwaruangrote 2000:105,109). There are some examples of intervocalic voicing in Rakhine and Marma. The RT and RS words for P ‘elbow’ and the RB and Marma words for R ‘rainbow’ have intervocalic [d] instead of [t]. I cannot account for the examples of word-initial voicing in the BT item O ‘door’, and RS, RB and Marma words for Q ‘sarong (M)’. In this correspondence set, intervocalic voicing seems to be sporadic rather than regular.

Other exceptions:

- [t^h] instead of [t]: RB words for H ‘to be short’ and I ‘to be shallow’
- [θ] instead of [t]: RT and RS words for J ‘to rub/scrub’; RT and Marma words for K ‘to be dry’; RS words for L ‘dry field’ and M ‘animal’; RT word for R ‘rainbow’

*3.2.2 Correspondences of [t^h] (PTB *t)*

As mentioned in 3.1.2, aspiration is subphonemic in PTB but has developed into a phonemic difference in Burmese and other TB languages. Voiceless stops in initial position are generally aspirated while they are unaspirated after most prefixes (except *s- or *ʔa-).

Words with [tʰ] in most or all varieties are seen in Table 10.[20]

Table 10. Correspondences of [tʰ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	cooked rice	{tʰ}amĩ:	{tʰ}əmĩ:	{tʰ}amã	{tʰ}ə maŋ	{tʰ}amaŋ	{tʰ}əmo/ {tʰ}əma	*ma-y 'rice'[21]	76
B	to sit	{tʰ}ãĩ-d̰i:		{tʰ}ãĩ	{tʰ}ai-ɹe	{tʰ}ai	{tʰ}oi/ {tʰ}oi-ɹe	*tu·ŋ ~ *du·ŋ	307
C	to go out	{tʰ}wɛʔ			{tʰ}waʔ-de	{tʰ}wo-te	{tʰ}wo-te		319a
D	to listen	na:{tʰ}ɔ̃-d̰i:		na{tʰ}ãũ	na{tʰ}au-ɹe	na{tʰ}o -ɹe	na{tʰ}ombo naliboju-ɹe	*r-na ~ *g-na 'to hear'[22]	255
E	to spit	{tʰ}we:-d̰i:		{tʰ}wi	twaŋ {tʰ}wi{tʰ}u -ɹe			*(m-)twa ~*(s-)twa or *(m-)tuk ~ *(s-)tu:k ~ *(s-)du:k	269a
F	one thousand	{tʰ}ɔ̃:		ta{tʰ}ɔ̃/ {tʰ}ɔ̃	tə{tʰ}auʔ	tə{tʰ}au	tə{tʰ}oŋ/ tə{tʰ}au	*s-toŋ	369
G	to be thick (thing)	{tʰ}u:-d̰ɔ:		{tʰ}u	a{tʰ}u-gɹi	tə{tʰ}u	θə{tʰ}o	*r-tas or *tu:k; *tow ~ *dow	381
H	to get up	no:{tʰ}a:-d̰i: 'to get up from bed'		{tʰ}a 'to stand up'	eiʔɹagaʔ {tʰ}a-ɹe	{tʰ}a-ɹe	iko {tʰ}a -ɹe/ uu̯aga{tʰ}a		299
I	firewood	«d̰»ɪʔ 'wood, log'		{tʰ}ɔ̃	{tʰ}aŋ	{tʰ}aŋ	{tʰ}au/{tʰ}a		241
J	leg	ʄʰe:«d»ɔʊʔ		kʰa«d»auʔ	kʰɹi{tʰ}au			*(r-)kaŋ *krij 'foot'[23]	174
K	morning			mo{tʰ}a	mo«θ»au	mow«θ»a			15a

[20] All Burmese words in Table 10 are written in WB with ∞, commonly described as a voiceless aspirated alveolar stop (the WB form of K 'morning' is unknown).

[21] This proto-form corresponds to the second syllable of A 'cooked rice'; I could not find a cognate proto-form of the first syllable.

[22] This proto-form corresponds to the first syllable of D 'to listen'; I was unable to identify the proto-form of the second syllable.

[23] This proto-form corresponds to the first syllable of J 'leg' and is glossed as 'foot'; I was unable to find a cognate proto-form for the second part of 'leg'.

There is a regular correspondence with [tʰ] word-initial in all of the varieties, illustrated in A-C of Table 10. Item D illustrates word-medial [tʰ] in all varieties; items E-H also illustrate regular correspondences, though in some varieties [tʰ] is word-initial while in others it is word-medial. Exceptions to these correspondences are shown in I-K.

BT I 'firewood' [t̪ɪʔ] has [t̪] instead of [tʰ]. It is glossed as 'wood, log', and this same form is used in other tree-related words such as 'tree bark' and 'leaf' (see wordlist 45 and 48 in Appendix B). These Burmese words appear to be reflexes of PTB *siŋ~*sik 'tree/wood' and PLB *sik 'tree' (Matisoff 2003:315). Though Rakhine and Marma 'firewood' do not seem to be reflexes of this same proto-form, I could not find a PTB or PLB form in the sources of which Rakhine and Marma might be reflexes.

The words for J 'leg' in BT and RT are exceptions that have [d] instead of [tʰ], another instance of sporadic intervocalic voicing. However, there are examples in these languages of [tʰ] word-medially, such as RT and BT F 'one thousand' and RT D 'to listen', so the voicing is not regular in this environment. The RS and RB words for K 'morning' have [θ]; I cannot account for these exceptions.

*3.2.3 Correspondences of [d] (PTB *d/*s-t)*

Correspondences of [d] are reflexes of PTB *d, as well as PTB *t preceded by the prefix *s-. Words with [d] in most or all varieties are shown in Table 11.

Table 11. Correspondences of [d]

	Gloss	**BT**	**BC**	**RT**	**RS**	**RB**	**Marma**	**PTB**	**WL**
A	this	{d}i:/{d}i:ha:					{d}eʃa	*daj	396a
B	to kneel	{d}u:tʰaʊ-t̪i:		{d}utʰauʔ	{d}utʰauʔ-de	{d}utʰaulotʰai	{d}ugoŋatʰoi-ɹe		309
C	knee	{d}u:/ {d}u:zɪʔ	«t»u:	{d}u	{d}u	{d}utsai	{d}ugo	*du	176
D	knife	{d}a:	«t»a:	{d}a	{d}a	{d}əmjau	{d}a-ʃjɛ	*s-ta	253

There is a regular correspondence with [d] word-initial in all of the varieties. The only exceptions are C ‘knee’ and D ‘knife’ in BC with voiceless [t]; these transcriptions reflect the findings of Cooper and Cooper (2013a), discussed in 3.1.3.

3.3 Velar Stop Correspondences

*3.3.1 Correspondences of [k] (PTB *g, *k)*

As mentioned in 3.1.1, TB has morphological alternation in its root initials; as such, words in this correspondence are reflections of both PTB *g and *k. Words with [k] in most or all varieties are shown in Table 12.

There is a regular correspondence with [k] word-initial in all of the varieties; this correspondence is illustrated in A-C of Table 12. Word-medial correspondence of [k] is illustrated in D-E. Items F-Q show the exceptions to these correspondences.

The RS and RB words for F ‘to swim’ have a [-gu(n)-] formative which is not present in the other words for ‘to swim’. This formative may be a reduplication of the following [k], with the reduplicated [k] voicing to [g] due to its intervocalic position; another possibility is that [-gu(n)-] is a morpheme in Rakhine.

Table 12. Correspondences of [k]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	nine	{k}o:		{k}o	{k}o	{k}o	{k}o	*d-kəw ~*d-gaw[24]; *s-gəw	365
B	betel nut	{k}õ:	{k}õ:-t̪i:	{k}õũ	{k}weŋ-θi	{k}wɛ-θi	{k}wɛ-θi/{k}wai-θi		59
C	to dance	{k}a:-d̪i:		{k}a	{k}aʔ-ɹe	{k}a-ɹe	{k}a-ɹe/{k}a-pʰo	*ga·r	346
D	elder brother (of M)	ʔa{k}o:		ʔa{k}o	ə{k}o	a{k}o-gɹi	{k}o-gɹi/a{k}o	*ik; PLB *ʔu-(j)ik > Proto-Lolish *ʔ-wyik	205
E	back				nauʔ{k}ɔŋ	nau{k}uŋ	no{k}uŋ/nau{k}uŋ	*s-ga:l; *s-nuŋ	162
F	to swim	je:{k}u:-d̪i:		ɹi{k}u	ɹi«g»u{k}u-ɹe	ɹə«g»un {k}ɛ-te	ɹi{k}u-ɹe		325
G	armpit[25]			laʔ{k}adi	laʔ«g»ədi	la{k}ədi	la{k}ədi/la«g»di/ la{k}ədoi	*g-li = *k(a)li	170b
H	yesterday		mənę{k}ą	ɲa«g»a	ɲaʔzə«g»a	ɲa«g»a	ɲa«g»a-ka/ɲa«g»a		17
I	to be ill				nemə«g»auŋ pʰɹaiʔ-de	nima{k}ou pʰɹa-te			430
J	to be good	{k}õ:-d̪ɔ:		«g»ãũ	{k}auŋ-ɹe	a{k}au	a{k}ouŋ/{k}ɔ-ɹe		434
K	to be skinny					{k}ɹuŋ-ɹe	{k}ɹuŋ-ɹe/kə«g»ɹuŋ-ʃɛ		384b
L	fly	jĩ«g»õ:		ja{k}ãũ	jaŋ«g»auŋ			*jaŋ = *(s-)braŋ	134
M	to play	«g»aza:-d̪i:		«g»azɛʔ	{k}əza-de	{k}əzɛ-te	{k}əzai-pʰo ni-ɹe/ {k}əzai-pʰo		345
N	rainbow	{k}õ:«g»ĩ:/ mo:{k}õ:«g»ĩ:	mo:{k}aũ:{k}ĩ	ʔa{k}a	{k}oŋ«kʰ»uŋ	«g»ou«kʰ»a	«g»oŋ{k}au/ «g»oŋ{k}a		8
O	spider	pĩ«g»u:		pa«kʰ»u	paŋ{k}u	paŋ{k}u	paŋ{k}uŋ	PLB *m-kaŋ	125
P	branch	ʔa{k}ãĩ/t̪ɹ{k}ãĩ	t̪ɹʔ{k}aĩ:	{k}ãĩ	θai{k}aiŋ		a«kʰ»aʔ/θoipa a«kʰ»aʔ	*s-ka:k; PLB *ʔ-kak < *ʔəkak	44
Q	to bend	{k}we:-d̪i:			{k}oŋni-ɹe	«kʰ»auʃu-kʰɹaŋ	«kʰ»au-te/«kʰ»aulaʔ	*koj	453a

[24] Benedict (1972:116) gives examples from several other TB languages of the shift from *d- > k-.

[25] In WB, G 'armpit' is written with **ə,** commonly described as an aspirated /kʰ/.

Exceptions with [g] are numerous; there are no apparent regular conditioning factors other than intervocalic position, but even this does not result in voicing in all cases. Word-medial examples of [g] include RT and Marma G ‘armpit’, RT, RS, RB and Marma H ‘yesterday’, RS I ‘to be ill’, Marma K ‘to be skinny’, BT and RS L ‘fly’ and BT N ‘rainbow’ and O ‘spider’. Mesher (2006:14) states that “initial consonants and those following a glottal stop are usually not voiced, but there are sometimes exceptions that are.” RT J ‘to be good’, BT and RT M ‘to play’ and RB and Marma N ‘rainbow’ seem to be some of these exceptions with word-initial voiced [g], while RT G ‘armpit’ has voiced [g] following a glottal stop.

The words for RS and RB N ‘rainbow’, RT O ‘spider’, Marma P ‘branch’ and RB and Marma Q ‘to bend’ are exceptions with [kʰ]; I cannot explain these exceptions.

*3.3.2 Correspondences of [kʰ] (PTB *k)*

As mentioned above in 3.1.2, aspiration, though subphonemic in PTB, is phonemic in many modern TB languages including Burmese. Generally, voiceless word-initial stops are aspirated while voiceless stops preceded by a prefix (other than *s- or *ʔa-) are not aspirated. The correspondences of [kʰ] follow the pattern of [pʰ] and [tʰ] of word-initial aspiration of voiceless stops.

Words with [kʰ] in most or all varieties are shown in Table 13.

Table 13. Correspondences of [kʰ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	seven	{kʰ}õnɪʔ		{kʰ}un̥aiʔ	{kʰ}ənaiʔ	{kʰ}ənai	{kʰ}ənaiʔ/ {kʰ}ənoiʔ	*s-nis[26]	363
B	dog	{kʰ}we:	{kʰ}we:	{kʰ}wi	{kʰ}wi	{kʰ}wi	{kʰ}wi	*kwij PLB *khwəj	95
C	snail	{kʰ}ajuʔ		{kʰ}aɹu	{kʰ}əɹuʔ	{kʰ}əɹu	{kʰ}əɹoʔ		131
D	to split	{kʰ}wɛ:-d̪i:		{kʰ}wɛʔ ‘to slash’	{kʰ}wɛ -pəlaiʔ-de		{kʰ}ɹai ləka-ɹe		337a
E	to steal			{kʰ}o	{kʰ}u-ɹe	{kʰ}u-ɹe	{kʰ}oboju -ɹe/ {kʰ}o-ʧwa	*r-kuw = *r-kəw	355
F	to be bitter	{kʰ}a:-d̪ɔ:		{kʰ}a	{kʰ}ani-ɹe	a{kʰ}a	{kʰ}a-ɹe	*ka ‘bitter’	411
G	to be difficult	{kʰ}ɛ{kʰ}ɛ: -d̪ɔ:		{kʰ}a	{kʰ}aʔ{kʰ}ɛ -ɹe	{kʰ}a-te	du{kʰ}a/ {kʰ}əgjai		457
H	eyelid	mjɛ{kʰ}õ:			mjaʔ{kʰ}wen	mjau{kʰ}ɛ			148
I	nose	n̥a{kʰ}ɔ̃:			nə{kʰ}au	na{kʰ}au	nə{kʰ}oŋ	*s-na = *s-na:r[27]	149
J	smoke	{kʰ}o:/ mi:«g»o:		ma{kʰ}o	mə{kʰ}u	mə{kʰ}o	mu{kʰ}o	*kuw = *kəw	246
K	door	da«g»a:			taŋ{kʰ}a	tɛŋ{kʰ}awa	tɛŋ{kʰ}aboi	*m-ka (?*ta-mkha?)	218
L	roof	{kʰ}ãõmo:				eiŋ{kʰ}au	iŋ«k»oŋ/ iŋ{kʰ}o		219a
M	eggplant	{kʰ}ajã:-d̪i: ‘brinjal’	{kʰ}əjæ̃: -t̪i:		{kʰ}əɹaŋ-θi	{kʰ}əɹe-θi	«k»ɹei-θi/ {kʰ}əɹai-θi		64
N	tree bark	ʔa{kʰ}ɔʔ/ t̪ɪ{kʰ}ɔʔ	t̪ɪʔ«k»auʔ		θai{kʰ}auʔ	θai«k»wɛ	apaŋ a«k»wei	*kok = *(r-)kwa:k or *s-graw	45

There is a regular correspondence with [kʰ] word-initial in all of the varieties; this correspondence is illustrated in A-E of Table 13. The regular correspondence of word-medial

[26] This proto-form corresponds to the second syllable of A ‘seven’; I could not find a cognate proto-form for the first syllable in the sources.

[27] This proto-form corresponds to the first syllable of I ‘nose’; I was unable to find a cognate proto-form for the second syllable of ‘face’ in the sources.

[kʰ] in all of the varieties is illustrated in H-I; items F-G illustrate the correspondence of both word-initial and word-medial [kʰ]. Exceptions to these correspondences are shown in J-N.

The voiced [g] of K ‘door’ and one of the words for J ‘smoke’ in BT may be examples of intervocalic voicing.

The words for N ‘tree bark’ in BC, RB, and Marma have [k] instead of [kʰ], as does one of the Marma words for L ‘roof’ and one of the Marma words for M ‘eggplant’. I am unable to account for these exceptions.

*3.3.3 Correspondences of [g] (PTB *k)*

Words with [g] in most or all varieties are shown in Table 14.

Table 14. Correspondences of [g]

	Gloss	**BT**	**BC**	**RT**	**RS**	**RB**	**Marma**	**PTB**	**WL**
A	head	{g}ɔ̃:/ʔu:{g}ɔ̃:		{g}ãũ	{g}auŋ	{g}au	a{g}oŋ	*m-gaw ~ *(s-)gaw	140
B	pillow	{g}ɔ̃õ ʔõ:			{g}ɔŋ oŋ	{g}o uŋ	{g}o uŋ	*kum	224

This correspondence is found only word-initially.

These two words have a regular sound correspondence, but both ‘head’ and ‘pillow’ are spelled with ɘ in WB. This symbol is commonly described as a voiceless aspirated velar stop; as such, these words should fit with the correspondences in Table 13. However, I have separated these correspondence sets from those in Table 13 to reflect how they are pronounced in all the speech varieties.

CHAPTER 4

NASAL AND RESONANT CORRESPONDENCES

This chapter begins with a summary of the sonorant PTB inventory (nasals, liquids, semivowels) as well as previous research relating to changes affecting these PTB consonants. It then lists correspondence sets of Burmese, Rakhine and Marma nasal consonants, including a description of exceptions to the correspondences. The chapter concludes with a list of the resonant correspondence sets (liquids and semivowels), including a description of exceptions. Correspondences of the semivowel [w] are not listed since they are systematically regular and there are no exceptions in the data. When possible, the proto-form(s) from which the data are derived is listed in the correspondence sets.

4.1 Inventory of PTB sonorants and previous research

There are four nasals reconstructed for PTB (shown above in Table 5): */m n ɲ ŋ/. Voiceless nasals are widely distributed in TB languages, and are found in Lolo-Burmese languages including WB and Modern Burmese (Matisoff 2003:37). According to Matisoff (2003:16), "preglottalized initials have arisen through the influence of one of the 'glottogenic' prefixes *s- or *ʔə- [*a- in Benedict 1972]"; voiceless nasals are a result of this preglottalization. As such, voiceless (or aspirated) nasals in Burmese (as well as in other TB languages) are due to earlier combinations of the PTB *s- or *ʔ- prefix with a root-initial nasal (Matisoff 2003:37). Matisoff mentions that some nasal roots show variation between plain nasals and glottalized nasals

(voiceless due to prefixation) in different languages, i.e. Lahu ‘mushroom’ has a voiced nasal and Burmese ‘mushroom’ has a voiceless nasal (Matisoff 2003:38, 183). This variation in nasal roots demonstrates that Lolo-Burmese languages can have different reflexes of the proto-form.

According to Matisoff (2003:38), “languages with voiceless nasals frequently have voiceless resonants (liquids and/or semivowels) as well;” Burmese is one of these languages. PTB has four reconstructed word-initial resonants (shown in Table 5): the liquids *l- and *r-, and semivowels *w- and *j-.

Nasals and resonants are both susceptible to “preemption” by a prefix due to their status as “weak” root-initial consonants; when this happens, what was originally the prefix “drives out” a weak root-initial and takes over the role of root-initial itself (Matisoff 2003:41, 153). Sonorant preemption due to the reconstructed *m- prefix,[28] if present in my data, will be included in the correspondence sets of this chapter. Any other examples of sonorant preemption in my data will be listed in the correspondence sets of the initial sound (which was originally a prefix).

4.2 Correspondences of [m] (PTB *m; PTB *s-m/*ʔ-m)

Correspondence sets are listed for both voiced and voiceless [m]. Voiced [m] is a reflex of PTB *m; voiceless [m̥] is a reflex of PTB *s-m or *ʔ-m, the earlier combination of *m with the prefix *s- or *ʔ-, as discussed above in 4.1.

[28] I am following Matisoff’s (2003:xxxix) transcriptional convention of representing the reconstructed nasal prefix as *m-; this prefix may have been homorganic to the following root-initial consonant or may have been separated from the initial consonant by a schwa.

*4.2.1 Correspondences of [m] (PTB *m)*

Words with [m] in most or all varieties are shown in Table 15.

Table 15. Correspondences of [m]

	Gloss	**BT**	**BC**	**RT**	**RS**	**RB**	**Marma**	**PTB**	**WL**
A	chin	{m}eːzeʔ		{m}aiʔ	{m}ɛiʔ	{m}ei	ɔ«m̥»ui/ {m}oi	*(m-)ka-j ~ *(s-)ka	157
B	name	naː{m}ɛː		n̥a{m}e	nə{m}e	na{m}ɛ	na{m}ɛ/ n̥a«m̥»ɛ	*r-miŋ	213
C	house lizard	ʔẽɪː{m}jɔ̃ː		ʔẽĩ«m̥»jɔʔ	eiŋ«m̥»jauŋ	i{m}jau	iŋ{m}jau		119
D	roof	kʰãõ{m}oː		ʔa«m̥»o	a{m}o				219b
E	crest			ʔa«m̥»auʔ	a{m}au	a{m}auʔ	kɹaʔ {m}oʔ		115
F	to dream	ʔeɪ{m}ɛ {mɛ}-t̪iː		ʔẽĩ«m̥»aʔ	eiŋ{m}a {m}a-de	eiŋ{m}a {m}a-te/ iŋ{m}a {m}a-tɛ	iŋ{m}a {m}ɹa-ɹe	*man = *r-man	298
G	to snore			«m̥»wɛ̃		{m}we -ɹe	nakʰo{m}wɛ -ɹe/ nakʰo{m}ɹe -ɹe		297a
H	soil (earth)	{m}jeːʤiː	{m}jeʧiː	{m}ɹi 'earth'	{m}ɹegɹi	{m}ɹebɹa	«n»ɛbɹa	*mləj 'earth, country	31
I	to submerge	{m}joʊ-t̪iː		{m}ɹouʔ 'to get drowned'	ɹi {m}ɹuʔlakʰa -ɹe	{m}ɹu-te	ɹi «n»oi-te/ «n»oi-te	*brup[29] 'submerged / overflow'	327a
J	widow	{m}osʰoː {m}aʔ		{m}asʰa {m}a	{m}əsə {m}aʔ	{m}oso {m}a / «b»oso {m}a	{m}aʧo {m}a/ {m}aʧə{m}a	PLB *ʧəw	203
K	sarong (F)	tʰa{m}ẽː/ tʰa{m}iː			tʰə{m}iŋ	tʰə«b»eiŋ	tʰa«b»i/ tʰa«b»wi		230
L	tail	ʔa{m}iː/ {m}jiː/ ʔa«m̥»iː/	ʔə{m}iː	«b»adõũ	«b»ə doŋ	«b»əduŋ	{m}əduŋ/ a{m}əduŋ	*r-maj	104

[29] Matisoff (2003:133-134) states that in several roots, including 'submerged / overflow', "WB has shifted an original *b- to m- before liquids."

There is a regular sound correspondence with [m] word-initial in all of the varieties; this is illustrated in A of Table 15. Regular word-medial correspondence is illustrated in B. Exceptions to these correspondences are shown in C-L (and one of the Marma words in A-B).

The Marma words for A ‘chin’ and B ‘name’ are pronounced with either voiced [m] or voiceless [m̥]. BT also has free variation between voiceless and voiced [m] in the words for L ‘tail’.

Marma H ‘soil (earth)’ and I ‘to submerge’ have [n] instead of [m]; in both of these items, the [n] in Marma corresponds to [mj] in Burmese and [mɹ] in Rakhine. Marma I ‘to submerge’ may be a reflex of the cognate proto-form *nip ‘to sink, submerge’ (Matisoff 2003:370). I cannot explain the exception in H ‘soil (earth)’. Matisoff (2003:66-67) states that many TB languages have found it difficult to maintain the distinction between [mj-] and [nj-] with considerable variation seen even among dialects of a single language; he mentions that many Loloish languages show a strong tendency for PTB *mj- clusters to develop into [nj-] or [n-]. However, at this point there is little to no evidence of Burmish languages changing [mj-] to [n-].

Several exceptions involve occurrences of [b] where [m] is expected. RB has free variation of [m] and [b] in the word for J ‘widow’; both RB and Marma have [b] in the words for K ‘sarong (F)’, while RT, RS and RB have [b] in the words for L ‘tail’. There does not seem to be a conditioning factor for these exceptions.

I cannot account for the voiceless [m̥] instead of voiced [m] in the following words: RT and RS C ‘house lizard’; RT D ‘roof’, E ‘crest’, F ‘to dream’, G ‘to snore’.

*4.2.2 Correspondence of [m̥] and [m] (PTB *s-m/*ʔ-m; PLB *m̥/*ʔ-m)*

As discussed previously, voiceless nasals originate from combinations of proto-prefixes *s- or *ʔ- to an initial nasal. Matisoff (2003:37), sees both *m̥ and *ʔ-m as essential PLB

reconstructed forms based on Loloish tonal evidence. Thus, voiceless [m̥] is a reflex of PLB *m̥ or *ʔ-m. Burmese, RT and RS [m̥] correspond to RB [m] and Marma [m̥/m], as seen in Table 16.

Table 16. Correspondences of [m̥] and [m]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	mushroom	{m̥}o:	{m̥}o	{m̥}o	{m̥}o	{m}o:	{m̥}o	*ɡ-muw = *ɡ-məw; *s-məw	55
B	arrow[30]	{m̥}ja:		{m̥}ja	{m̥}ɹa	{m}ja	{m̥}ɹaʤu	*b-la or *mla	251
C	water leech	{m̥}jɔʔ 'leech'		{m̥}jɔʔ 'leech'	{m̥}jɔʔ	{m}jo	{m}jo	*(m-)li·t	137
D	to be wrong	{m̥}a:		{m̥}a	{m̥}a-ɹe	{m}a-ɹe	a{m}a		437
E	to blow	{m̥}oʊ-t̪i:		{m̥}ouʔ	mi{m̥}o -θe	{m}ou-te	{m̥}ou-te/ {m̥}ou-ʧwa	*(s-)mut	274
F	to bury	{m̥}joʊ ŋ̊ã-d̪i: 'to inter'		{m̥}ɹouʔ	{m̥}ɹɔʔ -pəlaiʔ-de	{m}ɹo-te	nebɹɔŋ {m̥}ɹɔʔ -p^{h}o		343
G	to be ripe	jĩ {m̥}e: -d̪ɔ: 'fully ripe'	{m̥}ɛ	{m̥}e	{m̥}eʔ-ɹe	a{m}e	{m̥}ẽ/a{m̥}ĩ/ {m}ĩɾɛ	*s-min	74
H	to be dark	{m̥}õ:-d̪ɔ: 'dark'		{m̥}ãĩ 'gloomy'/ {m̥}ãũ 'to get dark'	«m»aiʔni -ɹe	a{m}ai	mə{m}oiŋʤai/ mə{m̥}oiŋʤai/ ɲi {m}a	*r-mu:k, *mu:ŋ	406
I	hair (body)	ʔa{m̥}we:/ ʔa{m̥}wi:		«m»wi	a{m̥}wi	a{m}wi	a{m}wi	*(s-)mul ~ *(r-)mul; *mui < *mul	144
J	feather	ŋ̊ɛ {m̥}we:			ŋ̊aʔ «m»wi	ŋaʔ{m}wi	ŋaʔ {m}wi	*(s-)mul ~ *(r-)mul	111
K	where	bɛ:{m̥}a: -lɛ:		sa{m̥}a	zane ɹa«m»a -le	za{m}a	ʤa{m}a/ ʤa{m}a-le/		440

There is a regular correspondence with word-initial Burmese, RT and RS [m̥], RB [m] and Marma [m̥/m] in all of the varieties; this is illustrated in A-C of Table 16. Items D-G illustrate

[30] Item B 'arrow' is written in WB with ʚ, a voiced bilabial nasal.

word-medial correspondences in one or two of the varieties, while the others are word-initial. Exceptions to these correspondences are shown in H-K.

