# A PRELIMINARY RECONSTRUCTION OF

# PROTO-PAKANIC

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## 1. Introduction

This paper presents a preliminary reconstruction of Proto-Pakanic, from which the Bolyu and Bugan languages are descended. Bolyu and Bugan, which are two tonal Austroasiatic languages spoken in southwestern China, together make up the Pakanic language subgroup, which in turn belongs to the Mangic branch of the Austroasiatic language family (see Figure 1).

## 2. Background

Bolyu and Bugan are clearly related to each other and belong to a single branch of the Austroasiatic language family, as observed by Li Jinfang (2006). The term *Pakanic* was first coined by Gérard Diffloth (Sidwell 2009), although Paul Sidwell prefers the term *Mangic*.

Benedict (1990) and Sidwell (1995) looked at the classification of Bolyu, with Benedict (1990) that Bolyu constitutes a separate branch of Austroasiatic, and Sidwell (1995) concluding that Bolyu fits somewhere within "Eastern Mon-Khmer." Edmondson (1996) compares Bolyu with Vietic, although he does not argue for an exclusive subgrouping relationship between Bolyu and Vietic.

Mang may or may form a single subgroup with Bolyu and Bugan, since Nguyen Van Loi suggests that Mang may more closely related to the Palaungic branch of languages, while Paul Sidwell suggests that Mang may be coordinate to Bugan and Bolyu (Sidwell 2009).

In this paper, the term *Pakanic* is used to refer to the branch of languages containing only Bolyu and Bugan, while *Mangic* is used to refer to the larger group of languages containing Mang, Bolyu, and Bugan.
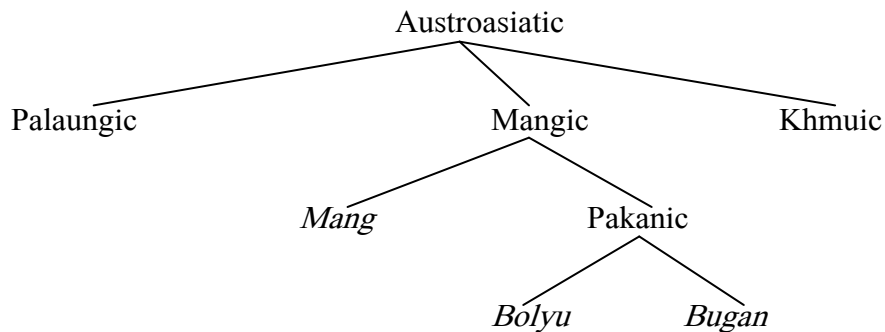


*Figure 1: The position of Pakanic (Bolyu and Bugan) within Austroasiatic*

The locations of the Mangc languages (Bolyu, Bugan, and Mang) are shown in the map below (Figure 2), with the location of Mang also given as reference.