Marma has free variation between voiced and voiceless /m/ in the words for G ‘to be ripe’ and H ‘to be dark’. Words of this correspondence with only Marma voiceless [m̥] are A ‘mushroom’, B ‘arrow’, E ‘to blow’ and F ‘to bury’. Marma words with only voiced [m] are C ‘water leech’, D ‘to be wrong’, I ‘hair (body)’, J ‘feather’ and K ‘where’. Marma voiceless [m̥] and voiced [m] are in both word-initial and word-medial positions in my data; therefore, word-medial position in a word is not the conditioning factor for voicing in Marma. I cannot account for this voicing variation of /m/ in Marma.

Exceptions with [m] instead of [m̥] are RT I ‘hair (body)’ and RS H ‘to be dark’, J ‘feather’ and K ‘where’. I cannot account for these exceptions.

4.3 Correspondences of [n] (PTB *n, *P-n)

*4.3.1 Correspondences of [n] (PTB *n)*

The correspondence of [n] is straightforward. Words with [n] in most or all varieties are shown in Table 17.

There is a regular word-initial correspondence with [n] in all of the varieties; this correspondence is illustrated in items A-D of Table 17..Word-medial correspondences of [n] are illustrated in one of the RT words for E ‘to be hurt’, the RB and Marma words for F ‘to be few’ and the RT and RB words for K ‘to be weak’, as well as all varieties of G and J (except RT in G and one of the Marma words in J). Exceptions to these correspondences are shown in G-L.

Table 17. Correspondences of [n]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	sun	{n}e:	{n}e	{n}i	{n}i	{n}eiŋ/{n}ei	{n}i	*nəj	2
B	ear	{n}a:		{n}a	{n}a	{n}a	{n}a:/{n}a	*r-na ~ *g-na	151
C	to be warm (water)	{n}we: -d̪ɔ:	{n}we:	{n}wi 'warm'	{n}wi-ɹe	{n}wi-ɹɛ			25a
D	back			{n}ãũʔ	{n}auʔkɔŋ	{n}aukuŋ	{n}okuŋ/ {n}aukuŋ		162
E	to be hurt	{n}a:ʧĩ: -d̪o: 'painful'		{n}a 'pain'/ ʔa{n}a 'wound'	{n}a-ɹe	{n}a-ɹe	{n}a-ɹe/ {n}a-ʧwa		300
F	to be few	{n}ɛ:-d̪ɔ:			{n}e-ɹe	a{n}e	a{n}oi/ a{n}e-ʃje		373
G	west	ʔa{n}ɔʔ	ʔə{n}auʔ -əjæʔ	ʔa«n̥»auʔ	a{n}au -pʰaʔ	a{n}au -pʰa	a{n}oʔ/ {n}au -pʰa		21
H	milk	{n}oʔ	nwa: {n}o̤	«n̥»o	nwa {n}uʔ	{n}uʔ	{n}uʔ	*nuw = *nəw	101
I	name	{n}a:mɛ:		«n̥»ame	{n}əme	{n}amɛ	{n}amɛ/ «n̥»am̥ɛ	*r-miŋ	213
J	heel[31]	pʰa{n}ɔ̃:ʔ		pʰa{n}au	pʰə{n}auʔ	pʰa{n}a	kɔ{n}auʔ/ «n̥»aʔ		179
K	to be weak	ʔa:{n}ɛ: -d̪ɔ: 'weak'		{n}õũ 'to feel weak and tired'	a{n}ɛ-ɹe	a{n}ɛ-ɹe	«ɲ»o-ɹe/ ɲə«ɲ»aiʔ		428
L	yesterday	ma{n}eʔ	mə{n}e̤ -ka̤	«ɲ»aga	«ɲ»aʔzəga	«ɲ»aga	«ɲ»aga -ka/ «ɲ»aga		17

Exceptions of [n] for which I cannot account:

- Free variation of [n] and [n̥]: Marma I 'name'
- [n̥]: RT words for G 'west', H 'milk', I 'name'; one of the Marma words for J 'heel'
- [ɲ]: Marma K 'to be weak'; Rakhine and Marma L 'yesterday'

[31] Item J 'heel' in WB is written with ṉ, an unaspirated voiceless alveolar nasal.

*4.3.2 Correspondences of [n̥] and [n] (PTB *n, *P-n)*

Nasals, when preceded by a prefix, often change to voiceless; this is especially true when preceded by PTB *s- or *ʔ-, as described in 4.1. The correspondences of voiced and voiceless /n/ follow the same pattern as that of voiced and voiceless /m/ in 4.2.2. Burmese and Myanmar Rakhine [n̥] correspond to RB [n] and Marma [n̥/n] as shown in Table 18.

Table 18. Correspondences of [n̥] and [n]

	Gloss	**BT**	**BC**	**RT**	**RS**	**RB**	**Marma**	**PTB**	**WL**
A	two	{n̥}ɪʔ		{n̥}aiʔ	{n̥}aiʔ	{n}ai	{n̥}aiʔ/{n̥}oiʔ	*g-nis	358
B	mist, fog			{n̥}a 'cloud, fog'		{n}aŋ	{n̥}au/ {n̥}ankjaʧwa		6b
C	year	{n̥}ɪʔ	{n̥}ɪʔ/ kʰʊ«n»ɪʔ	{n̥}aiʔ	kʰu{n̥}aiʔ	{n}ai	{n̥}aʔ/ {n̥}oiʔ	*niŋ = *s-niŋ	19
D	how many	bɛ: {n̥}ɪʔ			luza {n̥}iauʔ-le	za {n}iau-le	{n̥}aijoʔ		443
E	face	mjɛ {n̥}a:		mjaʔ «n»a	mja {n̥}a	mjau {n}a	mjau {n̥}a/ mja {n̥}a	*s-ma:j or *s-mel[32]	141
F	twenty	{n̥}asʰɛ:			«n»əse	{n}ətse	{n̥}aiʧe/ {n̥}oiʧe	*(m-)kul	367
G	nose	{n̥}akʰɔ̃:		{n̥}a	«n»əkʰau	{n}akʰau	{n}əkʰoŋ	*s-na	149
H	brain			ʔõũ{n̥}auʔ	u«n»auʔ	u{n}au	a{n̥}auʧĩ	*nuk	142
I	heart	{n̥}alõ:		{n̥}alõũ	{n̥}əloŋ	{n}aluŋ	a{n}l̥uŋ	*s-nik ~ niŋ	165
J	seven	kʰõ«n»ɪʔ		kʰu{n̥}aiʔ	kʰə«n»aiʔ	kʰə{n}ai	kʰə{n}aiʔ/ kʰə{n}oiʔ	*s-nis	363

There is a regular correspondence with word-initial Burmese, RT and RS [n̥], RB [n] and Marma [n̥/n] in all of the varieties; this is illustrated in A-B of Table 18. Regular word-medial correspondences are illustrated in D-E (with the exception of Marma D and RT E); item C has both word-initial and word-medial correspondences. Exceptions to the correspondences are shown in C and E-J.

[32] These proto-forms are for the first syllable of E 'face'; I was unable to find a cognate proto-form for the second syllable in the sources.

One of the BC words for C ‘year’ and BT J ‘seven’ have voiced [n]. In these words, the nasal is in word-medial position, seeming to indicate that voiceless [n̥] becomes voiced [n] intervocalically in Burmese. However, Burmese also has voiceless [n̥] word-medially in BT D ‘how many’ and E ‘face’. Other than the possibility of intervocalic voicing, I cannot account for these voiced [n] exceptions in C ‘year’ and J ‘seven’. Perhaps the preceding vowel affects the occurrence of intervocalic voicing, or there is some other conditioning factor which I have not identified in my data.

Marma has voiceless [n̥] and voiced [n] both word-initially and word-medially. Most Marma examples of voiceless [n̥] are word-initial, except for E ‘face’ and H ‘brain’ in word-medial position; according to my data, voiced [n] is word-medial in Marma except for G ‘nose’ with word-initial [n].

Exceptions with voiced [n] instead of voiceless [n̥]: RT E ‘face’; RS F ‘twenty’, G ‘nose’, H ‘brain’, J ‘seven’

4.4 Correspondences of [ɲ] (PTB *nj-/*ɲ, *P-ɲ)

Words with [ɲ] in most or all varieties are shown in Table 19.

There is a regular correspondence with [ɲ] word-initial in all of the varieties; this correspondence is illustrated in items A-E of Table 19. It is also found word-medially in the RB word for I ‘finger’ and in reduplicated forms, as illustrated in the RB and Marma words for E ‘to be soft’.

The BT word listed under H ‘to be tired’ has [ŋ], but it is glossed as ‘to feel sleepy, to nod’, so it is not clear that it is cognate; the other varieties of H ‘to be tired’ illustrate the regular correspondence of word-initial [ɲ].

Table 19. Correspondences of [ɲ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	night	{ɲ}aʔ	{ɲ}a̰	{ɲ}a	{ɲ}iʔ	{ɲ}ɪʔ/{ɲ}ɪ	{ɲ}ɪʔ/{ɲ}i	*ja > *n(e)-ja ‘sun night’	13
B	right side	{ɲ}a:-bɛ:ʔ		{ɲ}a-pʰa	{ɲ}a-pʰaʔ	{ɲ}a-pʰa	{ɲ}abɹauka/ {ɲ}a-pʰa[33]		391
C	younger brother (of M)	{ɲ}i:/{ɲ}i:le:		{ɲ}i/{ɲ}iʃe	{ɲ}i	{ɲ}iŋ		*njej ‘younger sibling PLB *ʔ-lak ‘youth (youngster)’	209
D	to be dirty	{ɲ}ɪpa-d̪ɔ:		{ɲ}eiʔpɛʔ ‘dirty’	{ɲ}aiʔpaiʔ -de	{ɲ}aipɛ-te	awai {ɲ}ɪʔ	*n(j)ik	403
E	to be soft	{ɲ}ĩ:t̪a:-d̪i: ‘soft, gentle’				{ɲ}ə{ɲ}e	{ɲ}ə{ɲ}e		422b
F	younger sister (of F)	{ɲ}amaʔ/ {ɲ}i:maʔ		{ɲ}ama/ «n»ama	{ɲ}əmaʔ	{ɲ}əma		*njej ‘younger sibling; *na:w ‘younger sibling’	210
G	younger sister (of M)	«n̥»amaʔ		«n̥»ama	{ɲ}əmaʔ	{ɲ}əma		*njej ‘younger sibling; *na:w ‘younger sibling’	211
H	to be tired	«ŋ»aɪ-d̪ɔ: ‘to feel sleepy, nod’		{ɲ}ãũ	{ɲ}auŋ-ɪe	{ɲ}au-ɪe	{ɲ}uŋ-ɪe/ {ɲ}ai-ɪe	*njuŋ = *(s-)ŋuŋ	429
I	finger					la{ɲ}o	la«ɲ̊»o	*(m-)juŋ	172b
J	to squeeze	«ɲ̊»ɪ-t̪i:			«ɲ̊»aiʔ -bəlaiʔ-de			*njap	462a

Other exceptions of [ɲ]:

- Free variation of [ɲ] and [n]: RT word for F ‘younger sister (of F)’
- [n̥]: BT and RT words for G ‘younger sister (of M)’
- [ɲ̊]: BT and RS words for J ‘to squeeze; Marma I ‘finger’

[33] M2 wordlist glosses [ɲapʰa] as ‘left side’.

4.5 Correspondences of [ŋ] (PTB *ŋ, *s-ŋ)

Words with [ŋ] in most or all varieties are shown in Table 20.

Table 20. Correspondences of [ŋ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	fish	{ŋ}a:		{ŋ}a	{ŋ}a	{ŋ}a	{ŋ}a:	*ŋja PLB *ʔ-ŋa	116
B	we (pl)	{ŋ}a:-tʰoʔ		{ŋ}a-ɹo	{ŋ}a-ɹoʔ	{ŋ}a-ɹoʔ	{ŋ}a-ɹoʔ/ {ŋ}ə-ɹoʔ	*ŋaj	447
C	to pull	{ŋ}ĩ-d̰i:				{ŋ}aŋ-ɹe	{ŋ}au-ɹe/ {ŋ}aŋ-ʧwa		321b
D	bird	«ŋ̊»ɛʔ	«ŋ̊»ɛʔ	«ŋ̊»aʔ	«ŋ̊»aʔ	{ŋ}aʔ	{ŋ}aʔ	*s-ŋak	107
E	feather	«ŋ̊»ɛ m̥we:			«ŋ̊»aʔ mwi	{ŋ}aʔ mwi	{ŋ}aʔ mwi	*s-ŋak ‘bird’ *(s-)mul ~ *(r-)mul ‘feather’	111
F	bird’s nest		«ŋ̊»ɛʔ t̪aiʔ		«ŋ̊»aʔ θaiʔ	{ŋ}aʔ θai	{ŋ}aʔ θwɛʔ/ {ŋ}aʔ adaŋ		109
G	banana	{ŋ}apjɔ:	{ŋ}əpjɔ: -t̪i:	{ŋ}apɹɔ̃ -θi	{ŋ}apjɔʔ -θi	«n»əpju -θi	«n»əpju -θi	*s-ŋak ‘banana, plantain’ *sej ‘fruit’	62
H	to weep	{ŋ}o:-d̰i:		{ŋ}o	{ŋ}u-ɹe	«m»u-ɹe	«m»o-ɹe	*ŋuw = *ŋəw	260
I	red pepper, chili	{ŋ}ajoʊʔ	{ŋ}əjouʔ -t̪i:	{ŋ}aɹo -θi	{ŋ}əɹɔ-θi	{ŋ}aɹo:	«m»əɹo-θi/ «m»əɹo-θi amu		69
J	to be thirsty			{ŋ}ɛʔ	ɹi {ŋ}aʔ -de	ɹi {ŋ}ɛ-te	ɹi «m»wai -te		265
K	silver	{ŋ}we:	{ŋ}we	{ŋ}we	{ŋ}we	«m»wɛ	«m»wɛ/ {ŋ}we	*ŋul = *d-ŋul	38
L	friend	t̪a{ŋ}ɛ:ʤĩ:			θə{ŋ}ɛʃaŋ	θu«m»eʃa			212

There is a regular correspondence with [ŋ] word-initial in all of the varieties; this correspondence is illustrated in A-C of Table 20. The BT and RS words for L ‘friend’ are the only examples of [ŋ] in word-medial position (RB is an exception to this correspondence with word-medial [m]).

All instances of the Burmese, RT and RS words for ‘bird’, illustrated in D-F, have voiceless [ŋ̊] instead of the voiced [ŋ] of RB and Marma. WB ‘bird’ has voiceless /ŋ̊/; the Burmese and Myanmar Rakhine pronunciations of ‘bird’ follow WB, while RB and Marma both have an innovation with voiced [ŋ] instead.

Other exceptions of [ŋ]:

- [n]: RB and Marma words for G ‘banana’
- Free variation between [ŋ] and [n]: Marma K ‘silver’
- [m]: Marma and RB words for H ‘to weep; Marma I ‘red pepper’, J ‘to be thirsty’; RB words for K ‘silver’ and L ‘friend’

4.6 Correspondences of [l] (PTB *l, *P-l)

As previously mentioned, languages with voiceless nasals have a tendency to also have voiceless liquids. Voiced [l] is a reflex of PTB *l; voiceless [l̥] is sometimes a result of PTB *l with a preceding prefix which causes the voicelessness of the liquid.

*4.6.1 Correspondences of [l] (PTB *l)*

Words with [l] in most or all varieties are shown in Table 21.

There is a regular correspondence with [l] word-initial in all of the varieties; this is illustrated in A-D of Table 21. Regular word-medial correspondences are illustrated in F-H; both word-initial and word-medial correspondences are illustrated in E and I. Exceptions to these correspondences are shown in J-O.

The BT word for J ‘wet rice field’ has voiced [l] and voiceless [l̥] in free variation while BC has only voiced [l]. Marma J ‘wet rice paddy’ has voiceless [l̥]. I cannot account for these exceptions. The Burmese voiceless [l̥] may be an older form of this word, which Marma borrowed before leaving Myanmar in the 1780’s. Another possibility is that the variation in voicing of Burmese and the voiceless [l̥] in Marma are the results of a reconstructed prefix.

Table 21. Correspondences of [l]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	moon	{l}aʔ	{l}a̰	{l}a	{l}a	{l}aʔ/{l}a	{l}a/{l}aʔ	*s-la ~ *g-la	3
B	turtle	{l}eɪʔ		{l}eiʔ	{l}eiʔ	{l}ei	{l}eiʔ/{l}oi		120
C	finger	{l}ɛʧʰõ:		{l}aʔʧʰãũ	{l}aʔʃau	{l}aɲu	{l}aɲ̊o	*(m-)juŋ > *lak-(k)jauŋ	172a&b
D	to come	{l}a:-d̰i:		{l}a	{l}a-ɹe	{l}aʔ	{l}e/ {l}a-ɹe/ {l}a-ʧwa	*la-j ‘come, arrive’	313
E	to be heavy	{l}e:-d̰ɔ:		{l}i ‘heavy’	ə{l}i-gɹi	a{l}i:	{l}ə{l}i/ {l}i-ɹe	*s-lij = *(s-)ləj	419
F	calf	ʧʰe:d̰a{l}õ:			kʰɹidə{l}on	kaθə{l}uŋ	kʰə{l}uŋθa/ θə{l}uŋθa		177
G	all	ʔa:{l}õ:		ʔa{l}õũ	a{l}oŋ	a{l}uŋ	a{l}uŋ		371
H	what	ba:-{l}ɛ:			za-{l}e	za-{l}e	ʤa-{l}e	*ba-j ‘what’ *la-j ‘question particle’	442
I	to work	ʔa{l}oʊʔ ‘work, job’			ə{l}o{l}oʔ -de	a{l}u{l}o -te	a{l}o{l}o -te/ {l}o:{l}o -pʰo		344
J	wet rice field	{l}ɛ:/ «l̥»ɛ: ‘paddy field’	{l}ɛ kwĩ:	{l}e ‘field’	{l}e		ʧɛba «l̥»ain-ʧwa	*low	71
K	heart	n̥a{l}õ:		n̥a{l}õũ	n̥ə{l}oŋ	na{l}uŋ	an«l̥»uŋ	*s-nik~*s-niŋ ‘heart/mind’; *m-luŋ ‘mind/heart’	165
L	child	kʰa{l}e:		kale«ʃ»e ‘boy’	ə«ʃ»ɛ	a«ʃ»jɛ	a«ʃ»jɛ	*ʦa ~ *za ‘child’ PLB *ʔ-lak ‘youth (youngster)’	198
M	son	jaʊʧa:{l}e: ‘boy’		jãũʧa«ʃ»e ‘boy’		jauʧa«ʃ»ɛ	jaukja«ʃ»jɛ	PLB *ʔ-lak ‘youth (youngster)’	199b
N	younger brother (of F)	mõ:{l}e:			maŋ«ʃ»e		moŋ«ʃ»ɛ/ amoŋ«ʃ»ɛ	PLB *ʔ-lak ‘youth (youngster)’	208
O	younger brother (of M)	ɲi:{l}e:		ɲi«ʃ»e ‘younger brother (elder brother call)’				*njej ‘younger sibling PLB *ʔ-lak ‘youth (youngster)’	209

Marma K ‘heart’ has voiceless [l̥] following a voiced nasal; in WB, the preceding nasal is written as voiceless while the liquid /l/ is voiced. I do not know the reasons for these changes. There is a possibility that this word in Marma is a mispronunciation (it was only provided by one Marma consultant, while the other consultant provided a non-cognate form); further data is needed to verify if this is the regular and correct Marma pronunciation of ‘heart’.

The BT words for L ‘child’, M ‘son’, and N-O ‘younger brother (of F and M)’ have [le], while Rakhine and Marma have [ʃe]; there are no other examples of this correspondence in the data. It is likely that these are not cognate. Burmese [le] may be a reflex of PLB *ʔ-lak ‘youth (youngster)’, while [ʃe] in Rakhine and Marma may be a reflex of PTB *zəj and PLB *ʔ-zəj ‘little/small’ (as listed in Matisoff 2003: 191, 53). The Burmese orthographic representation of ‘to be small’ on the Burmese/English wordlist from Myanmar is *ŋɛ:ɖɔ:*; this may be a reflex of *PTB *ŋaj ‘small, inferior, offspring’, listed in Matisoff (2003:209).

*4.6.2 Correspondences of [l̥] and [l] (PTB *l, *P-l)*

Burmese and Myanmar Rakhine [l̥] correspond to Bangladesh Rakhine and Marma [l], as seen in Table 22. There is a regular correspondence with voiceless [l̥] word-initial in Burmese, RT and RS and voiced [l] in RB and Marma; this correspondence is illustrated in A-C of Table 22. Exceptions to this correspondence are shown in D-G.

Exceptions which I cannot account for:

- Voiced [l] instead of voiceless [l̥]: RT D ‘lightning’; RT and RS E ‘boat’
- Voiceless [l̥] instead of voiced [l]: Marma F ‘to dry (rice)’ and G ‘bow’

Table 22. Correspondences of [l̥] and [l]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	spear	{l̥}ã:		{l̥}ɛ̃	{l̥}aŋ	{l}ɛ:	{l}ai		252
B	to slice	{l̥}i:-d̪i: 'to cut into small pieces'		{l̥}i	{l̥}i-ɹe	{l}i-ɹe		*lep = *(s-)lep	338
C	to set free, release	{l̥}ʊ-t̪i		{l̥}wɛʔ	{l̥}uʔ -bəlaiʔ-de	{l}wɛmau -kʰɹaŋ		*g-lwat	461a
D	lightning	{l̥}jasi: lɛ-t̪i	{l̥}jæʔsi:lɛʔ -t̪i	«l»ajɛ̃sʰeʔ	{l̥}jaʔse la-ɹe			*ljap = *(s-)ljap	9a
E	boat	{l̥}e:		«l»õ	«l»au	{l}au	{l}o	*(m-)lij = *(m-)ləj	216
F	to dry (rice)		{l̥}æ̃:	{l̥}ɛ̃ 'to dry in the sun'	səba {l̥}an-ɹe	{l}e:-kʰɹaŋ	k«l̥»ai -ʧwa		78
G	bow[34]				{l̥}e	{l}e:	«l̥»ɛ	*d-lij	249

4.7 Correspondences of [j] (PTB *j, *l)

Modern TB languages treat clusters with medial *-l- (and *-r-) very differently; Burmese generally has [j] for medial *-l- (Benedict 1972:41). Matisoff (2003:71) states that there is a general tendency for *-l- to become WB [-j-] after velars, though there are numerous exceptions.

Words with [j] in most or all varieties are shown in Table 23.

[34] Item G 'bow' is written in WB with ∞, a voiced liquid lateral approximate.

Table 23. Correspondences of [j]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	rabbit	{j}õ:	{j}oũ	{j}õũ	{j}uŋ	{j}ouŋ	{j}ouŋ	*b-juw = b-jəw	92
B	man	{j}aʊʧa:		{j}ãũʧa	{j}au?ʧa	{j}auʧa	{j}aukja		192
C	to lick	{j}ɛ-t̪i 'to lick (speaking)'		{j}a	{j}a-θe	{j}a-te	{j}au-te	*(m-)ljak ~ *(s-)ljak	277
D	monkey	m{j}ɔʊʔ	m{j}auʔ	m{j}auʔ	m{j}au	m{j}au	m{j}au	*mruk or *mjuk	90
E	to fly	p{j}ã:-d̪i:		p(j)ɛ̃	p{j}aŋ-ɹe	p{j}e-ɹɛ	p{j}ai-ɹɛ/ p{j}ɛn-ʧwa	*pjaw	112
F	dry field	{j}a: 'land with crops other than rice'	taũ{j}a kʰĩ:			{j}abɹa	{j}a/ {j}ama toʔ	*hja 'swidden'	70b
G	wife	ma{j}a: 'wife (very impol.)'		ma{j}a	mə{j}a	mə{j}a	mi{j}a/ mə{j}a	*ma 'mother'[35]	202
H	banana	ŋap{j}ɔ:	ŋəp{j}ɔ: -t̪i:	ŋap«ɹ»ð -θi	ŋap{j}ɔʔ -θi	nəp{j}u -θi	nəp{j}u -θi	PLB *s-ŋak[36] *sej 'fruit'	62

There is a regular correspondence with [j] word-initial in all of the varieties; this correspondence is illustrated in A-F of Table 23. Items A-C (and F, except for BC) illustrate root-initial [j] while in D-E, [j] is in the medial position of a word-initial consonant cluster. Item G and the BC word in F illustrate the word-medial correspondence of [j]. The only exception to this correspondence in my data is shown in H.

Item H 'banana' has [ɹ] instead of [j] in RT; this raises the question as to whether 'banana' should be part of this [j] correspondence set or whether it should be part of the [ɹ] and [j] correspondences listed in 4.8. The WB form ငှက်ပျောသီး *ŋ̊apjɔθi:* 'banana' has /j/. Therefore, /j/ is

[35] I was unable to find a cognate proto-form in the sources for the second syllable of G 'wife'; this [ja] form may be a reflex of the same proto-form as the [ja] in the first syllable of 'man'.

[36] The proto-forms given for H 'banana' correspond to the first and last syllables; I was unable to find a cognate proto-form in the sources for the second syllable (which contains the segment in focus for this correspondence).

the historical form of ‘banana’; it is generally agreed that WB represents one stage in the changes leading to modern Burmese, and shows the status of Burmese pronunciation from around the sixteenth to eighteenth centuries. RS, RB and Marma [j] retain the WB historical form of /j/ while RT is an exception with [ɹ]. I cannot account for the exception in RT of [j] instead of [ɹ]. Possibly RT assumed ‘banana’ was a borrowing from Burmese (in which [ɹ] merges to [j], discussed in 4.8 below), and therefore shifted to a [ɹ] pronunciation of ‘banana’ in a mistaken belief that this was the original form of the word in Burmese.

4.8 Correspondence of [j] and [ɹ] (PTB *r, *l)

The correspondence of Burmese [j] to Rakhine [ɹ] is well-established in the linguistic literature, often being noted as a primary difference between Burmese and Rakhine. Okell quotes the saying, “If you don’t know whether to spell it with a *y* or an *r*, ask an Arakanese.” He states that Standard Burmese speakers recognize that Rakhine retains an r-like sound, as reflected in Burmese spelling, which has merged with [j] in Burmese speech (Okell 1995:2). Matisoff (2003:41) states that “the palatalization of *r > y [j] occurred in Burmese, both in initial and medial position,” illustrating this change with the notation (WB r- > SB j-; WB -r- > SB -j-). Bradley (2011:43) comments that, in contrast to Burmese, “...the merger of initial and medial -r- [to -j-] does not take place in Arakanese where it is still [ɹ]”. The data show Marma retains an r-like sound, as well.

As mentioned in 4.7, several TB languages vary greatly in their treatment of medial *-r- (and *-l-) clusters (Benedict 1972:41). According to Matisoff (2003:71), there is a general tendency for *-l- to change to /-ɹ-/ after velars in WB; however, he says there are a number of exceptions. Burmese [j] corresponds to [ɹ] in Rakhine and Marma, as seen in Table 24.

Table 24. Correspondences of [j] and [ɹ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	water	{j}e:	{j}e	{ɹ}i	{ɹ}i	{ɹ}i	{ɹ}i	*m-ɣ̊ril ‘spit, water’	22
B	village	{j}wa:		{ɹ}wa	{ɹ}wa	{ɹ}wa	{ɹ}wa	*r-wa ~ *g-wa	214
C	to sell	{j}õ-d̪i:		{ɹ}ãũ	{ɹ}auŋ-ɹe	{ɹ}au-ɹe	{ɹ}ɔŋ-ɹe/{ɹ}ɔŋ-ɣ̊wa	?*jwar ‘sell, buy’?	352
D	to choose	{j}we:ɣ̊ʰɛ-d̪i:		{ɹ}wi	{ɹ}wiʃe-ɹe	{ɹ}wiʃɛ-ɹe	{ɹ}wi-ɣ̊wa	*s-ril	288
E	to fight	{j}æ̃pʰ{j}ɪ-t̪i		{ɹ}ɛ̃pʰ{ɹ}ɛʔ ‘to quarrel’	{ɹ}aŋpʰ{ɹ}aiʔ-de	{ɹ}ɛ̃pʰ{ɹ}ai-te		*ran = *g-ra·l	350
F	porcupine	pʰ{j}u:	pʰ{j}u:		pʰ{ɹ}u	pʰ{ɹ}u	pʰ{ɹ}u	*s-blu	93
G	ashes	p{j}a:		p{ɹ}a	p{ɹ}a	p{ɹ}a	p{ɹ}a	*pla	245
H	grass	m{j}ɛʔ	m{j}ɛʔ	m{ɹ}ɔʔ	m{ɹ}aʔ	m{ɹ}aupa	m{ɹ}aʔ	*m-rak = *m-ljak	52
I	to boil	p{j}oʊ-t̪i:	p{j}ouʔ		p{ɹ}ɔ-de	p{ɹ}o-kʰɹaŋ	p{ɹ}o-pʰo/p{ɹ}o-ɣ̊wa	*prjo	82a
J	to run	p{j}e:-d̪i:		b{ɹ}i	b{ɹ}i-ɹe	b{ɹ}i-ɹe	b{ɹ}i-ɹe	*ploŋ ‘flee, run’	315
K	to see	m{j}ĩ:-d̪i:			m{ɹ}aŋ-ɹe	m{ɹ}au-ɹe ‘to look at’	m{ɹ}au-ɹe/m{ɹ}aŋ-ɣ̊wa	*mraŋ	258
L	bone	ʔa{j}o:		ʔa{ɹ}o	ə{ɹ}u	a{ɹ}u	a{ɹ}o	*rus	180
M	beer, alcohol	ʔa{j}ɛʔ	kʰaũ{j}e	ʔa{ɹ}a/{ɹ}aʔ	kʰɔŋ {ɹ}e	a{ɹ}a	a{ɹ}aʔ		61
N	mango	t̪a{j}ɛ:ʔ	t̪ə{j}ɛʔ-t̪i:	ta{ɹ}a-θi	θə {ɹ}aʔ-θi	θa{ɹ}a-θi	θə{ɹ}a-θi/θə{ɹ}au-θi		63
O	snail	kʰa{j}uʔ		kʰa{ɹ}u	kʰə{ɹ}uʔ	kʰə{ɹ}u	kʰə{ɹ}oʔ		131
P	white	ʔapʰ{j}u{j}õ:		ʔapʰ{ɹ}u	apʰ{ɹ}u{ɹ}ɔŋ	apʰ{ɹ}u	apʰ{ɹ}u	*plu	399
Q	butterfly	leɪp{j}a:		lap{ɹ}a	ləʔp{ɹ}a	ləp{ɹ}a	leip{ɹ}a/loip{ɹ}a	*lep	135
R	garlic	ɣ̊ɛt̪õpʰ{j}u:	ɣ̊ɛʔt̪õpʰ{j}u	kɹatwẽpʰ{ɹ}u	kɹaʔθuŋpʰ{ɹ}u	kɹaθɛnpʰ{ɹ}u	kɹauθɛnp{ɹ}u/ kɹaθwaip{ɹ}u	*k-rak ‘chicken’ *swan ‘onion’ *plu ‘white’	67
S	animal	ta«ɾ»esʰã:	tə«ɹ»eiʔsæ̃	ta{ɹ}eʔsʰɛ̃	θə{ɹ}eisaŋ	twa tə{ɹ}eise			85
T	to smile	p{j}õŋ-d̪i:			p{ɹ}ɔŋ-ɹe	p«j»uŋ-ɹe			278
U	arrow	m̥{j}a:		m̥{j}a	m̥{ɹ}a	m«j»a	m̥{ɹ}adʒu	*b-la or *m-dan	251
V	to do, make	p{j}u:loʊ-t̪i:			p{ɹ}ɔʔlo-de		p«j»aŋ-ɣ̊wa		455a
W	tomorrow	manɛpʰ{j}ã:	mənɛpʰ{j}æ̃		napʰ«»eŋ-ka	napʰ{ɹ}ɛŋ-ka	nəpʰ{ɹ}ɛin-ka/ napʰ{ɹ}ɛi		18

There is a regular correspondence of Burmese [j] with Rakhine and Marma [ɹ] in both word-initial and word-medial position. Regular word-initial correspondence is illustrated in A-K of Table 24. Items A-E are root-initial while F-K are medial examples (the second segment in a consonant cluster). Word-medial correspondences of Burmese [j] and Rakhine and Marma [ɹ] are illustrated in L-R (and E); root-initial word-medial correspondences are illustrated in L-P, while E, Q and R illustrate medial examples of word-medial correspondences. Items S-W show the exceptions to this correspondence.

Item S 'animal' is the only Burmese example in my data with [ɹ]. If this word exemplified the regular correspondence, BT would be [tajes^{h}ã] and BC would be [təjeiʔsæ̃]. In its written Burmese form, 'animal' has stacked homorganic consonants indicating that is it a loanword;[37] Burmese scribes followed the Indian practice of stacking geminate and homorganic consonants in loan words (Wheatley 1996:453). 'Animal' is a loan from Pali (Shiwaruangrote 2000:67; Davids and Stede 1999:303). Pali is a "historical import and no longer a living language" but is still prominent in Myanmar culture and given high prestige as the language of the Buddhist scriptures (Watkins 2007:268; Wheatley 2003:196). Borrowings from Pali occurred before the merger of [ɹ] to [j] in Burmese yet loanwords were not affected by this merger; possibly the high prestige of the language of the loanwords exempted them from the merger. Rakhine are predominantly Buddhist; as such, it is possible that their words for 'animal' may also be borrowed from Pali. Another possibility is that Rakhine borrowed from Burmese after Burmese had borrowed the word 'animal' from Pali.

[37] WB 'animal': တရိစ္ဆာန်

RB has exceptions to the correspondence with [j] instead of [ɹ] in [pjuŋɹe] T ‘to smile’ and [mja] U ‘arrow’; Marma has [j] instead of [ɹ] in [pjaŋʧʷa] V ‘to do, make’. There are no conditioning factors that would cause [j] instead of [ɹ] in these cases; in fact, there are many other instances of medial [ɹ] after [p] or [m] in both RB and Marma. Some instances of [j] instead of [ɹ] may be borrowings from Burmese.

The RS word [napʰeŋka] W ‘tomorrow’ is an exception which I cannot account for; it has neither [j] nor [ɹ].

4.9 Correspondences of /ʃ/ (PTB *ʦ, *ʃ, *s-r/*s-l; PLB *rʔ, *lʔ/*lʔj)

Burmese orthography (WB) developed in the twelfth century and had stabilized by the eighteenth century (Okell 1995:1; Wheatley 2003:197). It is generally agreed that WB represents one stage in the changes leading to modern Burmese. Matisoff (1969:172), states that “…three of the [proto]glottalized resonants developed into the aspirated (or voiceless) hr, hl, and hw of Written Burmese”; some of the changes he summarizes are PLB *rʔ, *rʔj > WB ɹ̥; PLB *rʔw > WB ɹ̥w; PLB *lʔ > WB l̥; PLB *lʔw > WB l̥w; PLB *lʔj > WB l̥j. Bradley (2011:45) states that “…various voiceless liquid initials [of WB] developed into the modern fricative [ʃ]” in Burmese.

*4.9.1 Correspondence of [ʃ], [ɹ] and [ɹ̥] (PTB *ʃ, *s-r; PLB *rʔ)*

As discussed above, the pronunciations of various WB voiceless liquid initials changed to [ʃ] in modern Burmese (SB); words with WB forms of /ɹ̥/ are pronounced [ʃ] in SB. In some of my data, Burmese [ʃ] corresponds with Rakhine and Marma [ɹ̥] (or [ɹ]).

Words with [ʃ], [ɹ] and [ɹ̥] in most or all varieties are shown in Table 25.

Table 25. Correspondences of [ʃ], [ɹ] and [ɻ̊]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	to be long	{ʃ}e:-ɖɔ: ‘(human) tall’		{ɻ̊}e ‘long’	ə{ɻ̊}e-gɹi	a{ɹ}e	a{ɻ̊}e/ a{ɻ̊}je	*s-riŋ	377
B	to be ashamed	{ʃ}ɛ-ɖɔ: ‘shy’		{ɻ̊}a ‘shy’	{ɻ̊}a-θe	{ɹ}a-te	{ɻ̊}a-te/ a{ɻ̊}aukja-ɹe	*s-rak = *ʃrak	291
C	east	ʔa{ʃ}eʔ	ʔə{ʃ}ɛʔ -əjæʔ	a«ʃ»i -pʰaʔ	ʔa«ɹ»i	a{ɹ}i -pʰa	a{ɻ̊}i/ {ɻ̊}i-pʰa	*sjar = *ʃar	20

There is a regular correspondence with word-initial Burmese [ʃ], RB [ɹ] and RT, RS, and Marma [ɻ̊]; this correspondence is illustrated in A-B of Table 25. Item C is the only example in my data of this correspondence in word-medial position; it shows several exceptions to the correspondence.

Burmese [ʃ] corresponds to RB [ɹ] and RT, RS and Marma [ɻ̊] with the exception of C ‘east’ in RT and RS, discussed below. These three words are written with voiceless /ɻ̊/ in WB, which developed from PLB *rʔ.[38] Marma voiceless [ɻ̊] is a retention of this development; voiceless [ɻ̊] is also found in all of the Rakhine varieties except RB, which always has voiced [ɹ].

The RT word for C ‘east’ patterns with Burmese in its use of [ʃ]. RS ‘east’ has voiced [ɹ] instead of the expected voiceless [ɻ̊]. ‘East’ is the only word-medial example of this correspondence in my data; its word-medial position may be the reason for voiced [ɹ] instead of voiceless [ɻ̊] in RS as well as RT [ʃ] instead of voiceless [ɻ̊].

*4.9.2 Invariant correspondence of [ʃ] (PTB *ʦ, *s-r/*s-l; PLB *rʔ, *lʔ/*lʔj)*

As shown in Table 25, Burmese [ʃ] corresponds with Rakhine and Marma [ɻ̊] or [ɹ] in some words. Other words, show a correspondence with [ʃ] in all three languages. Various WB

[38] WB ‘to be long’ is ရှည်တယ်, WB ‘to be ashamed’ is ရှက်တယ and WB ‘east’ is အရှေ့အရပ.

voiceless liquid initials changed to [ʃ] in modern Burmese (SB), as discussed above in 4.9. Words with WB forms of /ɹ̥/ and /l̥/ are pronounced [ʃ] in SB; in my data, Rakhine and Marma also have [ʃ] for several of these words.

Words with [ʃ] in most or all varieties are shown in Table 26.

Table 26. Correspondences of [ʃ]

	Gloss	**BT**	**BC**	**RT**	**RS**	**RB**	**Marma**	**PTB**	**WL**
A	gold	{ʃ}we:	{ʃ}we	{ʃ}we	{ʃ}we	{ʃ}we	{ʃ}we	*tsjak = *ʧak PLB *s-rwəj	37
B	eight	{ʃ}ɪʔ	{ʃ}ɪʔ		{ʃ}aiʔ	{ʃ}ai	{ʃ}aʔ/ {ʃ}oiʔ	*b-r-gjat; *g-rjat > *ɹ̥et	364
C	to burn something	mi: {ʃ}o:-d̰i:		{ʃ}o 'to burn'				*m-(t)sik 'burn'	243a
D	to breathe	ʔaṭɛ {ʃ}u:-d̰i:		{ʃ}u	əθa {ʃ}u-ɹe			*sak ' breath(e), life'; *tsut ~ (t)sit 'to exhale'	273
E	tongue	{ʃ}a:	{ʃ}a	{ʃ}a	{ʃ}a	{ʃ}a	{ʃ}a	*m-laj ~ *s-laj or *s-l(j)a	153
F	to wash (clothes)	{ʃ}ɔ:pʰʊ -ṭi:						*(m-)sjil ~ *(m-)sjal	334a
G	to walk	lɛ̃:{ʃ}aʊ -ṭi:		{ʃ}auʔ/ lɛ̃«ʧʰ»au	laŋ {ʃ}auʔ-de			*s-wa	310a

There is a regular correspondence with [ʃ] word-initial in all of the varieties; this correspondence is illustrated in A-B and E of Table 26. Items C-D and G illustrate both word-initial correspondences (in most of RT) and word-medial correspondences of [ʃ].

The segment represented by [ʃ] in B 'eight', C 'to burn something' and D 'to breathe' is written as /ɹ̥/ in WB (A 'gold' is /ɹ̥w/).[39] These words are examples of a proto-Burmese voiceless liquid *ɹ̥ developing into the fricative [ʃ].

[39] WB 'eight (persons)' is ရှစ်ယောက်, WB 'to burn something' is မီးရို့တယ်, WB 'to breathe' is အသက်ရှူတယ and WB 'gold' is ရွှေ.

The segment represented by [ʃ] in E ‘tongue’, F ‘to wash clothes’ and G ‘to walk’ is written as /l̥j/ in WB.[40] These words are also examples of a proto-Burmese voiceless liquid developing into the fricative [ʃ], with *l̥ changing to [ʃ] and assimilation of [j]. The few Rakhine and Marma examples in the data also have [ʃ] except for [lɛ̃ʧʰau], one of the RT words for G ‘to walk’. I cannot account for this exception of [ʧʰ] instead of [ʃ].

I do not know the reason why Rakhine and Marma change from [ɹ̥] to [ʃ] in A-D of Table 26; the listed proto-forms of words in Table 26 seem similar to those in Table 25, where Rakhine and Marma (for the most part) retain WB /ɹ̥/. In addition, I cannot account for why WB /l̥/ changes to [ʃ] in E-G of Table 26 but Burmese, RT and RS have word-initial voiceless [l̥] in Table 22 while RB and Marma have voiced [l].

[40] WB ‘tongue’ is လျှာ, WB ‘to wash clothes’ is လျှော်တယ် and WB ‘to walk’ is လမ်းလျှောက်တယ်.

CHAPTER 5

CORONAL CORRESPONDENCES

This chapter lists correspondence sets of Burmese, Rakhine and Marma "coronal" consonants, including a description of exceptions. It includes velar consonant clusters of [kɹ] and [kj] under coronal correspondences since they correspond to [ʧ]. In addition, the correspondences listed in this chapter are all part of a sound change chain (discussed in 6.2). The correspondences of alveolar stops are listed above in 3.2 since these are invariant coronal stop correspondences. This chapter begins with a list of the correspondences of [ʧ] and [kɹ], including a description of exceptions. It then lists the correspondences of [ʧ] and [kj], along with a description of exceptions. The correspondence sets of [ʧ] to [kɹ] and [kj] include a discussion of both unaspirated and aspirated voiceless correspondences. The chapter then lists the correspondences of voiced and voiceless [s] and [ʧ], including a description of exceptions. It concludes with a list of the correspondences of [t̪], [t] and [θ] and a description of exceptions. All of the correspondence sets include the proto-form(s) when possible.

5.1 Correspondences of [ʧ] and [kɹ] (PTB *kr/*kl[41])

As mentioned in 4.8, medial WB /ɹ/ changed to [j] (WB -ɹ- > SB -j-). According to Bradley (2011:42, 44), the change in Burmese from [kɹ] to [kj] was the first stage of the merger of initial and medial [ɹ] to [j]. In the mid-1700's, after the stage evidenced by WB, Burmese [kɹ] merged with [kj]; in the late 1800s, Burmese [kj] became [ʧ].

Thus we have PTB *kr > WB kr > SB kj > ʧ.

*5.1.1 Correspondence of [ʧ] and [kɹ] (PTB *kr/*kl, *k-r)*

Burmese [ʧ] corresponds to [kɹ] in Rakhine and Marma, as seen in Table 27.

[41] "In WB, *KR and *KL were confused at an early date, yielding KR and/or KY [KJ]" (Matisoff 2003:72).

Table 27. Correspondences of [ʭ] and [kɹ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	star	{ʭ}ɛ:	{ʭ}ɛ	{kɹ}e	{kɹ}e	{kɹ}ɛ	{kɹ}ɛ	*s-kar = *s-kər	4
B	cane/rattan		{ʭ}eĩ	{kɹ}ẽĩ	{kɹ}iŋ	{kɹ}ein		*k-ri·m[42]	56
C	cat	{ʭ}ɔ̃:	{ʭ}aũ	{kɹ}ɔ̃	{kɹ}auŋ	{kɹ}au	{kɹ}õ	*k-roŋ	98
D	rat	{ʭ}wɛʔ	{ʭ}wɛʔ	{kɹ}wɔʔ	{kɹ}aʔ	{kɹ}oaʔ	{kɹ}oaʔ	PLB *rwak > *k-rwak	94
E	chicken	{ʭ}ɛ:ʔ		{kɹ}ɔʔ	{kɹ}aʔ	{kɹ}aʔ	{kɹ}aʔ/ {kɹ}aʔuʔ	*k-rak ‘chicken, fowl’	114
F	sugar cane	{ʭ}ã:	{ʭ}æ̃	{kɹ}ɛ̃ ‘sugar’	{kɹ}əŋ	{kɹ}e:	{kɹ}ai/ {kɹ}aiʔ	*rej	58
G	land leech	{ʭ}ʊʔ		{kɹ}wɛʔ	{kɹ}ɔʔ	{kɹ}we	{kɹ}oaʔ	*r-pat > *k-rwat	138
H	to grind	{ʭ}e:ʔ	{ʭ}eiʔ	{kɹ}e ‘mill’	{kɹ}ai-de	{kɹ}ei -kʰɹaŋ		*krit	80
I	to hear	{ʭ}a:-d̪i:		{kɹ}a	{kɹ}a-ɹe	{kɹ}a -ɹe	{kɹ}a-ɹe	PLB *gla	254
J	to be afraid	{ʭ}aʊjõ -d̪i:		«kʰɹ»auʔ ‘to terrify’	{kɹ}auʔ-θe	{kɹ}au -te	{kɹ}au-te	*grok ~ *krok	294
K	to be big	{ʭ}i:-d̪ɔ:		{kɹ}i	{kɹ}i-ɹe/ ə«gɹ»itaŋ	a«gɹ»i	a«gɹ»i/«gɹ»i	PLB *k-ri(j)	375
L	soil (earth)	mje:«ʤ»i:	mje{ʭ}i:		mɹe«gɹ»i			*mlij or *r-ka ‘earth’; *gliŋ ‘dry land, ground’	31

There is a regular correspondence with word-initial Burmese [ʭ] and Rakhine and Marma [kɹ]; this correspondence is illustrated in A-I of Table 27. Exceptions to this correspondence are shown in J-L; item L ‘soil’ is the only word-medial example of this correspondence.

RT has aspirated [kʰɹ] instead of [kɹ] in the word for J ‘to be afraid’. RT’s gloss of [kʰɹauʔ] is ‘to terrify’, which is a causative form of ‘to be afraid’. PTB marked causatives with the prefix *s-; this prefix is often not visible in the word form of the daughter languages but its presence

[42] Benedict (1972:107) states, “Burmese has prefixed k- in several roots, especially in relation to animal names; this prefix is exclusively a feature of Burmese and its dialects and does not appear in Maru or the Lolo languages.” His examples include items B-E and G of Table 27, as well as ‘tiger’ and’ stone’ which are in Table 30.

can be traced by an opposition in the initial consonant of verb-pairs. Matisoff (2003:90) states "Burmese has well over 50 verb-pairs where the intransitive member has a plain initial and the causative/transitive has an aspirate…where the aspiration is a clear reflex of the *s- prefix". RT [kʰɹauʔ] 'to terrify' with aspirated [kʰɹ] seems to follow the pattern of these Burmese verb-pairs. Benedict (1972:127) lists Burmese 'fear' *krauk* and 'frighten' *kʰrauk* as examples of alternation of initial consonants in certain TB roots. He reconstructs PTB 'fear' as *grok~*krok, positing that some alternations between intransitive forms with unaspirated initials and transitive forms with aspirated initials may be due to an alternation of voicing in the proto-forms instead of the effect of the PTB causative prefixed *s- (Benedict 1972:125).

RB and Marma words for K 'to be big' and the RS word for L 'soil' have [gɹ] instead of [kɹ]; RS K 'to be big' has both [kɹ] and [gɹ]. This is mostly to be expected, since voiceless [k] becomes voiced [g] in intervocalic position. One of the Marma words for 'to be big', [gɹi], is an exception which I cannot explain, as it has voiced [g] word-initially.

Burmese voicing varies between [ʤ] and [ʧ] in the words for L 'soil'. BT 'soil' has [ʤ] intervocalically while BC 'soil' has intervocalic [ʧ].

*5.1.2 Correspondence of [ʧʰ] and [kʰɹ] (PTB *kr/*kl)*

There is a correspondence in the data between Burmese aspirated [ʧʰ] and the Rakhine and Marma aspirated consonant cluster [kʰɹ].

Correspondences of the aspirated forms [ʧʰ] and [kʰɹ] are seen in Table 28.

Table 28. Correspondences of [ɣʰ] and [kʰɹ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	mosquito	{ɣʰ}ĩ: gɔ̃:ŋ		{kʰɹ}ɔ̃	{kʰɹ}aŋ	{kʰɹ}aŋ	{kʰɹ}au/ {kʰɹ}a	*kraŋ	132
B	to be dry	{ɣʰ}ɔʔ			{kʰɹ}ɔʔni -ɹe	{kʰɹ}au -te	a{kʰɹ}auʔ		415a
C	marrow	{ɣʰ}ĩzi		{kʰɹ}ɔ̃zi	{kʰɹ}aŋsi			*r-kliŋ	182a
D	thunder	mo:{ɣʰ}ẽɪ: -d̪ã: 'sound of thunder'	mo:{ɣʰ}eĩ: -t̪æ̃		mo«gɹ»u -taŋ	mo:«kɹ»u -ɹɛ	mo:«gɹ»u	*məw 'sky' (possibly *gle:k "Kuki-Naga" 'thunderbolt')	10
E	horn	«ʤ»o:	{ɣʰ}o	«gɹ»o	«gɹ»o	a«gɹ»o / {kʰɹ}anθe	a«gɹ»o/ «gɹ»o	*krəw	103
F	dove	«ʤ»o:	{ɣʰ}o:	«gɹ»o	«gɹ»u ŋ̊aʔ 'pigeon'	{kʰɹ}o 'pigeon'	«gɹ»o 'pigeon'	*m-krəw 'dove' (*(m-)kəw 'pigeon')	108a
G	six	{ɣʰ}ɔʔ		{kʰɹ}auʔ	{kʰɹ}auʔ	{kʰɹ}au	«kɹ»auʔ	*d-ruk[43]	362
H	leg	{ɣʰ}e:dɔʊʔ		«kʰ»adauʔ	{kʰɹ}itʰau	{kʰɹ}i	a{kʰɹ}i/ a«kʰ»i		174

There is a regular correspondence of Burmese [ɣʰ] to Rakhine and Marma [kʰɹ] in word-initial position (or after initial [a-]); this correspondence is illustrated in A-C of Table 28. The exceptions to this correspondence are shown in D-H.

Item D 'thunder' is the only example I have found of this correspondence in word-medial position. It is a compound word consisting of [mo:] 'sky' and a yet-to-be-confirmed etymon meaning 'thunder'; Benedict (1972:41) proposes a "Kuki-Naga" etymon *gle:k 'thunderbolt'. The RS and Marma words for D 'thunder' have [gɹ] instead of [kʰɹ], which appears to be the result of normal intervocalic voicing. RB 'thunder' [mo:kɹuɹɛ] is an exception with [kɹ] instead of the expected intervocalic [gɹ]. The Burmese aspirated [ɣʰ] in word-medial position is unexpected; normally, voiceless initials aspirate in word-initial position and are voiced

[43] Benedict (1972:116) gives examples from several TB languages of the shift from *d- > *k-.

intervocalically. I do not know the reason for this word-medial Burmese exception, though a possible explanation is that 'thunder' is analyzed as two separate etymons rather than a compound word in Burmese, thus resulting in aspirated [ʤʰ].

The voicing of the Burmese words for E 'horn' and F 'dove' varies, with voiced [ʤ] in BT and voiceless [ʧʰ] in BC.

RT, RS, and Marma E 'horn' and F 'dove' are exceptions with word-initial [gɹ] instead of [kʰɹ]. Word-initial voicing may result from *m-, the reconstructed nasal prefix which is frequently dropped after voicing the following consonant (Matisoff 2003:16). PTB 'dove' is reconstructed as *m-k(r)əw (Benedict 1972:38; Matisoff 2003:647). However, the reconstructed form of 'horn' is *krəw, and does not include the nasal reconstructed prefix (Benedict 1972:22; Matisoff 2003:654). One of the words for E 'horn' in both RB and Marma has intervocalic [gɹ]; again, this appears to be a result of the normal voicing intervocalically.

Other exceptions:

- [kʰ] instead of [kʰɹ]: RT H 'leg'; one of the Marma words for H 'leg'
- [kɹ] instead of [kʰɹ]: Marma G 'six'

*5.1.3 Correspondence of [ʧʰ], [kʰɹ] and [kɹ] (PTB *kr/*kl)*

Although many Rakhine and Marma words have [kʰɹ] corresponding to Burmese [ʧʰ], as shown in 5.1.2, above, some Bangladesh Rakhine and Marma words have unaspirated [kɹ] instead. In these words, Burmese and Myanmar Rakhine have the aspirated forms [ʧʰ] and [kʰɹ], respectively, while Bangladesh Rakhine and Marma has the unaspirated form [kɹ]. As noted in Benedict (1972:17), PTB *k corresponds to both Burmese [k] or [kʰ]; for reasons unknown, RB and Marma have unaspirated [kɹ] in these correspondences. Table 29 shows the correspondences of Burmese [ʧʰ], RT and RS [kʰɹ] and RB and Marma [kɹ].

Table 29. Correspondences of [ʧʰ], [kʰɹ] and [kɹ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	termite	{ʧʰ}aʔ 'white ant'	{ʧʰ}a:	{kʰɹ}aʔ	{kʰɹ}aʔ	{kɹ}aʔ		*krep PLB *ʔ-krip	128
B	to sew	{ʧʰ}oʊʔ		{kʰɹ}ouʔ	{kʰɹ}ɔʔ-de	{kɹ}o-te	{kɹ}u-tɛ/ {kɹ}o-ʧwa	*krwi(j) = *khrwi(j) in Kuki-Naga	232
C	to scratch (self)			{kʰɹ}ɛʔ	{kʰɹ}ai-te	{kɹ}ai-te	{kɹ}oi-te	*d-k(h)ew 'scratch'	303
D	to sing	t̪a{ʧʰ}ĩ: sʰo:-d̪i:		θẽĩ{kʰɹ}ɔ̃ sʰo 'to sing a song'	θe«kɹ»aŋ so-ɹe	ti{kɹ}aŋ su-ɹe			284
E	to cough	{ʧʰ}ãõ sʰo:-d̪i:		{kʰɹ}ɔ̃	{kʰɹ}auŋ sɔ-ɹe	«kʰ»au su-ɹe	{kɹ}oŋ ʧu-ɹe	*səw PLB *ʔ-ʤəj[44]	270
F	calf	{ʧʰ}e:d̪alõ:			{kʰɹ}idəlon	«k»aθəluŋ	«kʰ»əluŋθa		177

There is a regular correspondence with word-initial Burmese [ʧʰ], RT and RS [kʰɹ] and RB and Marma [kɹ]; this correspondence is illustrated in A-C of Table 29. The exceptions to this correspondence are shown in D-F.