*Figure 2: Locations of Mangic languages.*

The approximate geographical distributions of Austroasiatic branches in mainland Southeast Asia are given in Figure 3. The other Austroasiatic branches not shown in Figure 3 are the Aslian, Nicobaric, Khasic, and Munda branches. In regards to overall phylogeny of Austroasiatic languages, this paper will follow the Austroasiatic riverine hypothesis presented in Sidwell & Blench (2011), which assumes that all of the primary branches are coordinate to each other, and have all directly split off from Proto-Austroasiatic. Thus, the Austroasiatic family tree has a rake-like structure consisting of the primary branches Vietic, Katuic, Bahnaric, Pearic, Khmeric, Monic, Palaungic, Khmuic, Mangic, Aslian, Nicobaric, Khasic, and Munda branches.
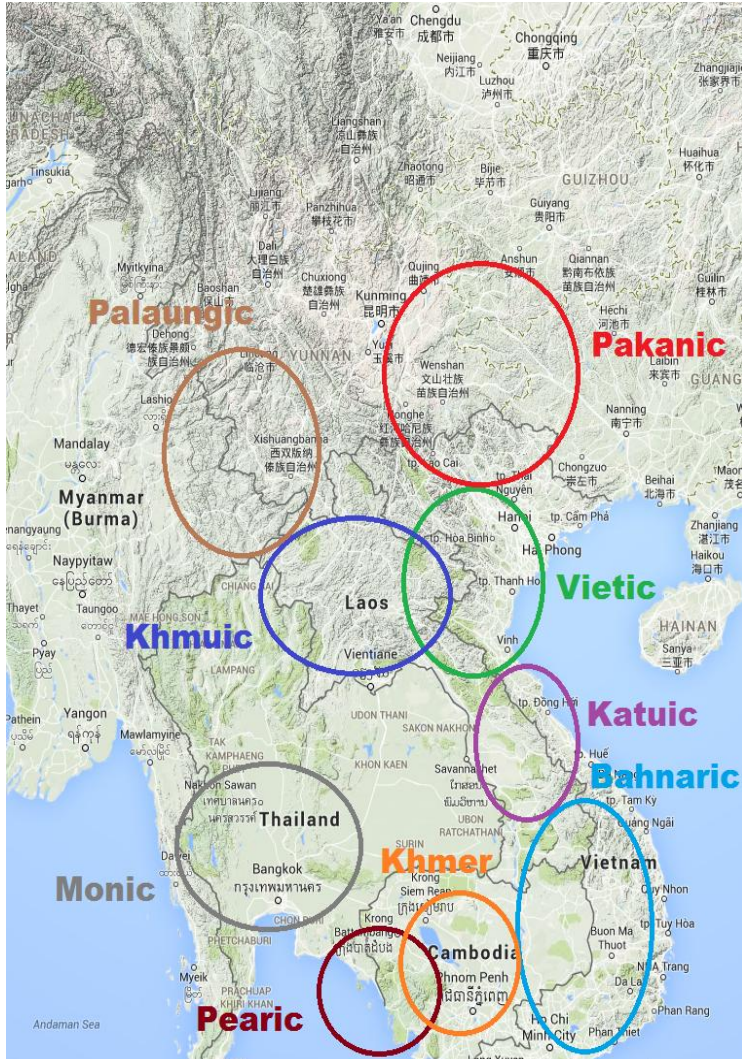
*Figure 3: Approximate geographical distributions of Austroasiatic branches.*

This reconstruction utilizes Li Xulian (1999) for Bolyu, Li Jinfang (2006) for Bugan of Nala, and Li Yunbing (2005) for Bugan of Manlong. All three of these sources include topical word lists glossed in Chinese. In Appendix 2, I have compiled the lexical data from these 3 sources and translated the Chinese glosses into English.

Yan (2012) includes a comparative word list of all three Mangic languages, namely Bolyu, Bugan of Manlong, and Mang. This word list has been useful in helping to find cognates among the three languages. The Bolyu data in Luo (2008) is identical to that of Li Xulian (1999), while the Bugan data in Luo (2008) is identical to that of Li Jinfang (2006), and hence

are not used in this paper. Edmondson (1996) contains a sizeable English-Bolyu glossary, which has not been used in this paper.

A sketch of Bugan of Nala is also covered in Li & Luo (2015), and a vocabuary list of Bolyu that contains about 4,000 words can be found in Luo (2008). The Bolyu lexicon in Luo (2008) is nearly identical to that of Li Xulian (1999), and hence is not used in this paper.

I have personally visited the Bolyu in Changfa Township (长发乡), Longlin County, Guangxi Province, China in August 2012, and the Bugan in Jiuping village (九坪村), Zhuanjiao Township, Guangnan County, Wenshan Prefecture, Yunnan Province, China in August 2012 and May 2015. A small number of audio recordings have been collected. The Bolyu of Changfa Township told me that Bolyu has some internal diversity, mostly in terms of tonal variation. However, these varieties are mutually intelligible with each other. Tonal variation within Bolyu remains to be researched, as now there only one dialect of Bolyu has been documented. The Bugan also told me that there is some internal variation within their language, but that people from all of the Bugan villages can understand each other. My 2012 and 2015 trips to the Bugan village of Jiuping was mainly to document the $p\vartheta^{31}$ calabash gourd mouth organ that is handcrafted there, and I did not have a chance to extensively document the dialect there.