Item D 'to sing' is the only example I have found of this correspondence in word-medial position. The RS word D 'to sing' is an exception and has [kɹ] instead of [kʰɹ] (or [gɹ]); like RB D 'thunder' (cf. Table 28), RS 'to sing' does not follow the previously posited intervocalic change of [kʰɹ] to [gɹ].

Other exceptions:

- [kʰ] instead of [kɹ]: RB E 'to cough'; Marma F 'calf'
- [k] instead of [kɹ]: RB F 'calf'

[44] The proto-forms given for E 'to cough' correspond to the second syllable; I was unable to identify a cognate proto-form for the first syllable.

5.2 Correspondences of [ʧ] and [kj] (PTB *kj/*kl)

Bradley (2011:42) notes that Burmese [kj] became [ʧ] in the late 1800s, after the stage represented by WB. Though the SB pronunciation of WB /kj/ is now [ʧ], Burmese names written with /kj/ are transliterated with "ky". Thus, we have PTB *kj > WB kj > SB ʧ.

*5.2.1 Correspondence of [ʧ] and [kj] (PTB *kj/*kl)*

Burmese and Rakhine [ʧ] correspond to Marma [kj], as seen in Table 30.

Table 30. Correspondences of [ʧ] and [kj]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	tiger	{ʧ}a:	{ʧ}a:	{ʧ}a	{ʧ}a	{ʧ}a	{kj}a	*d-kej/ *kəj[45] PLB *k-la	86
B	buffalo	{ʧ}wɛ:	{ʧ}wɛ:	{ʧ}we	{ʧ}we	{ʧ}we	{kj}ue	*lwa:j > *k-lwa:j	102
C	to fall	{ʧ}a:-d̪i:		{ʧ}a 'to drop'	{ʧ}a-ɹe	{ʧ}ala-ɹe	ot^{h}u{kj}a-ɹe/ {kj}a-ʧwa	*kla	324
D	I (1sg)			ʔa{ʧ}wɛ̃ '1sg fem'/ {ʧ}wɛ̃dɔ '1sg masc'			a{kj}we		444b
E	man	jaʊ{ʧ}a:		jãũ{ʧ}a	jauʔ{ʧ}a	jau{ʧ}a	jau{kj}a		192
F	son	jaʊ{ʧ}a:le: 'boy'		jãũ{ʧ}aʃe 'boy'		jau{ʧ}aʃɛ	jau{kj}a/ jau{kj}aʃjɛ		199b
G	stone	{ʧ}ɔʔ 'rock'	{ʧ}auʔ	{ʧ}auʔ	{ʧ}au	{ʧ}au	{kj}oʔ/{kj}aʔ	*r-luŋ PLB *k-lauk	34
H	cave	{ʧ}ɔʔgu:	{ʧ}auʔgu		{ʧ}augu	gu«k^{h}»au	{kj}eokoŋ		41
I	mud	«ʃ»õʔ	«ʃ»ʊ̃	{ʧ}ouʔ	{ʧ}au	{ʧ}ouʔ	{kj}ouʔ		32
J	pestle	«ʤ»abweʔ		{ʧ}apwɛʔ	{ʧ}auθa	{ʧ}amuŋʃjɛ			238

There is a regular correspondence with word-initial (or following [ʔa-] or [a-]) Burmese and Rakhine [ʧ] and Marma [kj]; this correspondence is illustrated in A-D (with an exception of a

[45] Benedict (1972:116) states that the *d- > ʧ- ~ ʃ- shift found in some TB languages is paralleled in other languages by the *d- > k- shift.

Marma word in C) and G of Table 30. Regular word-medial correspondences are illustrated in E-F; exceptions to correspondences are shown in H-J.

The RB word for H ‘cave’ is an exception to this correspondence with [kʰ] instead of [ʧ]. A comparison of the words for G ‘stone’ and H ‘cave’ shows that ‘cave’ is a compound form consisting of ‘stone’ and [gu] or [koŋ], which may be the etymon given by Benedict as PTB *kwar ‘hole’. The RB compound form of ‘cave’ is the only one in which the etymon for ‘stone’ follows the [gu] segment. RB ‘cave’ has aspirated [kʰ] instead of [ʧ] in word-medial position; I do not know the reason for this exception. However, it does follow the pattern of Burmese ‘thunder’, discussed in 5.1.2, of word-medial aspiration in a compound word.

The BT and BC words for I ‘mud’ have [ʃ] instead of [ʧ]. The orthographic representation in WB of this segment is /ɹ̥w/; all the other words of this correspondence set are /kj/ in WB. Voiceless /ɹ̥/ in WB corresponds to [ʃ] in Burmese, as discussed in 4.9, which explains the presence of [ʃ] in BT and BC. However, I do not know the reason for [ʧ] and [kj] in the Rakhine and Marma words for ‘mud’, as the normal correspondence as given in 4.9.1 would be [ɹ̥] or [ɹ].

Shiwaruangrote (2000:107) lists BT’s voiced [ʤ] in J ‘pestle’ as an example of coalescent assimilation; this assimilation is discussed in 3.1.1.

*5.2.2 Correspondence of [ʧʰ], [ʃʰ, ʃ], and [kʰj] (PTB *kj/*kl)*

There is also correspondence between aspirated forms of [ʧ] and [kj]: Burmese and RT [ʧʰ] correspond to Marma [kʰj]. RS and RB correspondences, however, vary between [ʃʰ] and [ʃ] with

more examples of [ʃ] than of the aspirated form [ʃʰ].[46] These correspondences of [ʧʰ], [ʃʰ, ʃ], and [kʰj] are shown in Table 31.

There is a regular correspondence with word-initial Burmese and RT [ʧʰ], RS and RB [ʃʰ] or [ʃ] and Marma [kʰj]; this correspondence is illustrated in A-G (and partially in K) of Table 31. Items H-J (and BC and RS of K) illustrate word-medial correspondences. Exceptions to correspondences are shown in L-R.

Marma N ‘deer’, O ‘sweat’, P ‘excrement’ and Q ‘to sneeze’ have [kʰ] instead of [kʰj]. The vowel following the [kʰ] segment in these words is [i]; [kʰj] changes to [kʰ] when the following vowel is [i]. This conditioned change also occurs in consonant clusters when the semivowel [w] precedes the [i] vowel as shown in O ‘sweat’.

RB M ‘ginger’ has [ʃʰ] and [ʧʰ] in free variation; [ʧʰ] is also used instead of [ʃʰ] or [ʃ] in RS M ‘ginger’ and RB Q ‘to sneeze’.

BT L ‘friend’ has voiced [ʤ] instead of voiceless [ʧʰ], which may be an example of intervocalic voicing. BT M ‘ginger’ has word-initial [ʤ] instead of [ʧʰ]; RS N ‘deer’ also has word-initial [ʤ] instead of [ʃʰ/ʃ].

Other exceptions for which I cannot account are [ʃ] instead of [ʧʰ] in the RT words for P ‘excrement’, Q ‘to sneeze’ and R ‘to be smooth’.

[46] [ʃʰ] is only found in word-initial position and usually precedes [i] or [j]. RS ‘stream’[ʦanʃʰau] is an exception as [ʃʰ] is in word-medial position and does not precede [i] or [j].

Table 31. Correspondences of [ʧʰ], [ʃʰ, ʃ] and [kʰj]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	to be cold (person)	{ʧʰ}ã:	{ʧʰ}æ̃:	{ʧʰ}ɛ̃	{ʃʰ}jaŋ-ɹe	{ʃʰ}jai-ɹɛ	{kʰj}ai-ɹɛ	*kjam	26
B	to tie	{ʧʰ}i:-d̪i:		{ʧʰ}ãĩ	kɹuneʔ {ʃ}aiŋ-ɹe	{ʃʰ}jai-ɹe	{kʰj}oiŋ -ʧwa	*kik	330
C	to cook (rice)	{ʧʰ}ɛ-t̪i:	{ʧʰ}ɛʔ	{ʧʰ}aʔ	{ʃ}a-de	{ʃ}akʰɹaŋ	{kʰj}a-pʰo/ {kʰj}a-ʧwa	*glak ~ *klak	81
D	navel	{ʧʰ}ɛ:ʔ			{ʃ}aʔ	{ʃ}aʔ	{kʰj}aʔ		164
E	to love	{ʧʰ}ɪ-t̪i:		{ʧʰ}ãĩʔ	{ʃ}aiʔ-te	{ʃ}ai-te	{kʰj}oi-te/ {kʰj}oigɹai -te		289
F	to be sweet	{ʧʰ}o:-d̪ɔ:		{ʧʰ}o	{ʃ}uni-ɹe	a{ʃ}ou	a{kʰj}o/ {kʰj}o-ɹe	*kjəw	409
G	to be sour	{ʧʰ}ĩ:-d̪ɔ:		{ʧʰ}ãĩ	{ʃ}aiʔni-ɹe	a{ʃ}jai	{kʰj}oi-ɹe	*s-kjur = *s-kjwar *kri(j) 'acid,sour'	410
H	finger	lɛ{ʧʰ}õ:		laʔ{ʧʰ}ãũ	laʔ{ʃ}au			*(m-)juŋ > *lak-(k)jauŋ	172a
I	to whistle	le:{ʧʰ}õ-d̪i:		li{ʧʰ}wɛ̃	li{ʃ}waŋ -ɹe	li{ʃ}wɛ -ɹe			275
J	to bathe	je:{ʧʰ}o:-d̪i:		ɹi{ʧʰ}o	ɹi{ʃ}o-ɹe	ɹi{ʃ}u-ɹe	ɹi{kʰj}u-ɹe		335
K	stream	{ʧʰ}õ:	sæ̃:{ʧʰ}aũ:		tsan{ʃʰ}au		{kʰj}oŋʃɛ		28
L	friend	t̪aŋɛ:«ʤ»ĩ:			θəŋɛ{ʃ}aŋ	θume{ʃ}a			212
M	ginger	«ʤ»ĩ:	{ʧʰ}ĩ:	{ʧʰ}ãsẽĩ	«ʧʰ»aŋziŋ	{ʃʰ}aŋ/ «ʧʰ»aŋ	{kʰj}a	*kjaŋ	66
N	deer		{ʧʰ}i		«ʤ»i		«kʰ»i	*d-kij or *d-juk[47]	89a
O	sweat	{ʧʰ}we:		{ʧʰ}wi	{ʃ}wi	{ʃ}wi	«kʰ»wi/ «kʰ»wiʧĩ-ɹɛ	PLB krwij = *khrwəj	188
P	excrement	{ʧʰ}e:/{ʧʰ}i:	{ʧʰ}i:	«ʃ»i	{ʃʰ}i		«kʰ»i	*klij or *(r-)kjak ~ *(s-)kjak	190a
Q	to sneeze	n̥a: {ʧʰ}e: -d̪i:		«ʃ»i	{ʃ}i-ɹe	«ʧʰ»i-ɹe	«kʰ»i-ɹe/ «kʰ»i-ʧwa		271
R	to be smooth	{ʧʰ}ɔ:mʊ -d̪ɔ:		«ʃ»ɔ	{ʃ}oni-ɹe	ʃə{ʃ}oa / ʃə{ʃ}wa			423

[47] Benedict (1972:116) states that the *d- > ʧ- ~ ʃ- shift found in several TB languages is paralleled in other languages by the *d- > k- shift.

5.3 Correspondences of [sʰ] and/or [s] and [ʧ] (PTB *ʦ/*ʦʰ, *ʧ/*ʧʰ)

Bradley (2012:174) says the change of palatal and alveolar affricates *ʧ/*ʦ to alveolar fricatives is a major change seen only in Burmese and its dialects; Hill (2013) further examines and discusses the change of *ʧ and *ʦ to WB /ʦ/ (SB [s]), noted by other scholars as well (Matisoff 1969:157; 2003:31). Bradley describes the change as ʧ > ʦ > s and ʧʰ > ʦʰ > sʰ. He further notes that "the change of palatal affricates to alveolars does not occur in Marama [Marma], the variety of Arakanese out of contact with Burmese since the early 1780's; it appears to have diffused into Arakanese [Rakhine] since then" (Bradley 2011:45).

*5.3.1 Correspondence of [sʰ], [s] and [ʧ] (PTB *ʦ, *ʧ)*

According to Hill (2013:336, 338), several words in this correspondence set have been reconstructed as Proto-Burmish *ʦʰ (including 'salt', 'joint', 'fat', 'elephant' and 'ten') while others (such as 'medicine' and 'widow') are reconstructed as Proto-Burmish *ʧʰ. However, as in previous tables, I list the PTB and PLB forms provided in Benedict (1972) and Matisoff (2003).

Cooper (p.c.) says words written with the "aspirated s" have no aspiration when pronounced by native Burmese speakers; thus, her BC transcriptions consistently have [s] instead of [sʰ]. Bradley's (2011:4) data agrees with Cooper's findings: he states that "a merger of aspirated /sʰ/ to unaspirated /s/" is currently in progress in Burmese.

BT and RT [sʰ] correspond to BC, RS and RB [s] and Marma [ʧ], as seen in Table 32.[48]

[48] All the Burmese words in Table 32 are written with ဆ in WB, commonly described as aspirated /sʰ/.

Table 32. Correspondences of [sʰ], [s] and [ʃ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	thorn	{sʰ}u:	{s}u:	{sʰ}u	{s}u	a{s}u	{ʃ}uʔ/θoipa a{ʃ}u	*tsow	46
B	salt	{sʰ}a:	{s}a:	{sʰ}a	{s}a	{s}a	{ʃ}a	*tsa	84
C	beard	moʊ{sʰ}eɪ m̥we:			mə{s}i mwi	mə{s}wi	mə{ʃ}wi	*(s-)mul ~ *(r-)mul 'beard' PLB *tsam 'hair'	158
D	widow	mo{sʰ}o:maʔ		ma{sʰ}ama	mə{s}əmaʔ	mo{s}oma/ bo{s}oma	ma{ʃ}oma/ ma{ʃ}əma	PLB *ʃəw	203
E	to wash	{sʰ}e:ʃɔ:-d̪i:			laʔ{s}i-ɹe	la{s}i-ɹe	alau{ʃ}i-ɹe/ ala{ʃ}i-ʃwa	*(m-)sjil ~ *(m-)sjal	333
F	ant	pajwɛ{sʰ}eɪʔ		paɹɔʔ{sʰ}eiʔ	pəɹwaʔ{s}ei	pəɹo{s}i/ pəɹo«ts»i	pɹoi{ʃ}iʔ/ pɹwa{ʃ}i		129
G	medicine	{sʰ}e:	{s}a:	{sʰ}i	{s}i	«ts»i:	{ʃ}i	*tsij	301
H	joint	ʔa{sʰ}ɪʔ/{sʰ}ɪʔ	ʔə{s}ɪʔ		a{s}aiʔ	a«ts»ai	a{ʃ}oiʔ	*tsik	181
I	ten	{sʰ}ɛ: /ta{sʰ}ɛ:		{sʰ}e	tə{s}e	«ts»e	{ʃ}e/tə{ʃ}e	*tsjaj	366
J	fat	ʔa{sʰ}i:			a{s}i	a«ts»i	a«ʃʰ»i	*tsow	185
K	to descend			{sʰ}ɔ̃ 'down'	{s}aŋ-ɹe	«ts»aŋ-ɹe	«ʃʰ»aŋ-ʃwa	*tsjuk	317
L	elephant	{sʰ}ĩ:	{s}ĩ	{sʰ}ɔ̃	«sʰ»aŋ	«ts»an	{ʃ}au/{ʃ}a	PLB *tsaŋ = *tsʰaŋ	105
M	elephant tusk		{s}ĩ zwɛ	{sʰ}ɔ̃ sʰwe 'ivory'	«sʰ»aŋ zwe		{ʃ}au dʒwe	PLB *tsaŋ = *tsʰaŋ 'elephant' *m-dzjwaj; PLB *dʒwaj 'tooth / tusk'	106
N	hair (head)	«z»abĩ:		{sʰ}ɛ̃bɔ̃	«ts»eŋbaŋ	«ts»ɛba	{ʃ}aibɔŋ	*s-kra; PLB *tsam	143
O	to cut hair	«z»abĩ: n̥ja-t̪i:			{s}aŋbɔŋ kaiʔ-de		{ʃ}aibɔŋ pwai-te/ {ʃ}aiba ɹoi-te	*s-kra; PLB *tsam 'hair'	339
P	urine	{sʰ}i: 'urine (impol.)'/ {ʃ}ĩ:ŋɛ: 'urine (pol.)'		«θ»aɹe 'urinate (n)'	«t»əbɔʔɹe	«ʃ»əɹɛ	«s»əɹɛ / «θ»əboɹɛ/«θ»əɹɛ	*ts(j)i 'urine (pol.)' PLB *ʒəj or *zij	191
Q	poison				mɹein «sʰ»eik	a{s}eiʔ	a{ʃ}iʔ/a{ʃ}oi		118
R	marrow	ʃʰĩ«z»i		kʰɹɔ̃«z»i	kʰɹaŋ{s}i	aɹu{s}i	aɹo{ʃ}i		182a&b
S	to dye				əɹoŋ{s}o-ɹe	ɹau{s}u-ɹe	ɹoŋ{ʃ}u-ʃwa/ɹoŋ «tʰ»i-ɹɛ		228

There is a regular correspondence with word-initial BT and RT [sʰ], BC, RS and RB [s] and Marma [ʧ]; this correspondence is illustrated in A-B (and in E of BT) of Table 32. Regular word-medial correspondences are illustrated in C-F. The exceptions to correspondences are shown in G-S.

RB has several words with [ʦ] instead of [s], such as G ‘medicine’, H ‘joint’ and K ‘to descend’. There seems to be free variation in RB between [s] and [ʦ], as illustrated by RB F ‘ant’ where a single consultant pronounced the word both ways. I have not discovered a conditioning factor for this variation; it is mainly in word-initial position (or after initial [a-]) but it is also word-medial. The variation may be evidence that the [ʦ] > [s] change mentioned by Bradley (2011:45) has not completely diffused into Bangladesh Rakhine. RB [ʦ] is shown in F-L and N of Table 32.

Item N ‘hair (head)’ is an exception with [ʦ] instead of [s] in RS. This seems to be an artifact of the transcription, as in O ‘to cut hair’ RS has the expected form of [s] for’ hair’.

‘Urine’ is written in WB with an aspirated /sʰ/, which is reflected in the BT impolite word for P ‘urine’; the other words for ‘urine’ do not follow the correspondence. Most likely these are euphemistic lexical replacements and thus not, strictly-speaking, cognate, although there is some resemblance in form. Further research may turn up words for ‘urine’ which correspond to Burmese [sʰi].

Exceptions which I cannot account for:

- [z] instead of [sʰ]: BT N ‘hair (head)’, O ‘to cut hair’; BT and RT R ‘marrow’
- [sʰ] instead of [s]: RS L ‘elephant’, M ‘elephant tusk’, Q ‘poison’
- [ʧʰ] instead of [ʧ]: Marma J ‘fat’, K ‘to descend’
- [tʰ] instead of [ʧ]: one of the Marma words for S ‘to dye’

*5.3.2 Correspondence of [s] and [ʧ] (PTB *ʦ/*ʦʰ, *ʧ/*ʧʰ; PLB *ʣ,*ʤ)*

Burmese and Rakhine [s] correspond to Marma [ʧ], as seen in Table 33.

Table 33. Correspondences of [s] and [ʧ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	to plant			{s}eiʔ	{s}aiʔ-te	{s}ai-te	{ʧ}wai-te/ {ʧ}oi-pʰo	*m-ʣ(j)u(:)k	341
B	to wait	{s}ɔ̃-d̪i:		{s}au	{s}ɔŋ-ɹe		{ʧ}oŋboni -ɹe/ {ʧ}a-ɹe	*ʤoŋ	292
C	seed	ʔa{s}eʔ/ t̪ɹ{s}iʔ	ʔə{s}i̯/ t̪ɹʔt̪i:{s}e̯	ʔa{s}i	θai θi a{s}iʔ	a{s}iʔ	a{ʧ}i/a{ʧ}iʔ	*ʤəj	51
D	eye	mjɛ{s}iʔ		mjaʔ{s}i ‘eyebrow’	mjaʔ{s}iʔ	mjau{s}i/ mjau«ʦ»i	mjau{ʧ}i/ mja{ʧ}iʔ		147
E	blanket	{s}ɔ̃:		pa{s}bo	pə{s}u	pə{s}o	po{ʧ}uboi/ pə{ʧ}wo		225
F	ring	lɛ{s}ʊʔ ‘finger ring’		laʔ{s}wɛʔ	la{s}wɛʔ	la«ʦ»wɛ	lau{ʧ}wɛʔ/ la{ʧ}wɛʔ		235
G	green	ʔa{s}ẽɪ: jɔ̃:		ʔa{s}ẽĩ	ə{s}iŋ ɹɔŋ	a«ʦ»eiŋ		*ʤim (or *ʃriŋ ‘alive, green’)	401
H	to suck	{s}o:-d̪i:		{s}ouʔ	{s}u-ɹe	«ʦ»ou-te	{ʧ}ou-te/ {ʧ}ou-ʧwa	*ʤo:p	276
I	to eat	{s}a:-d̪i:		{s}a	«sʰ»a-ɹe	{s}a-ɹe/ «ʦ»a-ɹe	{ʧ}a-ɹe	*ʤa	261
J	to be spicy	{s}a-d̪ɔ:		{s}ɛʔ ‘to taste hot’	{s}a-de	a{s}ɛʔ	«z»ai-te/ {ʧ}ai-te	*ʦa	412
K	to be wet	so:«ʃ»wɛ: -d̪ɔ: ‘wet’		{s}wɛʔ ‘to get wet’	{s}weni -ɹe/ {s}uni-ɹe	a{s}we:	a{ʧ}wa/ a{ʧ}wai		416
L	stream		{s}æ̃:ʧʰaũ:		«ʦ»anʃʰau				28
M	paddy rice	«z»aba:	«z»əba:	{s}aba	{s}əba	{s}əba	{ʧ}ɛba	PLB *ʤa ‘rice’	72
N	rice seedling		«z»əba: bjo:bĩ		{s}əba pjubaŋ	{s}əbənɛ	{ʧ}ɛba apaŋʃjɛ		73
O	to winnow	«z»aba: l̥e-d̪i:	«z»əba: l̥e̯		{s}əba kɹei-de			PLB *ʤa ‘rice’ PLB *ʔ-ra ‘winnow’	77a
P	elephant tusk	ʔa{s}wɛ: 'ivory'	sĩ «z»wɛ	sʰɔ̃ «sʰ»we ‘ivory’	sʰaŋ «z»we	a{s}we	ʧau «ʤ»we	PLB *ʤwaj ‘tooth / tusk’	106

There is a regular correspondence of Burmese and Rakhine [s] to Marma [ʧ] in word-initial position (and after initial [ʔa-/a-]); this correspondence is illustrated in A-C (and in E of BT) of Table 33. Regular word-medial correspondences are illustrated in D-E (and one of the BC words in C). The exceptions to correspondences are shown in F-P.

Several RB words use [ʦ] instead of [s], such as F ‘ring’ and H ‘to suck’. Some RB words have pronunciations of both [ʦ] and [s] from a single consultant, as in D ‘eye’ and I ‘to eat’. Bangladesh Rakhine seems to have free variation between [ʦ] and [s] in some words; as mentioned above, the [ʦ] to [s] change noted in Burmese by Bradley (2011:45) has not completely diffused through Rakhine in Bangladesh. RB [ʦ] is shown in D and F-I of Table 33.

The Burmese words for M ‘paddy rice’ have [z] instead of [s]. This word also appears in the data under N ‘rice seedling’ and O ‘to winnow’; in each instance, the Burmese words have [z]. ‘Paddy rice’ is one of Shiwaruangrote’s examples of coalescent assimilation in Burmese, as discussed in 3.1.1. Due to this coalescent assimilation, WB *sapa:* ‘paddy rice’ is pronounced [zaba:].

The word for ‘tusk’ in P ‘elephant tusk’ has several exceptions. BC and RS have [z] and RT has [sʰ] instead of [s]; Marma has [ʤ] instead of [ʧ]. In each of these exceptions, the word for ‘tusk’ is compounded with the word for ‘elephant’; BT and RB, which are not exceptions, are not compounded, but are simply preceded by [a]. Thus the voicing in BC, RS and Marma and the aspiration in RT appear to be a result of compounding.

Exceptions which I cannot account for:

- [ʃ] instead of [s]: BT K ‘to be wet’
- [sʰ] instead of [s]: RS I ‘to eat’
- [ʦ] instead of [s]: RS L ‘stream’
- [z] instead of [ʧ]: one of the Marma words for J ‘to be spicy’

5.4 Correspondences of [z] and [ʤ]

Burmese and Rakhine [z] correspond to Marma [ʤ], as seen in Table 34.

Table 34. Correspondences of [z] and [ʤ]

	Gloss	**BT**	**BC**	**RT**	**RS**	**RB**	**Marma**	**PTB**	**WL**
A	spoon	{z}õ:		{z}wɛ̃	{z}weŋ	{z}wɛ:	{ʤ}wai		239
B	what			{z}a	{z}a-le	{z}a-le	{ʤ}a-le		442
C	to think	sĩ{z}a-d̲i: ‘to think of’			saiŋ{z}a-ɹe	sei{z}a-ɹe	ʧoiŋ{ʤ}a-ʧwa		285
D	mouth	ba{z}aʔ	pə̆«z̥»æʔ	pa{z}eʔ	pə{z}aʔ	pa{z}a	pa{ʤ}a		152
E	when (past)			«s»akʰa	{z}akʰa-gaʔ-le	{z}akʰa	{ʤ}akʰa/ {ʤ}akʰa-le		438
F	where			«s»am̥a	{z}aneɹama-le	{z}ama	{ʤ}ama/ {ʤ}ama-le		440

There is a regular correspondence of word-initial Burmese and Rakhine [z] to Marma [ʤ]; this correspondence is illustrated in A-B of Table 34. Regular word-medial sound correspondence is illustrated in C. I do not know what the proto-form for this correspondence is; it could be PTB *z, though PTB *ʒ is also a possibility.

There are a few exceptions which I cannot account for: the BC word for D ‘mouth’ has [z̥] instead of [z], and RT has [s] instead of [z] in the words for E ‘when (past)’ and F ‘where’.

5.5 Correspondences of [t̪], [t] and [θ] (PTB *s, *ʦ, *s-C, *m-s)

*5.5.1 Correspondences of [t̪] and [θ] (PTB *s, *ʦ, *s-C, *m-s)*

Burmese dental [t̪] corresponds to Rakhine and Marma [θ], as seen in Table 35.[49]

There is a regular correspondence of word-initial Burmese [t̪] to Rakhine and Marma [θ]; this correspondence is illustrated in A-E of Table 35. Regular word-medial sound correspondences are illustrated in F-I. The exceptions to correspondences are listed in J-O.

BT J 'eggplant' has voiced [d̪], which is in complementary distribution with [t̪]; it is an allophone of /t̪/ (Cooper & Cooper 2013b).

Exceptions which I cannot account for:

- [t] instead of [θ]: RT K 'mango' and L 'garlic; RB O 'to sing'
- [s] and [ʦ] in free variation with [θ]: Marma M 'louse (head)'
- [s] in free variation with [θ]: Marma N 'to drink'

[49] All words in Table 36 are written in WB with ၥ, commonly described as a voiceless dental fricative. However, Cooper (p.c.) describes it as a "voiceless dental plosive or stop"; Shiwaruangrote (2000:58) similarly describes it as a "voiceless unaspirated apico-dental stop". Thus, I have used [t̪] to represent the Burmese data.

Table 35. Correspondences of [t̪] and [θ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	rainbow	{t̪}ɛ:tã:	{t̪}ɛʔtə̃	{θ}aʔθɛ̃	{θ}ataŋ	{θ}ədaŋɹeθa	{θ}ədaŋɹɛʃo/ {θ}ədaɹɛθa		8
B	tree	{t̪}ɪpĩ:	{t̪}ɪʔpĩ		{θ}aipaŋ		{θ}oipa	*siŋ ~ *sik 'tree/wood'	43
C	son-in-law	{t̪}amaʔ		{θ}amɛʔ	{θ}əmaʔ	{θ}ama	{θ}əmaʔ	*s-mak	200
D	blood	{t̪}we:		{θ}wi	{θ}wi	{θ}wi	{θ}wi	*s-hjwəj	187
E	to know	{t̪}i-d̪i:		{θ}i	{θ}i-ɹe	{θ}i-ɹe	{θ}ikja-ɹe/ {θ}i-pʰo	*sjej	286
F	liver	ʔa{t̪}e:		ʔa{θ}e	ə{θ}ɛ	a{θ}ɛ:	a{θ}ɛ	*m-sin	166
G	finger nail	lɛ{t̪}e:		laʔ{θ}e	laʔ{θ}ɛ	la{θ}i	lau{θ}ɛ/la{θ}ɛ	*m-(t)sin = *m-ʦjen	173
H	bird's nest		ŋ̊ɛʔ {t̪}aiʔ		ŋ̊aʔ {θ}aiʔ	ŋaʔ{θ}ai	ŋaʔ{θ}wɛʔ		109
I	fruit	ʔa{t̪}i:	{t̪}ɪʔ {t̪}i:	ʔa{θ}i/ {θ}i	{θ}ai {θ}i	a{θ}i/a{θ}ei	a{θ}i	*sej	50
J	eggplant	kʰajã -«d̪»i: 'brinjal'	kʰəjæ̃: -{t̪}i:		kʰəɹaŋ -{θ}i	kʰəɹe -{θ}i	kɹei-{θ}i/ kʰəɹai-{θ}i	*sej 'fruit'	64
K	mango	{t̪}ajɛ:ʔ	{t̪}əjɛʔ -{t̪}i:	«t»aɹa -{θ}i	{θ}əɹaʔ -{θ}i	{θ}aɹa-{θ}i	{θ}əɹau-{θ}i/ {θ}əɹa-{θ}i		63
L	garlic	ʧɛ{t̪}õ pʰju:	ʧɛʔ{t̪}õ pʰju	kɹa«t»wɛ̃ pʰɹu	kɹaʔ{θ}uŋ pʰɹu	kɹa{θ}ɛn pʰɹu	kɹau{θ}ɛnpɹu/ kɹa{θ}waipɹu	*k-rak 'chicken' *swan 'onion' *plu 'white'	67
M	louse (head)	{t̪}ã:		{θ}ɛ̃	{θ}aŋ		«s»ai/«ʦ»ai/ {θ}ai	*s-r(j)ik, *ʃrik or *s(j)ar	127
N	to drink	{t̪}aʊ -t̪i:		{θ}auʔ	{θ}auʔ-de	ɹi {θ}au-te	ɹi «s»au-te/ ɹi {θ}au-te		266
O	to sing	{t̪}aʧʰĩ: sʰo:-d̪i:		{θ}ẽĩkʰɹõ sʰo	{θ}ekɹaŋ so-ɹe	«t»ikɹaŋ su-ɹe			284

*5.5.2 Correspondences of [t̪], [t] and [θ](PTB *s, *ʦ, *s-C, *m-s)*

In some RS words, [t] (instead of [θ], shown above in 5.5.1) corresponds to Burmese dental [t̪] and RT, RB and Marma [θ]; this difference in RS may be a reflex of a different proto-form or different proto-environment. Another possibility is that these words with RS [t] indicate a sound change which I have not been able to identify, such as a shift in progress in RS from [θ] to a

pronunciation closer to that of Burmese. Cooper (2014) and Shiwaruangrote (2000) describe modern Burmese pronunciation as [t̪], while Bradley (2014:37) states it is [tθ]. I cannot account for the presence of [t] in RS for these words.

Table 36 shows the correspondences of Burmese dental [t̪], RS [t] and RT, RB and Marma [θ].[50]

Table 36. Correspondences of [t̪], [t] and [θ]

	Gloss	BT	BC	RT	RS	RB	Marma	PTB	WL
A	sand	{t̪}ɛ:	{t̪}ɛ:	{θ}ɛ̃ĩ	{t}e	{θ}ɛ	{θ}ɛ	*z(l)aj or *sa	35
B	iron	{t̪}ã:	{t̪}æ̃		{t}aŋ	{θ}ɛ	{θ}ai	*sjam = *ʃam or *s(j)i·r ~ *s(j)a·l	39
C	tooth	{t̪}wa:		{θ}wa	{t}wa	{θ}wa	{θ}wa	*s-wa or *m-dzjwaj	155
D	gums	{t̪}apʰõ:		{θ}apʰo/ «t»apʰo	{t}əpʰwoŋ	{θ}əpʰu	{θ}wəpuŋ	*r-nil ~ *r-ni(j) ~ *s-nil	156
E	thunder	mo:ɡʰẽɪ: -«d̪»ã: 'sound of thunder'	mo:ɡʰeĩ: -{t̪}æ̃		mogɹu -{t}aŋ				10
F	calf	ɡʰe:«d̪»alõ:			kʰɹi«d»əlon	ka{θ}əluŋ	θəluŋ{θ}a/ kʰəluŋ{θ}a		177
G	who	bɛ:«d̪»u:-lɛ:		ʔa{θ}u	za a«tʰ»u-le	a{θ}u-le	a{θ}uɹoŋ/ a{θ}u-le		441
H	to wipe				{t}ɔʔswe-ɹe	{θ}ou-te	«t»wai-te	*sut ~ *sit 'wipe / sweep'	331

There is a regular correspondence with word-initial Burmese [t̪], RS [t] and RT, RB and Marma [θ]; this correspondence is illustrated in A-C of Table 36. Regular word-medial sound correspondences are illustrated in E-F (Burmese voiced [d̪] is an allophone of [t̪], as discussed in 5.5.1; item F 'calf' has [d] instead of [t] in RS due to intervocalic voicing, as discussed in 3.2.1).

The RT word for D 'gums' shows free variation between [θ] and [t].

[50] As in Table 35, all words in Table 36 are written in WB with ∞.

Exceptions which I cannot account for:

- [t^h] instead of [t]: RS G ‘who’
- [t] instead of [θ]: Marma H ‘to wipe’

CHAPTER 6

SUMMARY OF CORRESPONDENCES AND DISCUSSION OF RELATIONSHIPS

This chapter provides a summary of the sound correspondences of Burmese, Rakhine and Marma. It lists the order of Burmese sound changes and includes an approximate date for the change when possible. The chapter concludes with a discussion of the relationship of Burmese, Rakhine and Marma based on the postulated order and approximate dates of Burmese changes as compared to Rakhine and Marma sound changes and correspondences.

6.1 Summary of Correspondences

Some consonants in Burmese, Rakhine, and Marma are normally the same in all varieties; these are shown below in Figure 5.

	Labial	**Alveolar**	**Palatal-Alveolar**	**Velar**	**Glottal**
Voiceless	p	t; ʃ		k	h; ʔ
Voiceless aspirated	p^h	t^h		k^h	
Voiced	b	d		g	
Nasal	m	n	ɲ	ŋ	
Semivowels and liquids	w	l	j		

Figure 5. Consonants normally identical in Burmese, Rakhine and Marma

In other cases, as described previously in this thesis, consonants from one variety correspond to different consonants in another variety. These correspondences are shown in Table 37.

Table 37. Correspondences of different consonants in Burmese, Rakhine and Marma

Burmese	**Rakhine (Myanmar)**	**Rakhine (Bangladesh)**	**Marma**
t̪	θ/t	θ	θ
s	s	s/ʦ	ʧ
sʰ, s	sʰ, s	s/ʦ	ʧ
z	z	z	ʤ
j	ɹ	ɹ	ɹ
ʧ	kɹ	kɹ	kɹ
ʧʰ	kʰɹ	kʰɹ	kʰɹ
ʧʰ	kʰɹ	kɹ	kɹ
ʤ[a]	gɹ	gɹ	gɹ
ʧ	ʧ	ʧ	kj
ʧʰ	ʧʰ, ʃʰ/ʃ	ʃʰ/ʃ	kʰj (kʰ)
ʃ	ɹ̥	ɹ	ɹ̥
l̥	l̥	l	l
m̥	m̥	m	m̥/m
n̥	n̥	n	n̥/n
ŋ̊	ŋ̊	ŋ	ŋ

[a] The correspondence of [ʤ] and [gɹ] is not on a separate table as it is often a result of intervocalic voicing. Examples can be found with correspondences of [ʧ] and [kɹ] and correspondences of [ʧʰ] and [kʰɹ].

Voicing is a major factor in exceptions to regular sound correspondences. Scholars have identified several voicing patterns in Burmese, including that voiceless stops tend to become voiced in intervocalic position (Matisoff 1969:163; Benedict 1972:21; Shiwaruangrote 2000:105,109). Burling (1967) (as quoted in Matisoff 1969:163-164) suggests that voiced stops in Burmese originated "by the voicing of consonants in medial position with a subsequent generalization of voicing to occasional initial position;" he recognizes that conditions for this initial voicing "cannot be stated precisely." Shiwaruangrote (2000:106) lists laryngeals, voiceless nasals and liquids, and unaspirated [ʧ] as exceptions to voicing when the sound is the onset of a non-initial syllable; he also states that the initial of a syllable is not voiced when it

follows “the presyllable”, or [Ca-]. Okell (1969:13) (as quoted in Shiwaruangrote 2000:106) notes that “…in the dialect of Arakan voicing occurs only with the plain voiceable initials, not with the aspirates.” Some agree that only unaspirated consonants are voiced while others claim voicing occurs regardless of aspiration (Shiwaruangrote 2000:106). Scholars disagree on the exact environments in which Burmese consonants are voiced, but agree that this voicing is not fixed; there are exceptions to most proposed rules and patterns (Matisoff 1969:163-164). Based on my data, the same is true for Rakhine and Marma: there are many exceptions to voicing which do not seem to be conditioned. Because my data are phonetic, not phonemic, non-contrastive details may be present which increases the number of apparent exceptions to regular sound correspondences.

6.2 Relative chronology (or temporal order) of Burmese sound changes

Several of the correspondences in Table 37 clearly show results of sound changes in one or more of the languages. Burmese, especially, has experienced a number of key sound changes through the centuries. Wheatley (2003:197) notes that an important sound change from WB to modern Burmese is an “ordered shift of initial consonants, e.g. *s > θ; *c > s; *ky, kr > c”.[51] Bradley (2014:37) and Cooper (2014) comment on the modern Burmese pronunciation resulting from the change of *s > θ; Bradley (2014) says the modern pronunciation of *s is [tθ] while Cooper (2014) and Shiwaruangrote (2000) describe it as [t̪]. In either case, modern Burmese shows a change in the pronunciation of *s.

[51] Wheatley’s *c and c correspond to [ʧ] in my data, while *ky corresponds to *kj.

The relative chronology of sound changes, or the historical sequence in which different changes occurred, contributes to a better understanding of the phonological history of a language (Campbell 2004:46). This is true of Burmese sound changes, where the relative chronology is vital, as several of these form sound change chains, or chain shifts. An example of this is seen in Burmese *s > θ and *ʧ [52] > s. The change of *s- to [θ-] had to occur before the change of *ʧ- to [s-], instead of vice versa. If the order were switched and *ʧ > s before *s > θ, Burmese [θ] (and its subsequent pronunciation of [t̪] or [tθ]) would be a reflex of both *ʧ and *s. There would no Burmese words with [s-], as [s-] would have changed to [θ-]. The presence of both [s] and [t̪] in the Burmese data indicates that *s > θ is the first step in a Burmese chain shift, and *ʧ > s is the second step in this chain. This is an example of a pull chain, where the "gap" created by the absence of [s-] is filled by "pulling" *ʧ- (or /ʦ-/) and changing it to [s-] to fill this hole in the phonological inventory (Campbell 2004:47-48). This chain continues with the "pulling" of other sound changes to fill the "gap" created by the absence of ʧ in the phonological inventory. Hill (2013:338) provides a chart illustrating some sound changes from Proto-Burmish to spoken Burmese in which he summarizes part of the pull chain shift described above. I adapt Hill's chart in Figure 6 to show the complete Burmese pull chain shift; the details given are a compilation of data from Hill (2013), Matisoff (2003), Wheatley (2013) and Bradley (2014).

[52] Chronologically, *ʧ seems to have changed to /ʦ/ before *s changed to [θ] (cf. Figure 6. Development of a Burmese Pull Chain below). However, I use *ʧ instead of /ʦ/ to refer to the change to [s], as it is the proto-form. Also, using the proto-form instead of /ʦ/ in my discussion illustrates the pull chain shift more clearly. The exact date or timing of the change from *ʧ to /ʦ/ is not vital to the sound change d iscussion at this point.

Step	Proto-Burmish	Old Burmese	Written Burmese	Spoken Burmese	
(1)	*s	s	s or θ	θ	t̪ or tθ
(2)	*ʦ	ʦ	ʦ	s (s^{h})	
	*ʧ				
(3)	*kj	kj	kj	kj	ʧ
	*kl	kl			
			kr		
	*kr	kr			

Figure 6. Development of a Burmese Pull Chain

As discussed above, *s > θ is the first change in the chain and precedes the change of *ʧ > s. Step (2) in Figure 6 shows the gradual change from *ʧ- to /ʦ-/ to [s-], as evidenced by early Burmese literature (Hill 2013:338). There is a merger of Proto-Burmish *ʦ and *ʧ > ʦ in Old Burmese (OB); this change occurred before the establishment of written Burmese (WB), with /ʦ-/ carried over into WB. The change to /ʦ-/ occurred prior to the change of /s-/ to [θ-] in modern spoken Burmese (SB). After the change of WB /s-/ > [θ-], WB /ʦ-/ changed to [s-] or [s^{h}-] in SB.

Regarding the velar consonant clusters, Matisoff (2003:71) points out a general tendency (with numerous exceptions and alternate WB inscriptional spellings) for OB /-l-/ to become WB /-j-/ after velars and for OB /-l-/ to become WB /-r-/ after labials. These changes listed by Matisoff may exemplify the beginning of WB's merger of OB /kl-/ to /kj-/ and /kr-/, as shown in step (3) of Figure 6 above; thus OB /kj-/ and /kl-/ > WB /kj-/ and OB /kr-/ and /kl-/ > WB /kr-/. Due to these mergers, WB /kj-/ is a reflex of both *kj- and *kl-, while WB /kr-/ is a reflex of both *kr- and *kl-. A merger of WB /kj-/ and /kr-/ > SB [kj-] followed, with the result of [kj-] as the reflex of all words with *kj-, *kl- and *kr- in modern spoken Burmese; the final sound change is SB [kj-] > SB [ʧ-]. Based on data from the related languages of Atsi and Maru, Hill (2013:338) says "Burmese must have changed c- [ʦ-] to s- before it changed ky- [kj-] to č- [ʧ-]."

The resultant change to [ʧ-] is part of step (2) of the pull chain discussed above, filling the gap in the phonological inventory created by the change of *ʧ > [s].

In Figure 7, I summarize the order, or relative chronology, of this Burmese chain shift based on the above discussion.

(1) *s > θ > t̪ / tθ

(2) *ʧ > ʦ > s

(3) *kj, *kl, *kr > kj, kr > kj > ʧ

Figure 7. Relative Chronology of a Burmese Chain Shift

In this chain shift, first *ʧ (in its form of [ʦ]) is "pulled" to [s] in order to fill the gap created by the change of *s to [θ]. Then [kj] (a reflex of *kj, *kl, *kr due to previous sound changes) is "pulled" to [ʧ] to fill the gap created by the change of *ʧ to [s]. The final change of [θ] > [t̪] or [tθ] (shown in (1) of Figure 7) in Burmese is an incidental part of this chain shift, with no apparent motivation for the change.

Based on this relative chronology of sound changes, modern (spoken) Burmese [ʧ] corresponds to *kj/*kl/*kr while the reconstructed Proto-Burmish *ʧ corresponds SB [s]. This fact illustrates the importance of relative chronology. Knowing the "sound change chains" is vital when attempting to reconstruct proto-forms of a language sub-group or branch, and when considering genetically-related languages and their relationships to each other. The order of sound changes is also important when seeking to link sound correspondences of a language to the reconstructed proto-forms.

Sometimes we can determine a date for a sound change (its beginning or, more likely, when it had disseminated through the language to a certain degree). Bradley (2014:37) gives

approximate times for some pronunciation changes in Burmese; his chart is reproduced below in Figure 8.

ဝ [s]	ဆ [sʰ]	ဇ [z]	သ [θ]	**Approximate dates for changes**
ʧ	ʧʰ	ʤ	s	1112, 16th century
ʦ	ʦʰ	ʣ	s	18th century
ʦ	ʦʰ	ʣ	θ	early 19th century
s	sʰ	z	θ	mid-19th century
s	s	z	tθ	early 21st century

Figure 8. Approximate dates for changes to the Burmese pronunciation of some consonants

Dates of sound changes are rarely reconstructible; when they can be approximated or determined, they are very helpful in reconstructing proto-forms. They can also provide valuable information regarding language relationships based on the dissemination (or lack of dissemination) of sound changes in these languages.

6.3 The relationship of Burmese, Rakhine and Marma

Subgrouping, defined by Campbell (2004:188) as the "internal classification of language families to determine which sister languages are most closely related to one another," is used to determine the family tree for genetically-related languages. Only shared innovations are commonly accepted as a criteria for subgrouping; a shared innovation is defined as "a linguistic change which shows a departure (innovation) from some trait of the proto-language and is shared by a subset of the daughter languages" (Campbell 2004:190-191). Therefore, subgrouping is based on a comparison of historically-related languages to the reconstructed proto-language.

There are implications for determining the historical relationship of Burmese, Rakhine and Marma when comparing Burmese consonants to corresponding Rakhine and Marma consonants (cf. Table 37) in light of the relative chronology and dates of Burmese sound changes discussed above. In Figure 9, I list Burmese, Rakhine and Marma correspondences that provide

information regarding subgrouping and the relationship of these languages. I include PTB forms (and PLB forms, when known), since comparison to the proto-language is necessary to identify shared innovations. I use the changes seen in the correspondences given in Figure 9 to make some initial observations about the historical relationships of Burmese, Rakhine and Marma as well as discuss implications for possible subgroupings of these languages.

	Burmese	**Rakhine (Myanmar)**	**Rakhine (Bangladesh)**	**Marma**	**PTB / PLB**
(1)	t̪	θ/t	θ	θ	*s, *ʦ
(2)	s, sʰ	s, sʰ	s/ʦ	ʧ, ʧʰ	*ʦ/*ʦʰ, *ʧ/*ʧʰ
(3)	j	ɹ	ɹ	ɹ	*r, *l
(4)	ʃ	ɹ̥	ɹ	ɹ̥	*ʃ, *s-r PLB *rʔ
(5)	ʧ	kɹ	kɹ	kɹ	*kr, *kl, *k-r
(6)	ʧʰ	kʰɹ	kʰɹ, kɹ	kʰɹ, kɹ	*kr, *kl
(7)	ʧ	ʧ	ʧ	kj	*kj, *kl
(8)	ʧʰ	ʧʰ, ʃʰ/ʃ	ʃʰ/ʃ	kʰj	*kj, *kl
(9)	l̥	l̥	l	l	*l, *P-l
(10)	m̥	m̥	m	m̥/m	*s-m, *ʔ-m PLB *m̥, *ʔ-m
(11)	n̥	n̥	n	n̥/n	*s-n, *ʔ-n
(12)	ŋ̊	ŋ̊	ŋ	ŋ	*s-ŋ

Figure 9. Sound correspondences with implications for historical relationships

The first correspondence (1) shows a retention of [θ] in Marma, Rakhine spoken in Bangladesh (hereafter "Bangladesh Rakhine") and some Rakhine spoken in Myanmar (hereafter "Myanmar Rakhine"); it also shows a Burmese innovation of [t̪]. Burmese, Rakhine and Marma all changed from the proto-forms of *s and *ʦ to [θ] by the early 19th century, according to Bradley's (2014) chart (cf. Figure 8). Both Marma and Bangladesh Rakhine retain the [θ] reflex of *s and *ʦ; Myanmar Rakhine retains some [θ] but also has [t]. Burmese [θ], however, has changed to [t̪] or [tθ] in modern pronunciation. Examples of Myanmar Rakhine [t] may be results of borrowing from Burmese, as [t] may be the equivalent of [t̪], a result of non-contrastive detail

in the (phonetic) data. In any case, Marma and (most) Rakhine have retained [θ], while modern Burmese has changed to [t̪] or [tθ]; my data have no examples of Burmese [θ].

Correspondence (2) in Figure 9 shows the shared innovation of [s] in Burmese and Rakhine (with variation between [s/ʦ] in Bangladesh Rakhine); Marma [ʧ] is a retention of *ʧ. Marma is thus more conservative than Burmese and Rakhine with a pronunciation of [ʧ] that echoes Burmese pronunciation from the sixteenth century (cf. ဝ [s] in Figure 8), and is a reflex of the *ʧ proto-form. In contrast, Burmese and Myanmar Rakhine have changed *ʧ to [s/sʰ]; in Bangladesh Rakhine, the change of *ʧ varies between [s] and [ʦ]. According to Bradley (2012:174), only Burmese and its dialects change alveolar and palatal affricates (*ʦ/*ʧ) to alveolar [s]; this is a shared innovation of Burmese and Myanmar Rakhine, with some evidence of this innovation in Bangladesh Rakhine.

Recognizing chains shifts help identify older forms still present in speech varieties. Bangladesh Rakhine's variation between [s] and [ʦ] evidences pronunciations from both the eighteenth or early nineteenth century ([ʦ]) and from the mid-nineteenth century ([s]) (cf. Figure 8). This demonstrates that changes in languages do not happen instantaneously but over time; not all words shift at the same time, and some words may not change at all (or have not yet changed, for changes still in progress). Also, perhaps more importantly, this variation in Bangladesh Rakhine is not present in Myanmar Rakhine; this illustrates that changes in these two Rakhine varieties have not occurred at the same time, or in the exact same way. This is to be expected, as these varieties are in different geographical areas and have different contact patterns; the Rakhine spoken in Bangladesh can be expected to differ in some ways from that spoken in Myanmar.

Correspondences (3) and (5)-(8) are all part of a single chain shift. Correspondence (3) shows the shared retention of [ɹ] in Rakhine and Marma; in contrast, Burmese has merged [ɹ] and [j]. This merger of [ɹ] to [j] in Burmese is a key difference between Burmese and Rakhine that is mentioned often in the literature; my data shows that [ɹ] is also retained in Marma. As a shared retention, the presence of [ɹ] in Rakhine and Marma does not form a basis for subgrouping; however, the change to [j] in Burmese is important to note as it also affects consonant clusters, as seen in correspondences (5)-(6) of Figure 9. In (5) and (6), Rakhine and Marma have a shared retention of [kɹ, kʰɹ], while Burmese changes to [ʧ, ʧʰ]. This Burmese change is part of a chain, discussed in 6.2, shifting from [kɹ/kʰɹ] > [kj/kʰj] > [ʧ/ʧʰ]. Correspondences (7)-(8), discussed below, are also part of this Burmese sound chain, illustrating the shift from [kj/kʰj] > [ʧ/ʧʰ] in Burmese and comparable changes in Rakhine.

Correspondence (7) shows the shared innovation of [ʧ] in Burmese and Rakhine; Marma is conservative with its retention of [kj]. This innovation is a result of the shift from [kj] to [ʧ]; both Myanmar Rakhine and Bangladesh Rakhine share this innovation with Burmese.

Correspondence (8) in Figure 9 shows the correspondences of the aspirated forms of (7), which are more complex than correspondence (7). In correspondence (8), Marma retains the pronunciation of [kʰj], a reflex of the proto-language (and WB). Burmese (8) also follows its pattern from (7), shifting from [kʰj] to [ʧʰ]. Bangladesh Rakhine, however, changes from [kʰj] to [ʃʰ/ʃ], presumably by way of [ʧʰ]; the sound change chain of Bangladesh Rakhine is therefore [kʰj] > [ʧʰ] > [ʃʰ/ʃ]. Some Myanmar Rakhine words shift from [kʰj] to [ʃʰ/ʃ], the pronunciation in Bangladesh Rakhine, while some words shift to [ʧʰ], the Burmese pronunciation. This shows that, as with the unaspirated forms in correspondence (7), Rakhine also shares the innovation of

[kʰj] to [ʧʰ], shown in correspondence (8) with Burmese. Bangladesh Rakhine has a later innovation of [kʰj] to [ʃʰ/ʃ], which Myanmar Rakhine partially shares.

In correspondence (4), Burmese has an innovation of [ʃ] that developed from WB voiceless /ɻ̥/ (Bradley 2011:45). Marma and Myanmar Rakhine retain voiceless [ɻ̥], a WB reflex of PLB *rʔ. My data show a change in Bangladesh Rakhine from voiceless [ɻ̥] to voiced [ɹ]; however, this change in Bangladesh Rakhine should be verified as I collected data from only one speaker.

Correspondences (9) and (12) show a retention of voiceless [l̥] and [n̥] in Burmese and Myanmar Rakhine. Voiceless sonorants developed in WB due to PTB prefixation; it is generally agreed that WB accurately represents one stage in the development of modern spoken Burmese. WB representations of (9) and (12) are voiceless, suggesting that Burmese, Rakhine and Marma all had voiceless sonorants around the eighteenth century. Thus, voiceless [l̥] and [n̥] in Burmese and Myanmar Rakhine is a retention, while the voicing of [l] and [ŋ] in Marma and Bangladesh Rakhine is a change from voiceless to voiced. Although this might be a shared innovation, it is more likely that it is an independent innovation of Marma and of Bangladesh Rakhine. A change from a voiceless to a voiced sound is less marked than a change from voiced to voiceless; a change that is less marked is more likely to occur naturally in a language, as an independent innovation. Further, the change to voiced sonorants may have been influenced by language contact with Bengali (which does not have voiceless sonorants).

Correspondences (10) and (11) also show a retention of voiceless [m̥] and [n̥] in Burmese and Myanmar Rakhine; Marma varies between retention of voiceless [m̥] and [n̥] and a change to voiced [m] and [n]. PTB prefixation led to the development of voiceless nasals in WB; voiceless [m̥] and [n̥] in Burmese, Myanmar Rakhine and some Marma correspond with the orthographic representation of WB (a retention of Burmese pronunciation from the sixteenth to eighteenth

century). In contrast to Marma which varies in voicing, Bangladesh Rakhine always has voiced [m] and [n]; as mentioned previously, Bengali language contact may have influenced the voicing of these nasals in Bangladesh Rakhine (and to some extent in Marma). Historically, then, nasals in Bangladesh Rakhine change from PTB *m and *n > WB /m̥/ and /n̥/ > [m] and [n].