### 3. Overview of synchronic languages
This section presents overviews of Bolyu and two dialects of Bugan.

### 3.1. Bolyu
Bolyu is spoken by about 1,400 people in Longlin County and Xilin County, Guangxi Province. The Bolyu call themselves the $p\vartheta^2lju^1$, while they are called by the neighboring Han Chinese people as Lai people (俫人). Li Xulian (1999:28) documents the Bolyu variety of Muzitun (亩子屯), Xinhe Village (新合村), Changfa Township (长发乡), Longlin County, Guangxi. Li's informant is Wei Chaofang (韦朝芳), a Bolyu man who was 54 years of age at the time of writing.

The phonology of Bolyu is as follows.

*Consonants (31)*
Bolyu has 31 consonants.

|  | Labial | Labio-velar | Labio-dental | Alveolar | Palatal | Velar | Uvular | Glottal |
|---|---|---|---|---|---|---|---|---|
| Stop (aspirated voiceless) | pʰ |  |  | tʰ |  | kʰ | qʰ |  |
| Stop (unaspirated voiceless) | p |  |  | t |  | k | q | ʔ |
| Stop (voiced) | b |  |  | d |  |  |  |  |
| Nasal | m |  |  | n | ɲ | ŋ |  |  |
| Fricative (voiceless) |  |  | f | s | ɕ |  |  | h |
| Fricative (voiced) |  |  | v |  | ʑ | ɣ |  |  |
| Lateral (voiceless) |  |  |  | ɬ |  |  |  |  |
| Lateral (voiced) |  |  |  | l |  |  |  |  |
| Glide |  |  |  |  | j |  |  |  |
| Approximant |  | w |  |  |  |  |  |  |
| Affricate (aspirated voiceless) |  |  |  | tsʰ | tɕʰ |  |  |  |
| Affricate (unaspirated voiceless) |  |  |  | ts | tɕ |  |  |  |

*Table 1: Bolyu consonant inventory.*

Bolyu has the following inventory of complex consonant clusters, which are listed below in no particular order. Bolyu has many palatalized and labialized clusters, as well as the 2 pre-glottalized consonants /ʔj/ and /ʔw/.

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| pj | tj | tɕj | tɕw | kj | kw | ʔj | hj |
| pʰj | tʰj | tɕʰj | tɕʰw | kʰj | | ʔw | hw |
| mj | | | | | | | |
| | sj | tsj | | | | | |
| mb | nd | | | | | | |
| mbj | ndj | | | | | | |
| vj | lj | ɕj | ɕw | | | | |

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ɬj

*Vowels (10)*

Bolyu has 10 vowels. Bolyu also has vowel length contrast.

/a    e    i    ɔ    o    u    ə    ɯ    ɨ    y/

|  | Front unrounded | Front rounded | Central | Back unrounded | Back rounded |
|---|---|---|---|---|---|
| High | i | y | ɨ | ɯ | u |
| Mid-high | e |  |  |  | o |
| Central |  |  | ə |  |  |
| Mid-low |  |  |  |  | ɔ |
| Low |  |  | a |  |  |

*Table  2: Bolyu vowel inventory.*

*Tones (6 [contour tones])*

Bolyu has 9 tone categories and unique 6 contour tones, namely /11/, /33/, 55/, /31/, /13/, and /53/.

| Tone category | Tone value |
|---|---|
| 1 | 13 |
| 2 | 33 |
| 3 | 55 |
| 4 | 31 |
| 5 | 53 |
| 6 | 11 |
| 7 | 53 |
| 8 | 31 |
| 10 | 11 |

*Table 3: Bolyu tones.*

Phonological features shared between Bolyu and Northern Tai languages include the presence of vowel length contrast, an elaborate tonal system, monosyllabic syllable structure, and phonemes such as /ɬ/ and /ɯ/. This is because the Northern Tai-speaking Zhuang people constitute the ethnic majority in western Guangxi Province, outnumbering the ethnic Han Chinese as well.

The Bolyu people are not native to western Guangxi. They have migrated with the White Gelao people from western Guizhou Province to Guangxi Province during the 1800's, around the time of the Taiping Rebellion and Opium War during the Qing Dynasty. At this time, many ethnic minorities from Guizhou and Guangxi provinces had migrated southward to the Sino-Vietnamese border region, forming what Jerold Edmondson calls a "language corridor" (Edmondson 1998). Bolyu presence in southwestern Guizhou is attested by many toponyms there that bear the name "Lai" (来). Bolyu oral tradition claims that the Bolyu had migrated from western Guizhou Province, including the area between Anshun City and Guanling County, and Xingren County. Another source of the Guizhou origin of Bolyu is that Bolyu has various loanwords from White Gelao, a Kra language which is spoken today in Judu village, Liuzhi Special District, west-Central Guizhou Province, but used to have a much wider distribution throughout western Guizhou. Gelao loanwords include *tshe¹* 'person', from Judu Gelao *tshu²¹⁴* (which is in turn borrowed from Loloish languages), and the post-verbal negator *ʔo²*, from Judu Gelao *ʔo⁵⁵* (Ni 2010). Post-verbal negation is typologically rare in southern China, and is a defining feature of Kra languages. On the other hand, sporadic Pakanic loanwords have also been found in White Gelao of Fengyan, Malipo County, Yunnan, such as *bu³⁵mai³¹* 'nose', cognate with Manlong Bugan *pɯ⁵⁵maŋ³¹* 'nose' (cf. Bolyu *lɔŋ2miɓ*).

As the Chinese government officially recognizes only 56 ethnic groups, the Bolyu people have been classified as a subgroup of the Gelao people. Today, they are in contact with speakers of Miao (Hmong), White Gelao (whom they share the same village with, as they have historically migrated from western Guizhou together with them), Zhuang (Northern Tai), and Southwestern Mandarin.

### 3.2. Bugan of Manlong

Li Yunbing (2005) reports that the Bugan people number about 2,700 individuals total, and live in a total of 7 villages, which are located in southern Guangnan County and northern Xichou County in southeastern Yunnan Province, China. The names of these villages are Laowalong, Xinwalong, Xiaoping, Nala, Jiuping, Shibeipo, and Manlong. Descriptions of the Nala and

Manlong dialects have been documented and published. The two dialects differ slightly from each other, but are mutually intelligible.

This Bugan dialect is spoken in Manlong (曼龙) village, Jijie Township, Xichou County, Wenshan Prefecture, Yunnan Province, China. In the Bugan language, Manlong village is called *pu³¹ɣu³¹*. The Bugan of Manlong call themselves the *pu⁵⁵qeŋ⁴⁴*. The Bugan are referred to by neighboring ethnic groups as the Flowery Luo (花倮) people, due to their colorful ethnic clothing. The phonology, lexicon, and grammar of the Manlong dialect have been covered in detail by Li Yunbing (2005).

Bugan is in contact with Miao (Hmong), Sha Zhuang (Northern Tai), Nong Zhuang (Central Tai), various Southeastern Loloish (Ngwi) languages. and Southwestern Mandarin. Bugan has many loanwords borrowed from Loloish languages, such as *hei³¹* 'year'. The loss of most final nasals and tense-lax register contrast are also features shared with Loloish languages, which has likely resulted due to long-term contact with Loloish languages. Not surprisingly, due to various cultural similarities, the Bugan are officially classified by the Chinese government as a subgroup of the Yi people, most of whom speak Loloish languages.