The changes discussed above lead me to the following initial implications for the historical relationship of Burmese, Rakhine and Marma. The two examples of Burmese and Rakhine shared innovations (correspondences (2) and (7) above) seem to point to the possibility that Burmese and Rakhine are a subgrouping, distinct from Marma. Myanmar Rakhine partially shares the Burmese innovation of [ʧʰ] in correspondence (8). However, these shared innovations do not provide sufficient evidence for subgrouping. Rakhine (especially Myanmar Rakhine) has more contact with Burmese; this contact may have led to some borrowing from Burmese, especially in Myanmar Rakhine; correspondence (1) seems to be an example of this possible borrowing, with Burmese [t̪] or [tθ] and some Myanmar Rakhine words with [t].

Bangladesh Rakhine has contact with Myanmar Rakhine and some Burmese, as they live on the coast and waterways. Some Rakhine from Bangladesh are educated in Myanmar (mostly in Rakhine State) which increases their level of contact with both Myanmar Rakhine and Burmese. Increased contact may account for some of the similarities of Bangladesh Rakhine to Myanmar Rakhine and Burmese.

The Marma, who live in the Chittagong Hill Tracts of Bangladesh, have little contact with Rakhine or Burmese, which may have contributed to the more conservative pronunciation of Marma, which often reflects WB pronunciation. The use of [θ] in Marma is an example of this, as this follows Burmese pronunciation from the early eighteenth to mid-19th century. These dates seem to coincide with the date given for the Marma departure from Myanmar in the early

1780's. For the most part, Marma has retained the pronunciations used in Burmese at that time. Marma has free variation of voicing for most nasals; Marma's use of voiceless nasals corresponds to voiceless nasals in modern Burmese and WB.

Rakhine spoken in Bangladesh differs in some ways from that spoken in Myanmar; one difference is the variation between [s] and [ʦ] in Bangladesh. The occasional use of [ʦ] in Bangladesh echoes Burmese pronunciation from the eighteenth and early nineteenth century, whereas Myanmar Rakhine's use of [sʰ] and [s] date to the mid-19th century. Another difference is that, in my data, Bangladesh Rakhine does not have voiceless nasals; possibly Bangladesh Rakhine has eliminated the voicing contrast in nasals.

Myanmar Rakhine shares the pattern of voiceless word-initial nasals with modern Burmese (and WB); sometimes, Marma also has voiceless word-initial nasals. These voiceless nasals are retentions of WB pronunciation.

The merger in modern Burmese of [ɹ] to [j], especially in consonant clusters, brought about a major difference between Burmese vs. Rakhine/Marma. The later sound change of Burmese [kj] to [ʧ] further divided Burmese pronunciation from that of Marma (which split away from Burmese before this sound change). Rakhine shares the sound change of [kj] to [ʧ] with Burmese; this, however, is not a shared innovation in the strict sense because it had to happen after the split of Burmese and Rakhine (since Rakhine does not merge [ɹ] to [j]). The change of Rakhine [kj] to [ʧ] may be due to Burmese language influence and/or language contact between Burmese and Rakhine. Myanmar Rakhine partially shares the Burmese sound change of aspirated [kʰj] to [ʧʰ]; other words in Myanmar Rakhine, however, show a pattern with Bangladesh Rakhine in the change of aspirated [kʰj] to [ʃʰ/ʃ].

Based on the data from sound changes listed in the correspondences, I conclude that Marma is the most conservative, evidencing fewer sound changes than those found in Rakhine and Burmese and thus is closer to proto-Burmish (or other proto-languages). Bangladesh Rakhine sometimes shares changes with Burmese and Myanmar Rakhine, while at other times it follows Marma in its retention of proto-forms or earlier forms of some consonants. Myanmar Rakhine often patterns with Burmese in changes; some of these correspondences are shared innovations and point toward the possibility of a Burmese and Myanmar Rakhine subgroup. A few similarities may be due to increased language contact between these two varieties.

CHAPTER 7

SUMMARY AND CONCLUSIONS

The main purposes of this thesis have been to provide new data for Rakhine and Marma and to make some initial observations about the relationship between Burmese, Rakhine and Marma based on the sound correspondences of these languages.

Although much literature is available on the Burmese language as the primary representative of the Southern Burmish languages, little is available on Rakhine and Marma. The literature occasionally mentions differences between Burmese and Rakhine (and, less frequently, Marma) but does not provide Rakhine or Marma data. I plan to make the Rakhine and Marma data I have collected, including my recordings, available by archiving it in PARADISEC or a similar archive.

I have sought to provide a good corpus of lexical data on the Rakhine and Marma languages of Bangladesh and to provide previously-collected Burmese and Rakhine data of Myanmar in a format comparable to my data. I have presented an introduction to Burmese, Rakhine and Marma, including their language family, geographic locations, nomenclature, populations and L2s. I have identified cognate sets and listed the consonant correspondences of these three languages. Based on these correspondences, where possible, I have mapped out the relative chronology or order of sound changes. I have concluded with a discussion of the relationships of Burmese, Rakhine and Marma, including their level of contact with one another.

Researchers can benefit from the study of lower-level languages (lower than the main TB branch or Lolo-Burmese), as research of these languages can help researchers notice and recognize sound changes that have affected these languages, while also providing more information regarding higher-level languages' innovations and retentions. Though Burmese is the largest Burmish language with the oldest written materials (WB), data from related languages help inform decisions regarding proto-forms for Tibeto-Burman and lower branches. Due to the merger of [ɹ] to [j], and the later change of [kɹ] and [kj] to [ʧ], Burmese is not the ideal language to consider when proposing proto-forms of words with *kl, *kr or *kj. Data from Rakhine and Marma, especially Marma with its more conservative pronunciation, can prove helpful in proto-form reconstructions.

Modern Burmese pronunciation often differs from written Burmese (which is a closer reflex of the proto-language); these major sound changes obscure its relationship to Rakhine and Marma. A comparison of consonants in Burmese, Rakhine and Marma provides useful information for mapping the order of sound changes and making preliminary claims of the relationship of these three languages.

Marma is more conservative than Burmese or Rakhine, as evidenced by its initial and medial consonants. For the most part, Marma has retained Burmese pronunciation from the early 1780's, when the Marma left Myanmar.

Rakhine is spoken in both Myanmar and Bangladesh; there are differences in the varieties of these two geographical areas. Bangladesh Rakhine consonants occasionally echo 18th and early-19th century pronunciation while the pronunciation found in Myanmar Rakhine dates to the mid-19th century. Some consonant correspondences of Bangladesh Rakhine group with Marma (also spoken in Bangladesh) while Myanmar Rakhine correspondences often match Burmese due to

common (shared) innovations; some of these correspondences may be due to language contact and/or borrowing

Burmese and Rakhine share two innovations which are not present in Marma: the change of *ʦ/*ʧ to [s], as well as the change of [kj] to [ʧ]. The Burmese innovation of [ʧʰ] instead of [kjʰ] is partially shared by Myanmar Rakhine, which varies between [ʧʰ] and [ʃʰ/ʃ]. Though my data does show some examples of shared innovations, these do not provide sufficient evidence to posit a subgrouping of Burmese and Rakhine. My data does show that these languages are historically related, and have many cognate forms. Furthermore, my data on correspondences demonstrate the important role of geographical location and language contact in the distribution of sound changes. When two varieties have greater contact, this may lead to borrowings or may influence the start of a sound change in one of the speech varieties. It is my hope that future Rakhine and Marma research will shed further light on the historical relationship of Burmese, Rakhine and Marma.

Further research is needed to ascertain if words absent from the data conform to the sound correspondences presented and provide more examples for correspondence sets with few supporting forms. An analysis of phonological contrast is needed in Rakhine and Marma; this would potentially decrease the number of apparent exceptions to regular sound correspondences by removing non-contrastive details. Future research is also needed to determine how tone functions in Rakhine and Marma, as well as the correspondence of Burmese, Rakhine and Marma vowels and tones.

It is possible that the comparison of Burmese, Rakhine and Marma consonants provided in this thesis may assist in future language development work among the Rakhine and Marma. A

list of the regular consonantal differences of these languages may assist in the adaptation of audio materials available in Rakhine for use in Marma, and vice versa.

The information in this thesis may also be useful to an individual who speaks Rakhine and wishes to learn Marma, or vice versa. Wordlist data (given in Appendix B) would show lexical items that differ from one language to the other. Also, a recognition of the results of sound changes in these languages, as well as a list of consonant correspondences, may also help a language learner.

APPENDICES

APPENDIX A

DEMOGRAPHIC QUESTIONNAIRE

English translation of the Bengali questions I asked my consultants for demographic information is as follows:

Demographic Questions

- What is your name?
- How old are you?
- Where were you born? (village, township, district, division/state)
- Which village did you grow up in? Have you lived anywhere else, and if so, where and for how long?
- What is the first language you spoke?
- Where was your father born?
- What language did your father first speak as a child?
- Where was your mother born?
- What language did your mother first speak as a child?

APPENDIX B

WORDLIST DATA USED IN THESIS

This appendix includes a complete listing of the wordlist data used in this thesis. Some items of the wordlist have more than one cognate set among the speech varieties; these cognate sets are divided and labeled with the corresponding wordlist number and 'a' and 'b' (e.g. 6a, 6b). When there are multiple words in a variety for an item or a consultant provided different pronunciations of a word, these are divided with '/'. Wordlist words analyzed as non-cognate are enclosed with '( )'. There are a few examples of Bengali words in my data; these are enclosed with '[ ]' as an indication that they are possible borrowings from Bengali. I do not know to what extent (or if) these Bengali words are widely used throughout the respective speech communities.

Wordlist sources are listed in the same order as used in the thesis. The various sources are described in 2.1 (RB, M1 and M2) and 2.4 (BT, BC, RT and RS).

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
	Nature							
1	sky	kɔ̃:gĩ:	mo: kaũ:kĩ	(ʔaka)	koŋkʰuŋ	goukʰa	goŋkau	goŋka
2	sun	ne:	ne	ni	ni	neiŋ / nei	ni	ni
3	moon	laʔ	la̰	la	la	laʔ / la	la / laʔ	laʔ
4	star	ʧɛ:	ʧɛ	kɹe	kɹe	kɹɛ	kɹɛ	kɹɛ
5a	cloud	mo:tẽɪ: / tẽɪ:	mo: teĩ	moʔo ‘cloudy’	tiŋ			
5b	cloud					muɹei	muɹi	muɹoi
6a	mist, fog	mju:	mjukʰo:	mɹu ‘mist’	mɹəkʰu			
6b	mist, fog			n̰a ‘fog’		naŋ	n̰au	n̰ankjaʧwa
7	rain	mo:	mo:	mo ‘rain, sky’	mo	mo:	mo:	muɹwoi / muɹwaɹɛ
8	rainbow	t̪ɛ:tã:	t̪ɛʔt̪a̰	θaʔθɛ̃	θataŋ	θədaŋɹeθa	θədaŋɹɛʃo	θədaɹɛθa
9	lightning	l̪jasi: lɛt̪i	l̪jæʔsi: lɛʔt̪i	lajẽsʰeʔ	l̪jaʔse laɹe	(ʃɛpɹatɛ)	(mo:gɾu)	(mugɾo boiʧa)
10	thunder	mo:ʧʰẽɪ:d̪ã: ‘sound of thunder’	mo:ʧʰeĩ:t̪æ̃		mogɹutaŋ	mo:kɹuɹɛ	mo:gɹu	(aθaiməko)
11	shadow / shade	ʔajeɪʔ	ʔəjeiʔ	ɹeiʔ ‘to throw a shadow’	aɹei	aɹei	aɹiʔ	aɹoi
12	wind	le:	le	li	li	li:	li	litaʧwa
13	night	ɲaʔ	ɲa̰	ɲa	ɲiʔ	ɲɪʔ /ɲɪ	ɲɪʔ	ɲi
14	day	neʔ / (jɛʔ)	nḛ	ni	niʔ	(ɹa)	niŋkɹau	ɲiŋkʰa
15	morning	(nanɛʔ) / (manɛʔ)	(nənɛʔ)	motʰa	moθauʔ	mowθa	(təʤo)	(ʤəʤoga)
16	noon	ne:lɛ: ‘midday’	nḛlɛ	nile ‘1pm - 3 pm’	nikʰaŋ	(mwɛndɛ)	nəbuɾi	(mwaindɛʔ)
17	yesterday	maneʔ	mənḛka̰	ɲaga	ɲaʔzəga	ɲaga	ɲagaka	ɲaga
18	tomorrow	manɛpʰjã:	mənɛpʰjæ̃		napʰeŋka	napʰɹɛŋka	napʰɹɛi / naɸɹɛi	nəpʰɹɛinka
19	year	n̰ɪʔ	n̰ɪʔ / kʰʊnɪʔ	n̰aiʔ	kʰun̰aiʔ	nai	n̰aʔ	n̰oiʔ
20	east	ʔaʃeʔ	ʔəʃḛʔəjæʔ	ʔaɹi	aʃipʰaʔ	aɹipʰa / aɹiɸa	a̰ɹi	ḭpʰa
21	west	ʔanɔʔ	ʔənauʔəjæʔ	ʔan̰auʔ	anaupʰaʔ	anaupʰa / anauɸa	anoʔ	naupʰa
22	water	je:	je	ɹi	ɹi	ɹi: / ɹi	ɹi	ɹi

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
23	to be hot (water)	pu:d̪ɔ:	pu	nipu ‘hot’ / pɔ ‘to steam’	pude	apu	ɹibu	ɹəbu
24	to be hot (person)		ʔaiʔ	nipu ‘hot’	puɹe	puɹɛ	puɹɛ / (lõɹɛ)	puʧwa
25	to be warm (water)	nwe:d̪ɔ:	nwe:	nwi ‘warm’ / n̥wi ‘to make warm’	nwiɹe	nwiɹɛ	(ləloŋ) / (loloŋ)	(tapeʃjɛ puʧwa)
26	to be cold (person)	ʧʰã: ‘(weather) to be cold, to feel cold’	ʧʰæ̃:	ʧʰɛ̃	ʃʰjaŋɹe	ʃʰjaiɹɛ	kʰjaiɹɛ	kʰjaiɹɛ
27a	to be cold (water)	ʔe:d̪ɔ: ‘cold’	ʔe:	ʔi ‘cool’	ɹi iɹe	ʔ̰iɹɛ		ɹiʔi:
27b	to be cold (water)	ʔe:mja:d̪ɔ: ‘cool’					mamɹaʔ	
28	stream	ʧʰõ:	sæ̃:ʧʰaũ:	(n̥a ʔaŋeiʔ) ‘stream’ / (mɹɔ) ‘brook’	tsanʃʰau	(mɹau)	kʰjoŋʃɛ	kʰjoŋʃɛ
29	river	mjɪʔ	mjɪʔ	mɹeiʔ	mɹaiʔ	mɹau ‘stream’ / (ʃau)	mɹwaiʔ ‘sea’ / (agɾikʰjoŋ)	(kʰjoŋgɾi)
30	sea	pĩlɛ:	pĩlɛ		paŋ le	paŋlɛ	(mɹwaiʔ)	paŋlɛ
31	soil (earth)	mje:ʤi: / gaba: mjeʤi: ‘earth, ground, soil, land’	mjeʧi:	mɹi ‘earth’	mɹegɹi	mɹebɹa	(kaipa)	nɛbɹa
32	mud	ʃõʔ	ʃõ̰	ʧouʔ	ʧau	ʧouʔ	kjouʔ	kjouʔ
33	dust	pʰõ: ‘dirt in the air’	pʰoũmoṵ̃	pʰõ	pʰoŋmo	pʰumu	pouɹmuʔ / pouɹəmuʔ	(kjouʔmuʔ)
34	stone	ʧɔʔ ‘rock’	ʧauʔ	ʧauʔ	ʧau	ʧau	kjoʔ	kjaʔ
35	sand	t̪ɛ:	t̪ɛ:	θɛ̃ĩ	te	θɛ	θɛ	θɛ
36	lime		tʰoũ:	tʰõũ	tʰoŋ	tʰum		tʰuŋ
37	gold	ʃwe:	ʃwe	ʃwe	ʃwe	ʃwɛ	ʃwɛ	ʃwɛ
38	silver	ŋwe:	ŋwe	ŋwe	ŋwe	mwɛ	mwi	ŋwɛ
39	iron	t̪ã:	t̪æ̃		taŋ	θɛ	θai	(kjaukɹi)
40	mountain	tɔ̃:	taũ	tɔ̃	tau	tau	toŋ / toŋtʰa	toŋ

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
41	cave	gu: 'cave, tomb' / ʧɔʔ 'rock'	ʧauʔgu	gu	ʧaugu	guk^{h}au	kjeokoŋ	(twa)
	Plants/Food							
42	forest	tɔ: 'forest, jungle, wood'	t̪ɹʔtɔ / tɔ		θaitɔ	twa	to	to
43	tree	ʔapĩ: / t̪ɹpĩ:	t̪ɹʔpĩ	ʔapɔ̃	θaipaŋ	apaŋ	apaŋ	θoipa
44	branch	ʔakãĩ / t̪ɹkãĩ	t̪ɹʔkaĩ:	kãĩ	θaikaiŋ	(at^{h}a)	ak^{h}aʔ	θoipa ak^{h}aʔ
45	tree bark	ʔak^{h}ɔʔ / t̪ɹk^{h}ɔʔ	t̪ɹʔkauʔ		θaik^{h}auʔ	θaikwɛ	apaŋ akwei	(θoipa aɹi)
46	thorn	s^{h}u:	su:	s^{h}u	su	asu	ʧuʔ	θoipa aʧu
47	root	ʔamjɹʔ	t̪ɹʔmjɹʔ	ʔamɹeiʔ / mɹeiʔ	θai mɹai	amɹai	amɹoi	θoipa amɹoi
48	leaf	ʔajwɛʔ / t̪ɹjwɛʔ	t̪ɹʔjwɛʔ	ʔaɹwaʔ / ɹwaʔ	θai ɹwɔʔ	aɹwa	aɹoʔ	θoipa aɹwa
49	flower	pã:	pæ̃:	pɛ̃	paiŋ	pɛ:	paiboʔ	pai
50	fruit	ʔat̪i:	t̪ɹʔt̪i: / ʔət̪i	ʔaθi / θi	θaiθi	aθi / aθei	aθi	aθi
51	seed	ʔaseʔ / ʔasiʔ / t̪ɹsiʔ	t̪ɹʔt̪i:sẹ / ʔəsi̯	ʔasi	θaiθi asiʔ	asiʔ	aʧĩ	aʧĩʔ
52	grass	mjɛʔ	mjɛʔ	mɹɔʔ	mɹaʔ	mɹaupa	mɹaʔ	(apa)
53	bamboo	wa:	wa:	wa	wa	wa:	wa	wa
54	bamboo shoot	(m̥ɹʔ) 'sweet bamboo'	(m̥jɹʔ)	wadouʔ	wadɔ	wədoʔ	waʃjɛ	wabaŋʃjɛ
55	mushroom	m̥o:	m̥o	m̥o	m̥o	mo:	m̥o	m̥o
56	cane, rattan		ʧeĩ	kɹẽĩ	kɹiŋ	kɹein	(nwɛ)	(neipɹaʧwa)
57	kapok	lɛ:m̥oʔ	lɛ:m̥o̱	m̥o	(baiʔ)			
58	sugar cane	ʧã:	ʧæ̃	kɹẽ 'sugar'	kɹəŋ	kɹe:	kɹai	kɹaiʔ
59	betel nut	kõ:	kõ:t̪i:	kõũ 'betel chew'	kweŋθi	kwɛθi	kwɛθi	kwaiθi
60	opium	be:	peĩ:	bẽĩ	baiŋ	bein	biŋ	
61	rice/millet beer	ʔajɛʔ 'alcoholic, liquor'	k^{h}aũje	ʔaɹa / ɹaʔ	k^{h}ɔŋɹe	aɹa	aɹaʔ	aɹaʔ
62	banana	ŋapjɔ:	ŋəpjɔ:t̪i:	ŋapɹɔ̃θi	ŋapjɔʔθi	nəpjuθi	nəpjuθi	nəpjuθi
63	mango	t̪ajɛ:ʔ	t̪əjɛʔt̪i:	taɹaθi	θəɹaʔθi	θaɹaθi	θəɹauθi	θəɹaθi
64	eggplant	k^{h}ajã:d̪i: 'brinjal'	k^{h}əjæ̃:t̪i:		k^{h}əɹaŋθi	k^{h}əɹeθi	kɹeiθi	k^{h}əɹaiθi

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
65	soy bean	pɛ: 'bean'	pɛ:pouʔ	pɛ 'bean'	pebo	(swabin pizi)	(ʧi 'oil')	(ɹeʧi)
66	ginger	ʤĩ:	ʧʰĩ:	ʧʰãsẽĩ	ʧʰaŋziŋ	ʧʰaŋ / ʃʰaŋ	kʰja	kʰja
67	garlic	ʧɛt̪õpʰju:	ʧɛʔt̪õpʰju	kɹatwɛ̃pʰɹu	kɹaʔθuŋpʰɹu	kɹaθɛnpʰɹu / kɹaθɛnɸɹu	kɹauθɛnpɹu	kɹaθwaipɹu
68	corn	pjɔ̃:bu:	pjaũ:bu:		pɹaupʰu	(ʃaŋku pizi)	(mouka)	(moukapʰu)
69	red pepper, chili	ŋajoʊʔ 'chili'	ŋəjouʔt̪i:	ŋaɹoθi	ŋəɹɔθi	ŋaɹo:	məɹoθi	məɹoθi amu
70a	dry field	tɔ̃:ja: 'mountain farmland; South farmland'	taũja kʰĩ:		θau			
70b	dry field	ja: 'farmland bearing crops other than rice'	taũja kʰĩ:			jabɹa	ja	jama toʔ
71	wet rice field	l̥ɛ: / lɛ: 'paddy field'	lɛ kwĩ:	le 'field'	le	(səba bɹa)	(ʧɛba kʰaŋ)	ʧɛba l̥aintʃwa
72	paddy rice	zaba:	zəba:	saba 'paddy'	səba	səba	ʧɛba	ʧɛba
73	rice seedling		zəba:pjo:bĩ		səbapjubaŋ	səbənɛ		ʧɛba apaŋʃjɛ
74	to be ripe	jĩm̥e:d̪ɔ: 'fully ripe'	m̥ɛ̰	m̥e	m̥eʔɹe	ame	am̥ĩ / mĩrɛ	m̥ẽ
75	pounded rice	sʰã:	sæ̃	sʰɛ̃ 'husked rice'	saŋ	sɛ	ʧai / ʧwai	ʧai
76	cooked rice	tʰamĩ:	tʰəmĩ:	tʰamã	tʰəmaŋ	tʰamaŋ	tʰəmo	tʰəma
77a	to winnow	zaba: l̥e̤di:	zəba: l̥ḛ		səba kɹeide			
77b	to winnow			sʰɛ̃ pɹa		(tʰaukʰɹaŋ)	pɹaɹɛ	ʧai pɹaʧwa
78	to dry (rice)		l̥ɛ̃:	l̥ɛ̃ 'to dry in the sun'	səba l̥anɹe	le:kʰɹaŋ	(nəbumatʰaɹɛ)	kl̥aiʧwa
79	to pound (rice)	tʰɔ̃d̪i:	tʰaũ:	tʰãũ	səba tʰauɹe	(nekʰɹaŋ)	ʧai tʰoŋpʰo 'to grind'	tʰoŋʧwa
80	to grind	ʧe:ʔ	ʧeiʔ	kɹe 'mill'	kɹaide	kɹeikʰɹaŋ	(ʧai pʰwaipo 'to pound (rice)')	(amuŋ pjaŋʧwa)
81	to cook (rice)	ʧʰɛt̪i:	ʧʰɛʔ	ʧʰaʔ 'to cook' / ʧaʔ 'to be cooked' / ʧɔ 'to fry'	ʃade	ʃakʰɹaŋ	kʰjapʰo	kʰjaʧwa

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
82a	to boil	pjoʊ̯ti:	pjouʔ		pɹɔde	pɹokʰɹaŋ	pɹopʰo / pɹoɸo	pɹoʧwa
83	rice husk	pʰwɛ: 'rice bran'	pʰwɛ:	pʰwe 'bran of rice'	pʰwe	pʰwekwɛ	pʰwɛmoʔ	(ʧai moŋboiʧwa)
84	salt	sʰa:	sa:	sʰa	sa	sa	ʧa	ʧa
	Animals							
85	animal	taɾesʰã:	təreiʔsæ̃	taɹeʔsʰɛ̃	θəɹeisaŋ	twa təɹeise	(pomwai)	(pomawai)
86	tiger	ʧa:	ʧa:	ʧa	ʧa	ʧa	kja	kja
87	pangolin		(ʧ̃ĩ:gwedʒæʔ)			(θɛkɹui)	(ui)	
88	bear	wawõ: / wɛwõ:	wɛʔwõ	waʔwɛ̃	waʔwuŋ	wawɛ	we	wawe?
89a	barking deer		ʧʰi		dʒi	(ʦɛ) / (sɛ)	kʰi	kʰi
89b		ʧ̃amĩ: 'deer'		θama				
90	monkey	mjɔʊʔ	mjauʔ	mjauʔ	mjau	mjau	mjau	mjau
91	gibbon	mjaʊʔ l̥wɛ:dʒɔ:	mjauʔ lwɛ:ʧɔ		mjau lweʧɔ	(anumemjau)		
92	rabbit	jõ:	joũ	jõũ	juŋ	jouŋ	jouŋ	[koɹgoʃɛ]
93	porcupine	pʰju:	pʰju:		pʰɹu	pʰɹu	pʰɹu	pʰɹu
94	rat	ʧwɛʔ	ʧwɛʔ	kɹwɔʔ	kɹaʔ	kɹoaʔ	kɹoaʔ	kɹoaʔ
95	dog	kʰwe:	kʰwe:	kʰwi	kʰwi	kʰwi	kʰwi	kʰwi
96	to bark	hõ:d̥i:	haũ	hõ	hauŋɹe	hauɹɛ	kʰwi huwɛ	hoŋʧwa
97	to bite	kaɪt̥i:	kaiʔ	kaiʔ	kaiʔde	kaite	kʰwi kwaitɛ	koiʧwa
98	cat	ʧɔ̃:	ʧaũ	kɹõ	kɹauŋ	kɹau	kɹõ	kɹõ
99	pig	wɛʔ	wɛʔ	waʔ	waʔ	waʔ	woʔ	waʔ
100	cow	nwa:maʔ	nwa:	nwa 'cattle'	nwa	nwa	nwa	nwa
101	milk	noʔ	nwa: nǫ	n̥o	nwa nuʔ	nuʔ	nuʔ	nuʔ
102	buffalo	ʧwɛ:	ʧwɛ:	ʧwe	ʧwe	ʧwe	kjue	kjue
103	horn (buffalo)	dʒo:	ʧʰo	gɹo	gɹo	agɹo / kʰɹanθe	gɹo:	agɹo
104	tail	ʔam̥i: / ʔami: / mji:	ʔəmi:	badõũ	bədoŋ	bəduŋ	məduŋ	məduŋ / aməduŋ
105	elephant	sʰĩ:	sĩ	sʰɔ̃	sʰaŋ	ʦan	ʧau	ʧa
106	elephant tusk	ʔaswɛ: 'ivory'	sĩ zwɛ	sʰɔ̃ sʰwe 'ivory'	sʰaŋ zwe	aswe	ʧau dʒwe	
107	bird	ŋ̊ɛʔ	ŋ̊ɛʔ	ŋ̊aʔ	ŋ̊aʔ	ŋaʔ	ŋaʔ	ŋaʔ