The phonology of the Manlong dialect of Bugan is as follows.

*Consonants (34)*

Manlong Bugan has the richest consonant inventory of all the 3 Pakanic language varieties covered in this paper, with a total of 34 consonants.

| | Labial | Labio-velar | Labio-dental | Alveolar | Palatal | Velar | Uvular | Glottal |
|---|---|---|---|---|---|---|---|---|
| Stop (aspirated voiceless) | pʰ | | | tʰ | | kʰ | qʰ | |
| Stop (unaspirated voiceless) | p | | | t | | k | q | ʔ |
| Stop (voiced) | b | | | d | | g | | |
| Nasal | m | | | n | ɲ | ŋ | ɴ | |
| Fricative (voiceless) | | | f | s | ɕ | x | | h |
| Fricative (voiced) | | | | | ʐ | ɣ | ʁ | |

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| | | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| Lateral | | | | l | | | | |
| Glide | | | | | j | | | |
| Approximant | | w | | | | | | |
| Affricate (aspirated voiceless) | | | | tsʰ | tɕʰ | | | |
| Affricate (unaspirated voiceless) | | | | ts | tɕ | | | |
| Affricate (voiced) | | | | dz | dʑ | | | |

*Table 4: Manlong Bugan consonant inventory*

Manlong Bugan has the following complex consonant onsets.

- With glides: /pj/, /pʰj/, /mj/, /bj/, /mbj/, /tj/, /tʰj/, /dj/, /kj/, /xj/
- Pre-nasalized: /mb/, /nd/, /mbdz/, /ndz/, /ɲdʑ/, /ŋg/, /ɴɢ/
- Others: /pts/, /ptsʰ/, /bd/

*Vowels (8)*

Manlong Bugan has 8 vowels, forming a symmetrical vocalic system. Vowels also have lax register and tense register contrast. Lax register is unmarked (as in V), which tense register is marked with an underscore in this paper (as in V̱). Unlike Bolyu, there is no vowel length contrast. There is also nasalization contrast.

/i     e     ɛ     a     o     ɔ     ə     u/

| | Front unrounded | Central | Back rounded |
|---|---|---|---|
| High | i | | u |
| Mid-high | e | | o |
| Central | | ə | |
| Mid-low | ɛ | | ɔ |
| Low | | a | |

*Table 5: Manlong Bugan vowel inventory*

*Tones (4)*

Manlong Bugan has 4 contour tones, which are /55/, /44/, /24/, and /31/.

### 3.3. Bugan of Nala

Bugan of Nala is spoken in the village of Nala (那腊), Nasa Town, Guangnan County, Wenshan Prefecture, Yunnan Province, China. In the Bugan language, Nala village is called *pə³¹pʰja⁴⁴*. The Bugan of Nala refer to themselves as the *pə⁵⁵qeŋ⁴⁴*. Li Jinfang (2006) gives a brief sketch description of the phonology and grammar of the Nala dialect, although he does include a lengthy word list.

The phonology of the Nala dialect of Bugan is as follows.

*Consonants (32)*

Nala Bugan has 32 consonants, which is 2 fewer consonants than in Manlong Bugan.

| | Labial | Labio-velar | Labio-dental | Dental | Alveolar | Palatal | Velar | Uvular | Glottal |
|---|---|---|---|---|---|---|---|---|---|
| Stop (aspirated voiceless) | pʰ | | | | tʰ | | kʰ | | |
| Stop (unaspirated voiceless) | p | | | | t | | k | q | ʔ |
| Stop (voiced) | b | | | | d | | g | | |
| Nasal | m | | | | n | ɲ | ŋ | | |
| Fricative (voiceless) | | | f | θ | s | ç | x | | h |
| Fricative (voiced) | | | v | | | ʑ | ɣ | | |
| Lateral | | | | | l | | | | |
| Glide | | | | | | j | | | |
| Approximant | | w | | | | | | | |
| Affricate (aspirated voiceless) | | | | | tsʰ | tɕʰ | | | |
| Affricate (unaspirated voiceless) | | | | | ts | tɕ | | | |

| Affricate (voiced) | | | | | dz | | | | |
|---|---|---|---|---|---|---|---|---|---|

*Table 6: Nala Bugan consonant inventory*

Nasalized onsets are /mts/, /mtsʰ/, /pts/, /ptsʰ/, /mdz/, /mv/, /md/, /ŋg/, /ŋq/, /nd/, and /ndz/.