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
108a	dove	ʤo: ‘dove’	ʧʰo: ‘dove’	gɹo ‘dove’	gɹu ŋ̊aʔ	kʰɹo	gɹo	
108b	pigeon	kʰo: ‘pigeon’		kʰo ‘pigeon’				kʰo
109	bird’s nest		ŋ̊ɛʔt̪aiʔ		ŋ̊aʔθaiʔ	ŋaʔθai	ŋaʔθwɛʔ	(ŋaʔadaŋ) / (ŋaʔdaŋ)
110	wing	tɔ̃:bã:	taũpæ̃ / ʔətaũ	ʔatɔ̃	atau	ŋaʔtau	ŋaʔ atoŋ / ŋaʔtoŋ	ŋaʔ atoŋ
111	feather	ŋ̊ɛ m̥we:			ŋ̊aʔ mwi	ŋaʔ mwi	ŋaʔ mwi	ŋaʔ mwi
112	to fly	pjã:d̪i:		pjɛ̃ / jɔ̃	pjaŋɹe	pjeɹɛ	pjaiɹɛ	ŋaʔ pjɛnʧwa
113	egg	ʔuʔ		ʔu	kɹaʔuʔ	oʔu	oʔo	uʔu
114	chicken	ʧɛ:ʔ		kɹɔʔ	kɹaʔ	kɹaʔ	kɹaʔ	kɹaʔuʔ
115	crest			ʔam̥auʔ	amau	amauʔ	kɹaʔ moʔ	
116	fish	ŋa:		ŋa	ŋa	ŋa	ŋa:	ŋa:
117	snake	mwe:		mwi	mwein	mɹein	mwi	mɹi
118	poison				mɹein sʰeik	asei ʔ	aʧĩʔ	aʧoi
119	house lizard	ʔẽɪ:mjɔ̃:		ʔẽĩ1m̥jɔʔ	eiŋm̥jauŋ	imjau	iŋmjau	
120	turtle	leɪʔ		leiʔ	leiʔ	lei	leiʔ	loi
121	crocodile	mi:ʤɔ̃:			miʔdʒauŋ	mindʒau	məjoŋ	məjoŋ
122	otter	pʰjã:		pʰjɛ̃	pʰjəŋ	pʰje	(togɾoŋ) / (togɾo)	
123	frog	pʰa:	pʰa:	pʰapʰɹouʔ	pʰa	pʰa	pʰa	pʰa
124	insect	po:m̥wa: / po:gɔ̃:		pogãũ	pomwa	poʔ	apo / apʰo	po:ʃjɛ
125	spider	pĩgu:		pakʰu	paŋku	paŋku	paŋkuŋ	paŋkuŋ
126	spider web				paŋkueiŋ	paŋkuiŋ	(paŋkuŋgɹɛ)	(paŋkuŋkʰɛ)
127	louse (head)	t̪ã:		θɛ̃	θaŋ	(pwi) / (kʰwi)	sai / tsai	θai
128	termite	ʧʰaʔ ‘white ant’	ʧʰa:	kʰɹaʔ	kʰɹaʔ	kɹaʔ	(bəlibɛla)	
129	ant	pajwɛsʰeɪʔ		paɹɔʔsʰeiʔ	pəɹwaʔsei	pəɹotsi / pəɹosi	pɹoiʧĩʔ	pɹwaʧĩ
130	cockroach	po:haʔ		pahɛʔ	puhɛʔ	pohe	bahaiʔ	bahaimaʔ
131	snail	kʰajuʔ		kʰaɹu ‘a kind of shell’	kʰəɹuʔ	kʰəɹu	kʰɹoʔ	kʰəɹoʔ
132	mosquito	ʧʰĩ:gɔ̃:ŋ		kʰɹɔ̃	kʰɹaŋ	kʰɹaŋ	kʰɹau	kʰɹa
133	bee	pja:		pja	pja	pja	pja	pja
134	fly	jĩgɔ̃:		jakãũ	jaŋgauŋ	jaŋ	(kʰɹau)	jaŋ

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
135	butterfly	leɪpja:		lapɹa	ləʔpɹa	ləpɹa	leipɹa	loipɹa
136	scorpion	kĩmi:gɔʔ		kãmikauʔ	kanmikauʔ	(kalenθu)		
137	water leech	m̥jɔʔ ‘leech’		m̥jɔʔ ‘leech’	m̥jɔʔ	mjo	mjo	
138	land leech	ʧʊʔ ‘leech’		kɹwɛʔ	kɹɔʔ	kɹwe	kɹoaʔ	
139	earth worm	ti:gɔ̃:	ti	ti	tigauŋ	ti	ti	ti
	Body							
140	head	ʔu:gɔ̃: / gɔ̃:		gãũ	gauŋ	gau	agoŋ	agoŋ
141	face	mjɛn̥a:		mjaʔna	mjan̥a	mjauna	mjaun̥a	mjan̥a
142	brain			ʔõũn̥auʔ	unauʔ	unau	(agoŋʧĩ)	an̥auʧĩ
143	hair (head)	zabĩ:		sʰɛ̃bõ	tseŋbaŋ	tsɛba	ʧaibɔŋ	ʧaibɔŋ
144	hair (body)	ʔam̥we: / ʔam̥wi:		mwi	am̥wi	amwi	amwi	amwi
145	forehead	napʰu:		napʰu	nəpʰu	(tʰeipɹa)	nəpuʤa	nəpuʤa
146	eyebrow	mjɛkʰɔ̃:m̥wi:			mjaʔkʰəuŋ	mjaumwi	(mjaɹoiʔ)	(mjaɹoiʔ)
147	eye	mjɛsiʔ		mjaʔsi ‘eyebrow’	mjaʔsiʔ	mjautsi / mjausi	mjauʧĩ	mjaʧĩʔ
148	eyelid	mjɛkʰõ:			mjaʔkʰwen	mjaukʰɛ	(mjautoŋ)	(mjatoŋ)
149	nose	n̥akʰɔ̃:		n̥a	nəkʰau	nakʰau	nəkʰoŋ	nəkʰoŋ
150	cheek	pa:	pa:	pa	pa	pa	pa	pa
151	ear	na:		na	na	na	na:	na
152	mouth	bazaʔ	pə̆z̥æʔ	pazeʔ	pəzaʔ	paza	paʤa	paʤa
153	tongue	ʃa:	ʃa	ʃa	ʃa	ʃa	ʃa	ʃa
154a	spit (N)	dadwe:		twɛ̃ ‘saliva’ / (ʃaɹe ‘saliva’)	taŋtʰwi			
154b	spit (N)					twensi	twaiʧĩ	twaiʧĩ
155	tooth	t̥wa:		θwa	twa	θwa	θwa	θwa
156	gums	t̥apʰõ:		tapʰo / θapʰo	təpʰwoŋ	θəpʰu	θwəpuŋ	θwəpuŋ
157	chin	me:zeʔ		maiʔ	mɛiʔ	mei	ɔm̥ui	moi
158	beard	moʊsʰeɪm̥we:			məsimwi	məswi	məʧwi	məʧwi
159	to shave			ɹeiʔ	məsimwi ɹeiʔde	ɹekɹa	ɹeiʧa	(kʰwi twatɛ)
160	neck	lɛ:bĩ:		lãĩpʰɔ̃	laipʰəuŋ	leipʰa	loipa	loipʰa

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
161	shoulder	bakʰõ:		pakʰo	pakʰɔŋ	paukʰuŋ	pakʰuŋ	pakʰuŋ
162	back	(ʧɔ:gõ:)		nãũʔ	nauʔkɔŋ	naukuŋ	nokuŋ	naukuŋ
163	belly	wã:baɪʔ		wɛ̃	wan	we:	wai	wai
164	navel	ʧʰɛ:ʔ			ʃaʔ	ʃaʔ	kʰjaʔ	kʰjaʔ
165	heart	n̥alõ:		n̥alõũ	n̥əloŋ	naluŋ	(aθake)	anl̥uŋ
166	liver	ʔaṯe:		ʔaθe	əθɛ	aθɛ:	aθɛ	aθɛ
167	intestines	ʔu: ‘entrails’		ʔu	u	aʔu	oʔu	uʔu:
168	arm	lɛʔ		laʔ	laʔ	lamo	alaʔ	lamo
169	elbow	dadõ:zɪʔ		tɛ̃dãũ	taŋdəu	(kɛŋgau)	(alauʧwɛ) / (lauʧwɛ)	(laʧʰoiʔ)
170a	armpit	ʤãĩ		ʤãĩ				
170b	armpit			laʔkadi	laʔgədi	lakədi	lakədi / lagdi	lakədoi
171	palm	lɛpʰawa:		pʰawa	laʔpʰəwa	lawa	lauwa	lawa
172a	finger	lɛʧʰɔ̃:		laʔʧʰãũ	laʔʃau			
172b	finger					laɲu	laɲ̊o	laɲ̊o
173	finger nail	lɛṯe:		laʔθe ‘nail’	laʔθɛ	laθi	lauθɛ	laθɛ
174	leg	ʧʰe:dɔʊʔ ‘leg, foot’		kʰadauʔ	kʰɹitʰau	kʰɹi	akʰɹi	akʰi
175	thigh	pɔ̃:		pɔ	pau	pau	poŋθa	poŋθa
176	knee	du: / du:zɪʔ	tu:	du	du	dutsai	(pəʧwetu)	dugo
177	calf	ʧʰe:ḏalõ:			kʰɹidəlon	kaθəluŋ	θəluŋθa	kʰəluŋθa / kʰeluŋθa
178	shin	(ɲo:ṯaʧi:)			(kʰənəɹau)	(katsai) / (tsai)	(akʰɹi)	(kukʰuŋ)
179	heel	pʰanɔ̃:ʔ		pʰanau	pʰənauʔ	pʰana	kɔnauʔ	n̥aʔ
180	bone	ʔajo:		ʔaɹo	aɹu	aɹu	aɹo	aɹo / ɹo
181	joint	ʔasʰɪʔ / sʰɪʔ	ʔəsɪʔ		asaiʔ	atsai	aʧoiʔ	aʧoiʔ
182a	marrow	ʧʰĩzi		kʰɹɔ̃zi	kʰɹaŋsi			
182b	marrow					aɹusi	aɹoʧi	(aɹo an̥aʔ)
183	ribs	nã:jo:			nəŋɹu	neɹu	(ɹauɹo)	(ɹaŋ ʔaɹo)
184	meat, flesh	ʔaṯa:		ʔaθa	aθa	aθa	aθa	aθa

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185	fat	ʔasʰi:			asi	atsi	aʧʰi	aʧʰi
186	skin	ʔaje:bja: ‘skin (spherical)’ / ʔaje: ‘skin’		θaɹi 'hide(n)'	aɹibɹa	aɹi	aɹi	aɹi
187	blood	t̪we:		θwi	θwi	θwi	θwi	θwi
188	sweat	ʧʰwe:		ʧʰwi	ʃwi	ʃwi	kʰwi	kʰwiʧʃiɾɛ
189	pus	pji: t̪ɛ:na: ‘abscess’ / (ʔaje:ʤi: ‘pus’)		pɹe	pɹe	pɹɛ:	pɹɛ	pɹɛ
190a	excrement, feces	ʧʰe: / ʧʰi: / ʧĩ:	ʧʰi:	ʃi	ʃʰi		kʰi	kʰi
190b	excrement, feces	masĩ: ‘feces (impolite)’				məθwɛnθa		
191	urine	sʰi: ‘urine (impolite)’ / ʧĩ:ŋɛ: ‘urine (polite)’		θaɹe ‘urinate (n)’	təbɔʔɹe	ʃəɹɛ	səɹɛ / θəboɹɛ	θəɹɛ
	People							
192	man	jaʊʧa:		jãũʧa	jauʔʧa	jauʧa	jaukja	jaukja
193	woman	mẽɪmaʔ			mama	mama	mama	mima
194	person	lu:		lu	lupoku	lu	lu	lu
195	father	ʔapʰe: / pʰe:pʰe:		baba	baba	apʰa	apʰa	apʰa
196	mother	ʔame: / me:me:		ʔami / meme	ami	amei	ami	ami
197	to be old (person)	(ʔat̪ɛʧĩ:d̪ɔ: ‘(human) old’) / (ʔat̪ɛʔ ‘age’)		ʔo ‘old (human)’	ɔɹe	a̱ʔo	(wagɹima)	oʔo:
198	child	kʰale:		ʔabuʃe ‘infant’ / kaleʃe ‘boy’	əʃɛ	aʃjɛ	aʃjɛ	aʃjɛ
199a	son	t̪a:	t̪a:	θa	θa			
199b	son	jaʊʧa:le: ‘boy’		jãũʧaʃe ‘boy’		jauʧaʃɛ	jaukja	jaukjaʃjɛ
200	son-in-law	t̪amaʔ		θamɛʔ	θəmaʔ	θama	θəmaʔ	(abɛʃjɛθa)

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
201	husband	lĩ: ‘husband (very impolite)’ / (kʰĩbõ: ‘husband (polite)’)		lã	laŋ	laŋ	lau	la
202	wife	maja: ‘wife (very impolite)’		maja	məja	məja	mija	məja
203	widow	mosʰo:maʔ		masʰama	məsəmaʔ	mosoma / bosoma	matʃoma	matʃəma
204	elder brother (of F)	ʔako: / ko:ko:		ʔako ‘elder brother’	əko	akogɹi	(moŋgɹi)	(amou)
205	elder brother (of M)	ʔako: / ko:ko:		ʔako ‘elder brother’	əko	akogɹi	kogɹi	ako
206	elder sister (of F)	ʔamaʔ / mama		mama ‘elder sister’	emaʔ	mamagɹi	mɛgɹi	amɛgɹi
207	elder sister (of M)	ʔamaʔ / mama		mama ‘elder sister’	emaʔ	mamagɹi	mɛgɹi	amɛgɹi
208	younger brother (of F)	mɔ̃: / mɔ̃:le:		mãũ ‘(woman's) brother’ / (ɲi ‘younger brother’)	maŋʃe	(ɲiŋ)	moŋʃɛ	amoŋʃɛ
209	younger brother (of M)	ɲi:le: / ɲi:		ɲiʃe ‘younger brother (elder brother call)’ /ɲi ‘younger brother’	ɲi	ɲiŋ	(moŋʃɛ)	(akoʃʃɛ)
210	younger sister (of F)	ɲamaʔ / ɲi:maʔ		nama / ɲama ‘(woman's) younger sister’	ɲəmaʔ	ɲəma	(mimaʃɛ)	(amɛʃɛ)
211	younger sister (of M)	n̥amaʔ		n̥ama ‘(man's) sister’	ɲəmaʔ	ɲəma	(mimaʃɛ)	(amɛʃɛ)
212	friend	t̪aŋɛ:ʤĩ:			θəŋɛʃaŋ	θumeʃa	(apauθa) / (apauθəma)	(kʰaubwai)
213	name	na:mɛ:		n̥ame	nəme	namɛ	namɛ	n̥am̥ɛ
	Home							
214	village	jwa:		ɹwa	ɹwa	ɹwa	ɹwa	ɹwa

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
215	road	lã:		lɛ̃	lan	le:ma:	lai	lai
216	boat	l̥e:		lɔ̃	lau	lau	lo	lo
217	house	ʔẽɪ:		ʔẽĩ	eiŋ	eiŋ	iŋ	iŋ
218	door	daga:			taŋkʰa	tɛŋkʰawa	(laipʰo)	tɛŋkʰaboi
219a	roof	kʰãõmo:				eiŋkʰau	iŋkoŋ	iŋkʰo
219b	roof	kʰãõmo:		ʔam̥o	amo			
220	area under house	ʔeɪkʰã: ‘bedroom’			eiŋauʔ	iŋgɹau	iŋkʰjɛ	i:ʔauka
221	wall (house)	nã:jã:		(tɛ̃dãĩ)	nəŋɹəŋ	iŋnɛɹɛ	(iŋbo)	(tʰəɹai)
222	sleeping area	ʔeɪja: ‘bed’			eiʔɹa	eiɹa	eiɹa	oi̯a
223a	mat			pʰja	pʰja			
223b	mat					θabau	θaŋku	θabaʔ
224	pillow	gɔ̃õ ʔõ: / ʔõ:			gɔŋ oŋ	go uŋ	go uŋ	go uŋ
225	blanket	sɔ̃:		pasbo	pəsu	pəso	poʧuboi	pəʧwo
226	clothing				əweʔ	awe	awaiʔ	awaiʔ
227	to weave	jɛkã: 'loom'			ɹaʔde	ɹəke	awai ɹautɛ	awai ɹaʧwa
228	to dye	ʔajɔ̃: ‘color’		ʔaɹãũ ‘color’	əɹoŋ soɹe	ɹau suɹe	awai ɹoŋ tʰiɹɛ	awai ɹoŋ ʧuʧwa
229a	sarong (M)			taja ‘loincloth’	dəja	dəjoạ	dəja	doja
229b	sarong (M)	lõʤi: ‘sarong’					loŋgi	
230	sarong (F)	tʰamẽ: / tʰami:			tʰəmiŋ	tʰəbeiŋ	tʰabi	tʰabwi
231	trousers	bɔ̃:bi:			bauŋbi	bopʰi	boŋpʰɹi	boŋpʰi
232	to sew	ʧʰoʊʔ ‘to sew, to bind’		kʰɹouʔ	kʰɹɔʔde	kɹote	awai kɹutɛ	kɹoʧwa
233	needle	ʔaʔ		ʔɛʔ	ɛiʔ	e:	ãiʔ	ãiʔ
234	comb	bi:	pi:	pʰɹi ‘to comb’	gauŋpʰi	gopʰɹi	gopʰɹi	goŋpʰɹi
235	ring	lɛsʊʔ ‘finger ring’		laʔswɛʔ	laswɛʔ	latswɛ	lauʧwɛʔ	laʧwaiʔ
236	pot (cooking)	ʔo:		ʔɔ̃ 'basin'	oʔ	o:	o:	o:
237	mortar	sʰõ: / ŋajoʊsʰõ:		sʰõũ	ŋəɹəusoŋ	suŋʃɛ	(duŋ) / (tɛduŋ)	(məɹo kɹoiʧwa)
238	pestle	ʤabweʔ		ʧapwɛʔ	ʧauθa	ʧamuŋʃjɛ	(duŋɹo) / (duŋɹu)	

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
239	spoon	zõ:		zwɛ̃	zweŋ	zwɛ:	ʤwai	ʤwai
240	plate	(bagã: ‘cup, plate, dish’)			(hauŋsa)	laube	loŋbai	loŋbai
241	firewood			tʰɔ̃	tʰaŋ	tʰaŋ	tʰau	tʰa
242	fire	mi:		mi	mi	meiŋ	miŋ	miŋ
243a	to burn something	mi:ʃo:d̪i:		ʃo ‘to burn’				
243b	to burn something	lɔ̃d̪i: ‘to burn’			(mi θaiʔde)	meiŋ lokʰɹaŋ	miŋ loɹɛ	(miŋ poʧwa)
244	to extinguish	(mi:n̥ẽɪd̪i:)			mi θiɹe	meiŋ θɛkʰɹaŋ	miŋ tsa	miŋ θaiʧwa
245	ashes	pja:		pɹa	pɹa	pɹa	pɹa	pɹa
246	smoke	mi:go: / kʰo:		makʰo	məkʰu	məkʰo	mukʰo	mukʰo
247	drum	bõʊ:		(pɛ̃θa)	boŋ	boŋ	(ʤi)	
248	gong	mɔ̃:		(sʰãĩwãĩ ‘gong’)	mau	mo:	(tunkoŋ)	(θaimo)
249	bow				l̥e	le:	(m̥ɹa)	l̥ɛ
250	crossbow	du:le:		lãũlekwaʔ / (tʰãĩpʰu)	dul̥e	le:	(m̥ɹa)	
251	arrow	m̥ja:		m̥ja	m̥ɹa	mja	m̥ɹaʤu	(l̥ɛʤu)
252	spear	l̥ã:		l̥ɛ̃	l̥aŋ	lɛ:	lai	(θaiŋʤu)
253	knife	da:	ta:	da	da	dəmjau	daʃjɛ	daʃjɛ
	Verbs							
254	to hear	ʧa:d̪i:		kɹa	kɹaɹe	kɹaɹe	na kɹaɹe	kɹaɹe
255	to listen	na:tʰɔ̃d̪i:		natʰãũ	natʰauɹe	natʰoɹe	natʰombo nalibojuɹe	(kɹaʧwa)
256	to be smelly	nãd̪i: ‘to smell offensively’		nɛ̃ ‘stink’	naŋɹe	nɛɹe	anai ɹaɹe	aʧʰo naje
257	to smell (something)	(ʔanãtʰwɛt̪i:)			(anaŋkʰaŋɹe)	(nɛ:ɹe)	(anai juɹe)	(naiŋʧwa)
258	to see	mjĩ:d̪i:			mɹaŋɹe	mɹauɹe ‘to look at’	mɹauɹe	mɹaŋʧwa
259	to look at	ʧĩ:di:			kɹiʔɹe	kɹɛɹe ‘to see’	(mɹauŋbo sibojuɹe)	

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260	to weep	ŋo:d̪i:		ŋo ‘to cry’ / (ʃaiʔ ‘to sob’) / (ʔẽĩle ‘to weep’)	ŋuɹe	muɹe	(kjoʔ)	moɹe
261	to eat	sa:d̪i:		sa	sʰaɹe	tsaɹe / saɹe	ʧaɹe	ʧaɹe
262	to swallow	mjo:ʧʰa:d̪i:		mjo	mjoʃaʔɹe	mjuɹe	mjuɹe	mjuʧwa
263a	to be hungry	baɪsʰa:d̪ɔ:		sʰa	wansaɹe			
263b	to be hungry					mwɛte	mwaite	mwaite
264a	to be full	baɪpje:bi:		pɹe ‘full’			pɹɛbja	
264b	to be full				waŋtaŋɹe	waːɹe		wabjaʔ
265	to be thirsty	(je: sʰa:d̪ɔ: ’thirsty’)		ŋɛʔ	ɹi ŋaʔde	ɹi ŋɛte	ɹi mwaite	ɹi mwaite
266	to drink	t̪aʊt̪i:		θauʔ	θauʔde	ɹi θaute	ɹi saute	ɹi θaute
267a	to be drunk			jaiʔ		jaite	joite	joite
267b	to be drunk	ʔajɛ muːd̪i:			muɹe			
268	to vomit	ʔãːd̪i:		ʔɛ̃	aŋɹe	ɛːɹe	aiɹe	aiŋʧwa
269a	to spit	tʰweːd̪i:		tʰwi	twaŋtʰwi tʰuɹe			
269b	to spit					twentsi baite	twaiʧi boite	twaiʧi boite
270	to cough	ʧʰãðsʰoːd̪i:		kʰɹɔ̃	kʰɹauŋsɔɹe	kʰausuɹe	kɹoŋʧuɹe	kɹoŋʧuɹe
271	to sneeze	n̥a: ʧʰeːd̪i:		ʃi	ʃiɹe	ʧʰiɹe	kʰiɹe	kʰiʧwa
272	to yawn	t̪ãːd̪i:		θɛ̃	wa θaŋɹe	θeɹe	wawa θaiɹe	aθaiŋaɹe
273	to breathe	ʔat̪ɛʃuːd̪i:		ʃu	əθaʃuɹe	(litʰote)	(aθa hwaite)	(aθaŋantʃwa)
274	to blow	m̥oʊt̪i:		m̥ouʔ	mi m̥oθe	moute	m̥oute	m̥outʃwa
275	to whistle	leːʧʰõd̪i:		liʧʰwɛ̃	liʃwaŋɹe	liʃwɛɹe	(n̥u pjuɹe)	(liṉoje)
276	to suck (milk)	soːd̪i:		souʔ	nu suɹe	tsoute	ʧoute	ʧoutʃwa
277	to lick	jɛt̪i ‘to lick (speaking)’		ja	jaθe	jate	jaute	
278	to smile	pjõd̪i:			pɹɔŋɹe	pjuŋɹe	(ɹɛɹe)	(ɹɛɹe)
279	to laugh	jiːd̪iː/ jɛːmɔːd̪i:		ɹe ‘to laugh’ / ha ‘to laugh at’	ɹiɹe	ɹɛːɹe	hawa ɹɛɹe	ɹɛgɹaite

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
280	to speak	pjɔ:d̪i: ‘to speak, to say’		pɹo	səga pɹɔɹe	saga pɹoɹe	təga pɹoɹe	səga pɹoɹe
281	to tell about			pɹa ‘to show’	pɹɔpɹaʔɹe	pɹopɹaɹe	waitu pɹoɹe	(ɹətʰunatʰoɹe)
282	to shout	ʔɔ:d̪i:			ɔɹe	ɔɹe	(kiɹe)	ɔɹe
283a	to lie, fib	lẽɪ:d̪i: ‘to twist, to cheat’		(n̥wɛ ‘to d̥eceive’)				liŋʧwa
283b	to lie, fib				wapɹɔɹe	muθapɹoɹe	muθapɹoɹe	
284	to sing	t̪aʧʰĩ:sʰo:d̪i: / sʰo:d̪i:		sʰo ‘to sing’ / θẽĩkʰɹ̃ ‘song’	θekɹaŋsoɹe	tikɹaŋsuɹe	eiʧuɹe	eʧoɹe
285	to think	sĩzad̪i: ‘to think of’			saiŋzaɹe	seizaɹe	(twote)	ʧoiŋʤaʧwa
286	to know	t̪id̪i:		θi	θiɹe	θiɹe	θikjaɹe	θipʰo
287	to forget	me:d̪i:			miʔɹe	miŋlaɹe	miŋbolaɹe	miŋlipʰo
288	to choose	jwe:ʧʰɛd̪i:		ɹwi	ɹwiʃɛɹe	ɹwiʃɛɹe	(θibujuɹe)	ɹwiʧwa
289	to love	ʧʰɪt̪i:		ʧʰãĩʔ	ʃaiʔte	ʃaite	kʰjoite	kʰjoiɡɹaite
290	to hate	mõ:d̪i:		mõũ	moŋɹe	moŋɹe	(ɹwaiɹe)	(ɹwaiɹe)
291	to be ashamed	ʃɛd̪ɔ: ‘shy’		ɹ̥a ‘shy’	ɹ̥ade	ɹate	aɹ̥aukjaɹe	ɹ̥ate
292	to wait	sɔ̃d̪i:		sau	sɔŋɹe	(θaŋniɹe)	ʧoŋboniɹe	ʧaɹe
293	to count			ɹi	ɹitɔɹe	(twate)	ɹwiɹe	ɹwiʧwa
294	to be afraid	ʧaʊjõd̪i:		kʰɹauʔ ‘to terrify’	kɹauʔte	kɹaute	kɹaute	kɹaute
295a	to be angry	seɪsʰo:d̪ɔ: ‘angry’		seiʔto	sisɔɹe			
295b	to be angry					mepaɹe	maipaɹe	maipaɹe
296	to sleep	ʔeɪt̪i:		ʔẽĩʔ	eiʔte	eite	iʔte	(oipʰo)
297a	to snore			m̥wɛ̃		mweɹe	nakʰomwɛɹe	nakʰomɹeɹe
297b	to snore	haʊt̪i:			hauʔte			
298	to dream	ʔeɪmɛmɛt̪i:		ʔẽĩm̥aʔ	eiŋmamade	eiŋmamate / iŋmamatɛ	iŋmamɹaɹe	iŋmamɹaɹe
299	to get up	no:tʰa:d̪i: ‘to get up from bed’		tʰa ‘to stand up’	eiʔɹagaʔtʰaɹe	tʰaɹe	iko tʰaɹe	uɹ̥agatʰa
300	to be hurt	na:ʧĩ:d̪o: ‘painful’		ʔana ‘wound’ / na ‘pain’	naɹe	naɹe	naɹe	naʧwa