*Vowels (11)*

Nala Bugan has 11 vowels. Vowels also have lax register and tense register contrast. Lax register is unmarked (as in V), which tense register is marked with an underscore in this paper (as in V̲), which is the most number of consonants out of all the Pakanic languages covered here. Unlike Bolyu, there is no vowel length contrast. There is also nasalization contrast.

/a    ɑ    i    e    ɛ    ə    o    ɔ    u    ɯ    y/

| | Front unrounded | Front rounded | Central | Mid-back | Back unrounded | Back rounded |
|---|---|---|---|---|---|---|
| **High** | i | y | | | ɯ | u |
| **Mid-high** | e | | | | | o |
| **Central** | | | ə | | | |
| **Mid-low** | ɛ | | | | | ɔ |
| **Low** | | | a | ɑ | | |

*Table 7: Nala Bugan consonant inventory*

*Tones (5)*

Nala Bugan has 5 contour tones, which are /55/, /33/, /35/, /13/, and /31/. Vowels also have lax register and tense register contrast. Lax register is unmarked (as in V), which tense register is marked with an underscore in this paper (as in V̲).

## 4. Overview of Proto-Pakanic phonology

Proto-Pakanic has the following consonant and vowel inventory. There are 29 consonants and 9 vowels in all. The most notable differences from the synchronic Pakanic languages are Proto-Pakanic's lack of uvular consonants, presence of implosive consonants, and the palatal stop /c/.

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|  | Labial | Labio-velar | Labio-dental | Alveolar | Palatal | Velar | Glottal |
|---|---|---|---|---|---|---|---|
| Stop (aspirated voiceless) | pʰ |  |  | tʰ | c | kʰ |  |
| Stop (unaspirated voiceless) | p |  |  | t |  | k | ʔ |
| Stop (voiced) | b |  |  | d |  | g |  |
| Implosive | ɓ |  |  | ɗ |  |  |  |
| Nasal | m |  |  | n | ɲ | ŋ |  |
| Fricative (voiceless) |  |  |  | s | ç | x | h |
| Fricative (voiced) |  |  | v |  | ʑ | ɣ |  |
| Lateral (voiced) |  |  |  | l |  |  |  |
| Glide |  |  |  |  | j |  |  |
| Approximant |  | w |  |  |  |  |  |
| Affricate (unaspirated voiceless) |  |  |  | ts |  |  |  |
| Affricate (unaspirated voiced) |  |  |  | dz |  |  |  |

Table 8: Proto-Pakanic consonant inventory

Pre-Pakanic, the stage of Pakanic that occurred before the Proto-Pakanic stage, does not have the fricatives /ç, /ʑ/, /x/, /ɣ/, nor the affricate /ts/, which are assumed to be later developments. /ç/, /ʑ/, /x/, /ɣ/, /ts/ developed from Pre-Pakanic *c-, * ɟ-, *r-, and *g-. Pre-Pakanic has been posited in order to fill in the gaps of Proto-Pakanic's development from Proto-Austroasiatic. There is a total of 25 consonants and 9 vowels in Pre-Pakanic.