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
301	medicine	sʰe:	sa:	sʰi	si	tsi:	ʧi	ʧi
302	to be itchy			ja ‘itchy’	jaɹe	jaɹe	jaɹe	jaɹe
303	to scratch (self)	(koʊ̯ti:)		kʰɹɛʔ ‘to scratch’ / (kouʔ ‘to scratch’)	kʰɹaite	kɹaite	kɹoite	(pɹaute)
304	to shiver			tõũ ‘to tremble’	toŋɹe	tuŋɹe	tuŋɹe	tuŋɹe
305a	to die			θi	θiɹe	θiɹe	θibolaɹe	θilakaɹe
305b	to die	sʰõ:d̯i: ‘to lose, to die’		sʰo				
306a	ghost	tasʰe: / t̯ajɛ:		sʰasʰi	təsi / θəɹe			
306b	ghost	wẽŋ̃ĩ: ‘spirit’				wuŋe	(n̥aiʔ)	(naiʔ)
307	to sit	tʰãĩd̯i:		tʰãĩ	tʰaiɹe	tʰai	tʰoi	tʰoiɹe
308a	to stand (standing)	jɛʔ ‘to stand upright, to stop’			ɹaʔde		ɹaipʰo	ɹaite
308b	to stand (standing)	tʰa:d̯i: ‘to get up, to stand’		tʰa ‘to stand up’		tʰa		
309	to kneel	du:tʰaʊ̯ti:		dutʰauʔ	dutʰauʔde	dutʰaulotʰai	(poʧoitutʰopotʰoiŋ)	dugoŋ̥atʰoiɹe
310a	to walk	læ̃:ʃaʊ̯ti:		ʃauʔ / lɛ̃ʧʰau	laŋʃauʔde			
310b	to walk	læ̃:ʃaʊ̯ti:		lɛ̃ʧʰau	laŋʃauʔde	la	la	laʧwa
311	to crawl	twa:t̯wa:d̯i:		twa	twabigelaɹe	(dutʰaulola)	twabolaɹe	twaʧwa
312	to go	(t̯wa:d̯i:)		la	laɹe	la	laɹe	lapʰo
313	to come	la:d̯i:		la	laɹe	laʔ	le / laɹe	laʧwa
314	to return	pjã:la:d̯i:			pɹailaɹe	pɹɛ	pɹaiŋbolaɹe	pɹaiŋʧwa
315	to run	pje:d̯i:		bɹi	bɹiɹe	bɹiɹe	bɹiɹe	bɹiɹe
316	to ascend	tɛt̯i: ‘to climb’		taʔ / (l̥wɛ̃)	tate	atʰa tate	atʰaumo tate / tʰaumo tate	atʰama taʧwa
317	to descend			sʰɔ̃ ‘down’	saŋɹe	tsaŋɹe	(auto sate)	ʧʰaŋʧwa
318	to enter	wĩd̯i:		wɔ̃	waŋɹe	wõːɹe	wouɹe	waŋʧwa
319a	to go out	tʰwɛʔ ‘to go or come out, to rise’			tʰwaʔde	tʰwote	tʰwote	
319b	to go out						apɹaumolaɹe	pɹaumalapʰo

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
320	to push	to:		to	toɹe	tuːɹe	tuɹe	toɹe
321a	to pull	sʰwɛːd̪i:		sʰwe ‘to lead (by hand)’	sweɹe			
321b	to pull	ŋĩd̪i: ‘to pull, to draw’				ŋaŋɹe	ŋauɹe	ŋaŋʧwa
322	to kick	(kãd̪i:)			ʧauʔde	ʧaute	(tʰamwelabute)	(doo̯abote)
323	to throw	pjɪt̪i:		paiʔ / (we)	paiʔlaiʔde	baite	boite	boite / boiʧwa
324	to fall	ʧaːd̪i: ‘to fall, to drop’		ʧa ‘to drop’	ʧaɹe	ʧalaɹe	atʰaka otʰukjaɹe	atʰaga kjaʧwa
325	to swim	je: kuːd̪i:		ɹi ku	ɹigukuɹe	ɹəgunkɛte	ɹi kuɹe	ɹi kuɹe
326a	to float	bɔːlɔːpɔːd̪i:		pʰɔ	ɹitʰaʔma palapɔɹe			
326b	to float			mjɔ		mjuɹe		ɹima mjuɹe
327a	to submerge	mjoʊt̪i: ‘to make something sink’		mɹouʔ ‘to get drowned’	ɹi mɹuʔlakʰaɹe	mɹute	noite	ɹi noite
327b	to submerge	nɪʔ ‘to sink, to drown’		neiʔ ‘to get drowned’			noite	ɹi noite
328	to flow	je: siːd̪i:			ɹi siɹe	ɹi siɹe	(ɹi laɹe)	(ɹi laɹe)
329	to give	peːd̪i:		pi	piɹe	piɹe	piɹe	piʧwa
330	to tie	ʧʰiːd̪i:		ʧʰãĩ	kɹuneʔ ʃaiŋɹe	ʃʰjaiɹe	(kʰeŋgotaɹe)	kʰjoiŋʧwa
331	to wipe				tɔʔsweɹe	θoute	twaite	(pwaiploite)
332a	to rub, scrub	put̪i:		pwɛʔ ‘to rub’	pweʔ θaide			
332b	to rub, scrub			θouʔ ‘to scrub’	pweʔ θaide	tuɹe	atiŋtuɹe	
333	to wash	sʰeːʧɔːd̪i:			laʔsiɹe	lasiɹe	alau ʧĩɹe	ala ʧĩʧwa
334a	to wash (clothes)	ʃɔːpʰʊt̪i:						
334b	to wash (clothes)			pʰwɛʔ	awɛʔ pʰwɛʔte	awei pʰwɛte / awei̯ ɸwɛte	awai pʰwaite	awai pʰwaite
335	to bathe	je: ʧʰoːd̪i:		ɹi ʧʰo	ɹi ʃoɹe	ɹi ʃuɹe	ɹi kʰjuɹe	ɹi kʰjuɹe
336a	to hit, beat	jaɪt̪i: 'to hit/strike with hand'		ɹaiʔ 'to hit'				
336b	to hit, beat	(taɪʧaːd̪i:) ‘to hit’		(ti) ‘to beat’	θaʔde	θɛʔte	(boute)	(naɹe)
337a	to split	kʰwɛːd̪i:		kʰwɛʔ ‘to slash’	kʰwɛpəlaiʔde		(naipe pwaiɹe)	kʰɹai ləkaɹe

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
337b	to split			sãĩ ‘to mince’		seite		
338	to slice	l̥i:d̪i: ‘to cut into small pieces’		l̥i / (n̥a)	l̥ɪe	lɪe	(ʃaute)	(kwɛ ləkaɪe) / (kwɛʧwa)
339	to cut hair	zabĩ: (n̥jat̪i:)		pʰɪɛʔ	saŋbɔŋ (kaiʔde)	pʰɪete	ʧaibɔŋ (pwaite)	ʧaiba (ɹoite)
340	to stab			tʰo	tʰuθaiʔbəlaiʔde	da tʰuɹe	daʃjɛ tʰoɹe	daʃjɛ tʰoɹe
341	to plant			seiʔ	saiʔte	asi saite	aʧi ʧwaite	aʧi ʧoipʰo
342	to dig	tu:		tu	tuɹe	tuɹe	twɔŋ tuɹe	twɔŋ tupʰo
343	to bury	m̥joʊn̥ãd̪i: ‘to inter’		m̥ɹouʔ	m̥ɹɔʔpəlaiʔde	mɹote	(θoŋkʰeŋ kʰjaɹe)	nebɹɔŋ m̥ɹɔʔpʰo
344	to work	ʔaloʊʔ ‘work, job’			əloʔloʔde	alulote	alolote	lo:lopʰo
345	to play	ɡaza:d̪i:		ɡazɛʔ	kəzade	kəzɛte	kəzaipʰoniɹe	kəzaipʰo
346	to dance	ka:d̪i:		ka	kaʔɹe	kaɹe	kaɹe	kapʰo
347	to shoot	pjɪt̪i:		peiʔ	paiʔte	θənebaite	boliboite	θan̥aiboite
348	to hunt	(tʰɔ̃pʰã:d̪i: ‘to trap (animal)’)			(amelaiʔde)	twalɛɹe	tolɪe	tolepʰo
349	to kill	t̪at̪i:		θɛʔ	θəʔbəlaiʔde	θɛplaite	θaibloite	boploite
350	to fight	jæ̃pʰjɪt̪i:		ɹɛ̃pʰɹɛʔ ‘to quarrel’	ɹaŋpʰɹaiʔde	ɹɛ̃pʰɹaite	bukwaite	bokɹaite
351	to buy	wɛ:d̪i:		we	wɛɹe	w̥iɹe	w̥eɹe	weʧwa
352	to sell	jɔ̃d̪i:		ɹãũ	ɹauŋɹe	ɹauɹe	ɹɔŋɹe	ɹɔŋʧwa
353	to exchange			pʰja ‘to change money’	pʰakaiʔde	pʰaɹe	(kl̥ibojuɹe)	pʰabloite
354	to pay				əkʰaʔ piɹe	akʰaʔ	(teŋga) piɹe	(teŋgja) piʧwa / (teŋgɹa) piʧwa
355	to steal			kʰo	kʰuɹe	kʰuɹe	kʰobojuɹe	kʰoʧwa
356	to hide(self)	põ:d̪i: ‘to hide from someone’ / pʰõd̪i: ‘to cover, to conceal or hide something’		pʰo ‘to cover’	poŋniɹe			
356b	to hide(self)			w̥aʔ ‘to hide’		wõte	(ʃuɹe)	w̥atapʰo

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
	Numbers							
357	one	tɪʔ	tɪʔ	tiʔ	taiʔ	tai	taiʔ	toiʔ
358	two	n̥ɪʔ		n̥aiʔ	n̥aiʔ	nai	n̥aiʔ	n̥oiʔ
359	three	ʥõ:		θõũ	θɔŋ	θuŋ	θuŋ	θuŋ
360	four	le:		le	le	le:	le	le
361	five	ŋa:		ŋa	ŋa	ŋa:	ŋa	ŋa
362	six	ʧʰɔʔ		kʰɹauʔ	kʰɹauʔ	kʰɹau	kɹauʔ	kɹauʔ
363	seven	kʰõnɪʔ		kʰu3 n̥aiʔ	kʰəɬ naiʔ	kʰənai	kʰənaiʔ	kʰənoiʔ
364	eight	ʃiʔ	ʃiʔ		ʃaiʔ	ʃai	ʃaʔ	ʃoiʔ
365	nine	ko:		ko	ko	ko:	ko	ko
366	ten	sʰɛ: / tasʰɛ:		sʰe	təse	ʦe	ʧe	təʧe
367	twenty	n̥asʰɛ:			nəse	nəʦe	n̥aiʧe	n̥oiʧe
368	hundred	ja:		taɹa / ɹa	təɹa	təɹa	təɹa	təɹa
369	one thousand	tʰõ:		tatʰõ / tʰõ	tətʰauʔ	tətʰau	tətʰoŋ	tətʰau
370	to be many	mja:ʥɔ:		mja ‘a lot’	əmjagɹi	amja	ami agɹi	ami agɹi
371	all	ʔa:lõ:		ʔalõũ	aloŋ	aluŋ	aluŋ	(akuθo)
372	some				(təʃjoʔ)	(təkʰunuku)	(təθe)	(təpje)
373	to be few	nɛ:ʥɔ:			neɹe	ane	anoi	aneʃje
374	half	tawɛʔ			təwaʔ	təwa:	(n̥aipotopo)	(təboi)
	Dimensions							
375	to be big	ʧi:ʥɔ:		kɹi	kɹiɹe / əgɹitaŋ	agɹi	agɹi	gɹi
376	to be small	ŋɛ:ʥɔ:		ʔaŋeʃe ‘little’ / ŋe	aŋeʃe	aʃe	aʃɛ	aʃɛ
377	to be long	ʃe:ʥɔ: ‘(human) tall’		ɻe ‘long’	əɻegɹi	aɹe	aɻi	aɻi
378	to be short	to:ʥɔ: ‘short (in time, length or temper)’		to ‘short (length)’	atoʃe	atʰu	ato	atoʃɛ
379	to be tall	mjĭʥɔ: ‘(thing) high’			amɹjaŋgɹi	amɹaŋ	(ami aɻigɹi)	(aɻe) / (aɻegɹi)

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
380a	to be short	nɛ̃ɪ:d̪ɔ: ‘(thing) low’			aneiŋʃe	aneiŋ	(atoʃɛ)	aniŋ
380b	to be short	pu:d̪ɔ: ‘(human) low (short)’		pu ‘short (height)’				
381	to be thick	tʰu:d̪ɔ: ‘(thing) thick’		tʰu	atʰugɹi	tətʰu	θətʰo	(waigɹi)
382	to be thin	pa:d̪ɔ: ‘(thing) thin’		pa ‘thin (thing)’ / (l̥wa ‘thin (thing)’)	pabaʃe	paba:	paba	(aɲeʃɛ)
383a	to be fat	wa:d̪ɔ: ‘(man) fat’		wa	waɹe	waːɹe		
383b	to be fat						θəduŋ	lo təduŋ
384a	to be skinny	pɛ̃:ɪd̪ɔ: ‘(woman) thin’		pɛ̃ĩ ‘thin (human)’	pəbeiŋʃe			
384b	to be skinny					kɹuŋɹe	kɹuŋɹe	kəgɹuŋʃɛ
385	to be wide	ʧɛ:d̪ɔ: ‘wide’		ʧe	aʧegɹi	aʧi:	(al̥i)	(lai al̥e) / (al̥e agɹi)
386	to be narrow	ʧĩd̪ɔ:		ʧãĩ	aʧeiŋʃe	ʧjɛte	(amouŋʃɛ)	(lai aʃɛ)
387	to be deep	nɛd̪ɔ:		na 'deep'	anaʔgɹi	ana:	ana	ana
388	to be shallow	tɛ̃ɪ:d̪ɔ: ‘shallow’			əteiŋʃe	atʰein	atiŋ	(ana məhaʔ)
389a	to be round	lõ:			loŋniɹe		luŋpjaŋbo	(wəwai) pjaɹo
389b	to be round	wãĩd̪ɔ: ‘round’		wãĩ ‘round’		waite		wəwai pjaɹo
390	to be full	pje:d̪ɔ:		pɹe ‘full’	pɹiniɹe	abɹe	abɹe	abɹe
391	right side	ɲa:bɛ:ʔ ‘right (speaking)’ / bɛ:ʔ ‘direction, side’		ɲapʰa ‘right side’	ɲapʰaʔ	ɲapʰa	ɲabɹauka	ɲapʰa ‘left side’
392	left side	bɛ:bɛʔ ‘left (speaking)’		bepʰa ‘left side’	bepʰaʔ	bɛpʰa	bɛbɹauka	bepʰa ‘right side’
393	to be straight	pʰjõ:d̪ɔ: ‘handsome’		pʰɹãũ ‘straight’	pɹauŋniɹe	(tade:)	pəbɹaŋ	pəbɹa
394	to be far	we:d̪ɔ: ‘far’		wi	awɛgɹi	awi:	awi	awi
395	to be near	(ni:d̪ɔ: ‘near’)		ʔapaʃe	əpaʃe	apa	apa	apaʃɛ

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
396a	this	di: / di:ha:						deʃa
396b	this				eʃaŋ	eʃã	(eiθu)	
397	that	(ho:)			tʰuʃaŋ	tʰuʃã	(jauθu)	tʰweʃa
	Appearance							
398	black	ʔamɛ: jõ: ‘black (speaking)’ / (ʔanɛ jõ: ‘black (writing)’)		ʔame	amɛ	amɛ:	məme	məme
399	white	ʔapʰju jõ:		ʔapʰɹu	apʰɹu ɹɔŋ	apʰɹu	apʰɹu	(pəpʰwi)
400	red	ʔani: jõ:		ni	ani ɹɔŋ	aneiŋ	ani	(ɹəɹe)
401	green	ʔasẽɪ: jõ:		ʔasẽĩ	əsiŋ ɹɔŋ	atseiŋ	(ɲuɲo)	(aɲo)
402	yellow	ʔawa: jõ:		ʔawa / wa	əwa ɹɔŋ	awa:	awa	awa
403	to be dirty	ɲɪpaḏɔ:		ɲeiʔpɛʔ	ɲaiʔpaiʔde	ɲaipɛte	awai ɲɪʔ	(awai ɣʰo)
404	to be new	ɻɻḏɔ: ‘(thing) new’			əθaiʔ	aθai	aθoiʔ	awai θoiʔ
405	to be old	hõ:ḏɔ:		hãũ ‘old (thing)’	əhauʔ	ahau	ahau	wai hau
406	to be dark	m̥õ:ḏɔ: ‘dark’		m̥ãĩ ‘gloomy’ / m̥ãũ ‘to get dark’	maiʔniɹe	amai	məmoiŋʤai / məm̥oiŋʤai	ɲi ma
407	to shine	lĩḏɔ: ‘bright’			laŋniɹe	alaŋ	ləlaŋ	(niŋ ɣweɹe)
408	to be the same			tu ‘similar’	ətudu	(tʰəkʰude)	(təmju)	(ʤale)
	Taste/Feel							
409	to be sweet	ɣʰo:ḏɔ:		ɣʰo ‘sweet’	ʃuniɹe	aʃou	akʰjo	kʰjoɹe
410	to be sour	ɣʰĩ:ḏɔ:		ɣʰãĩ	ʃaiʔniɹe	aʃjai	kʰjoiɹe	kʰjoiɹe
411	to be bitter	kʰa:ḏɔ:		kʰa	kʰaniɹe	akʰa	kʰaɹe	kʰaɹe
412	to be spicy	saḏɔ:		sɛʔ ‘to taste hot’	sade	asɛʔ	zaite	ʃaite
413	to be rotten	poʊḏɔ: ‘(animal, fruit) rotten’		pouʔ / (θo ‘to spoil’)	pɔʔniɹe	apouʔ / apou	apouʔ	apouʔ
414	to be swollen	jã: ‘slightly swollen’		ɹõ	ɹɔŋniɹe	ɹauɹe	ɹaiɹe	akʰi ɹaiɹe
415a	to be dry	ɣʰɔʔ			kʰɹɔʔniɹe	kʰɹaute		akʰɹauʔ
415b	to be dry	tweʔ 'dry'		θwi ‘to get dry’			θəθwi	

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
416	to be wet	so:ʃwɛ:d̪ɔ: ‘wet’		swɛʔ ‘to get wet’	sweniɹe / suniɹe	aswe:	aʧwa	aʧwai
417a	to be sharp	tʰɛd̪ɔ: ‘sharp’		(ʧwɛ̃) ‘to sharpen’ / (mɹiʔ ‘sharp’)	tʰaniɹe			
417b	to be sharp					pɹɛte	pɹaite kɔŋgɔŋ	pɹaite
418a	to be blunt	tõ:d̪ɔ: ‘stupid, blunt’		tõũ ‘dull’	toŋniɹe			
418b	to be blunt					məpɹe	mapɹai	mapɹai
419	to be heavy	le:d̪ɔ:		li	əligɹi	ali:	ləli	liɹe
420	to be light	pɔ:d̪ɔ:			poboʃe	pəbwa	pəbo	(məli)
421a	to be hard	ma:d̪ɔ: (material) hard’ / ʔama: ‘anything hard’		ma	maniɹe			
421b	to be hard					(ʤəʤe)	kəgjeŋ	kəgjai
422a	to be soft	pjɔ:pjõ:d̪ɔ: ‘soft, flexible, gentle’			pəpjɔʔʃe			pəbe
422b	to be soft	ɲĩ:t̪a:d̪i: ‘soft, gentle’ / (nuɲãd̪ɔ:)		(nu) ‘tender’		ɲəɲe	ɲəɲe	
423	to be smooth	ʧʰɔ:moʊd̪ɔ: ‘smooth’		ʃɔ	ʃoniɹe	ʃəʃoa / ʃəʃwa	(ɲiɲi)	(lai ako)
424	to be rough	(ʧã:tã:d̪ɔ:) ‘rough, violent’			(kəgɹaŋgɹi)	(ʃəʃe)	(kətogəɹo)	(lai məko)
Other Qualities								
425	to be fast	(ljĩ:ljĩ: mjã:mjã: ‘to be swift, to be fast, to be quick’)		jõ ‘quick’	(kəgauŋ mɹeɹe)	aja:jaŋ	(apɹauŋ)	aja ajaŋ
426a	to be slow	n̥e:d̪ɔ:		n̥e ‘sluggish’	kəgauŋ n̥eɹe			
426b	to be slow					aθa:θa	aθe	aθase aθase
427	to be strong	ʔa:ʃi:d̪ɔ: ‘strong’		ʔahẽĩ ‘force’	(akɹiɹe)	ahiɹe	(apɹoite)	ahiʧwa
428	to be weak	ʔa:nɛ:d̪ɔ: ‘weak’		nõũ 'to feel weak and tired'	anɛɹe	anɛɹe	ɲoɹe	ɲəɲaiʔ

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
429	to be tired	ŋaɪd̪ɔ: ‘to feel sleepy, to nod (in drowsiness)’		ɲãũ ‘to be tired’	ɲauŋɹe	ɲauɹe	ɲuŋɹe	ɲaiɹe
430	to be ill	pʰja:na:d̪ɔ: ‘to be sick, to be ill’			neməgauŋ pʰɹaiʔde	nimakou pʰɹate	[ɹoga]	(kʰaitʰaməko)
431	to be blind	kæ̃d̪ɔ:		kɛ̃ ‘blind’	mjaʔsiʔ kaŋneɹe	kɛ̃ɹe	akai	(mjaʧi məmɹa)
432	to be deaf	na:pĩd̪ɔ:		(nabɔ̃) ‘deaf’	napaŋ niɹe	napanɹe	napaŋ	napaɹe
433	to be bald	pjɔ̃: ‘to shine, bald, bare’			nəpʰu pjɔŋɹe	(teiʧan)	(goŋkʰja)	(ʧaibɔmhi)
434	to be good	kɔ̃:d̪ɔ:		gãũ	kauŋɹe	akau	akouŋ	kɔɹe
435a	to be bad	sʰo:d̪ɔ: ‘bad’		sʰo ‘bad’			(apja)	
435b	to be bad				kauŋɹe	məkau		məkɔ
436	to be correct	m̥ã:d̪ɔ: ‘to hit’			m̥aŋɹe	mɛɹe	(aθa)	(kʰjaɹe)
437	to be wrong	m̥a:		m̥a	m̥aɹe	maɹe	ama	(məkɔŋswa) / (məkɔŋʧwa)
Miscellaneous								
438	when (past)	(bɛ:dɔ:lɛ:) / (bɛ:ʔaʧʰɛ̃ɪlɛ:)		sakʰa	zakʰa gaʔle	zakʰa	ʤakʰa	ʤakʰale
439	when (future)	(bɛ:dɔ:lɛ:) / (bɛ:ʔaʧʰɛ̃ɪlɛ:)		sakʰa	zakʰa pʰɹaiʔlapʰuʔle	zakʰa	ʤakʰa	ʤakʰale
440	where	(bɛ:m̥a:lɛ:)		saṃa	zaneɹamale	zama	ʤama	ʤamale
441	who	bɛ:d̪u:lɛ:		ʔaθu	za atʰule	aθule	aθuɹoŋ	aθule
442	what	ba:lɛ:		za	zale	zale	ʤale	ʤale
443	how many	bɛ:n̥ɪʔ			luza n̥iauʔle	za niaule	n̥aijoʔ	(m̥jai jaule)
444a	I	ŋa:			ŋa	ŋa	ŋa	ŋa
444b	I			ʔaʧwɛ̃ ‘I (female)’ / ʧwɛ̃dɔ ‘I (male)’			akjwe	
445	you (S)	t̪ĩ: ‘you (general, formal)’		(nã)	(maŋ)	θaŋ	(koubauŋ)	(kouba)
446	he, she	t̪u: ‘he’		θu ‘he’	jaŋθu	jaŋθu	(jaŋlu)	(twe)θo
447	we (pl)	ŋa:tʰoʔ		ŋaɹo	ŋaɹoʔ	ŋaɹoʔ	ŋaɹoʔ	ŋəɹoʔ

No.	Gloss	Burmese - BT	Burmese - BC	Rakhine - RT	Rakhine -RS	Rakhine - RB	Marma - M1	Marma - M2
448	you (pl)	ʇ̈doʔ ‘you (general, formal)’		(nãɹo)	(maɲɹoʔ)	θaɲɹoʔ	(koubauɲɹoʔ)	(koubaɹoʔ)
449	they	ʇ̈u:doʔ ‘they (male; animal)’ / ʇ̈u:ma:doʔ ‘they (female)’			θuɹoʔ	jaɲθuɹoʔ	[unaɹa]	(twe)θoɹoʔ
450	to take	(ja:ʃi:ɖ̈i:) ‘to receive, to take’			juɹe	ju:	jupʰo	joutʃwa
451	to put, place	tʰa:ɖ̈i:		tʰe ‘to put in’	tʰaɹe	tʰa	tʰaɹe	tʰatʃwa
452	to be lost	pʰjaʊpjɪʇ̈i: ‘to make lost’		pjauʔ ‘to disappear’	pjauʔləkʰaɹe	pjaute	pjauɹe	pjauləkʰaɹe
453a	to bend	kwe:ɖ̈i:			koŋniɹe	kʰauʃukʰɹa	kʰaute	kʰaulaʔ
453b	to bend	ɲʊ̥:ʔ ‘to bend’		ɲweʔ				
454	to lift	pwe:ʔ ‘to lift, to carry’/ (ma:ɖ̈i:)		(ɹð)	paɲɹe	pauɲta	(n̥aɹe)	(kwentaɹe)
455a	to do, make	pju:loʊʇ̈i:			pɹɔʔloʔde			pjaŋʧwa
455b	to do, make	loʊʇ̈i: ‘to do, to work’			pɹɔʔloʔde	loute	loute	
456a	don't do it						məpjaŋge	məpjaŋge
456b	don't do it				məlɔʔkʰeʔ	məloukʰɛ		
457	to be difficult	kʰɛkʰɛ:ɖ̈ɔ:		kʰa	kʰaʔkʰɛɹe	kʰate	dukʰa	kʰəgjai
458	to be easy	lwɛ:gu:ɖ̈ɔ:		lwe	kəgauŋ lweɹe / alweʃe	lwɛɹe	alwe / (ɲeɲe)	aloiʃe
459	to be loose	ʃɔ:ɖ̈ɔ: ‘loose (speaking)’				ʃauɹe	(kɹiɹe)	(agɹi)
460	to be tight	ʧaɖ̈ɔ:		ʧɛʔ	ʧeniɹe	ʧɛte	(tədaŋ)	(atouʃe) / (təboŋʃe)
461a	to set free, release	l̥oʊʇ̈i		l̥weʔ ‘to set free’	l̥uʔbəlaiʔde	lwɛmaukʰɹa		
461b	to set free, release	pwa:ɖ̈ɔ: ‘loose’		pɹi ‘to be untied’			pwaite	
462a	to squeeze	n̥ɪʇ̈i:			n̥aiʔbəlaiʔde			
462b	to squeeze	pʰi:n̥ɪʇ̈i: ‘to squeeze in fist’		(sʰouʔ) ‘to tear off, to squeeze’		pʰjaite	pʰjaite	pʰjoiʧwa

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