|  | Labial | Labio-velar | Labio-dental | Alveolar | Palatal | Velar | Glottal |
|---|---|---|---|---|---|---|---|
| Stop (aspirated voiceless) | pʰ |  |  | tʰ | c | kʰ |  |
| Stop | p |  |  | t | ɟ | k | ʔ |

| | | | | | | | |
|---|---|---|---|---|---|---|---|
| (unaspirated voiceless) | | | | | | | |
| Stop (voiced) | b | | | d | | g | |
| Implosive | ɓ | | | ɗ | | | |
| Nasal | m | | | n | ɲ | ŋ | |
| Fricative (voiceless) | | | | s | | | h |
| Fricative (voiced) | | | v | | | | |
| Lateral (voiced) | | | | l | | | |
| Rhotic | | | | r | | | |
| Glide | | | | | j | | |
| Approximant | | w | | | | | |
| Affricate (unaspirated voiceless) | | | | ts | | | |

*Table 9: Pre-Pakanic consonant inventory*

Proto-Pakanic has a total of 9 vowels.

| | Front unrounded | Central | Back unrounded | Back rounded |
|---|---|---|---|---|
| High | i | | ɯ | u |
| Mid-high | e | | | o |
| Central | | ə | | |
| Mid-low | ɛ | | | ɔ |
| Low | | a | | |

*Table 10: Proto-Pakanic vowel inventory*

The vowels of Pre-Pakanic are the same as those of Proto-Pakanic.

Final consonants are *-p, *-t, *-k, *-m, *-n, *-ŋ, and *-ʔ. The final glottal stop *-ʔ can occur after final nasals but not after final stops, in line with Ferlus' (2007) reconstruction of Proto-

Vietic. The Proto-Pakanic final is preserved in Bugan as tense vowels, but has been lost in Bolyu. Pre-Pakanic also has final liquids, namely *-l and *-r.

Both Proto-Pakanic has been reconstructed here as a non-tonal language, as with all other Austroasiatic branch-level reconstructions. Similarly, although many Palaungic languages, some Khmuic languages, and Vietnamese are all fully tonal Austroasiatic languages, Proto-Palaungic (2007), Proto-Khmuic (Sidwell 2013), and Proto-Palaungic (Sidwell 2015) have all been reconstructed as non-tonal. Register constrast develops from final stops (*-p, *-t, *-k, *-ʔ) and fricatives (such as *-h and *-s). This paper does not explore the intricacies of tonogenesis in Bolyu and Bugan, which is a question for further study.

## 5. Sound correspondences and reconstructions

In this section, sound correspondences and reconstruction methodology are summarized. Entire rimes have been reconstructed instead of having vowels and final consonants separately, since Bugan rimes have often dropped final consonants that are preserved in Bolyu rimes; also, Bugan rimes preserve Proto-Pakanic final glottal stops that are preserved as tense registers in vowels, while this distinction has been lost in Bolyu. The reconstructed onset and rime correspondences are then put together to give the reconstructed Proto-Pakanic forms, given in Appendices 1 and 2.

Since the Nala Bugan word list in Li Jinfang (2006) is shorter than the Bolyu and Manlong Bugan word lists, Nala Bugan forms and correspondences are absent in many of the comparisons.

The following abbreviations are used in this section for shorthand. All data can also be found in the appendices.
- B = Bolyu
- N = Nala Bugan
- M = Manlong Bugan
- PP = Proto-Pakanic
- Pre-P = Pre-Pakanic

Cognates have been selected after eliminating loanwords, mostly of Southwestern Mandarin origin, and eliminating extra syllables if the lexical item has more than one syllable. Bugan and Bolyu have many dummy prefixes that may have come from frozen classifiers or

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sesquisyllables. For instance, the word for 'eye' is disyllabic in all 3 languages. The reconstructable syllable has been highlighted in **bold**.

| Gloss | B | NB | MB | PP |
|-------|---|----|----|----|
| 'eye' | ɬaːi5**mat8** | pə⁵⁵**mɛ³³** | pɯ⁵⁵**mɛ³¹** | ***mat** |

The first syllables in each of these words are prefixes that may have originated as frozen classifiers, and do not reconstruct to Proto-Pakanic or to Proto-Austroasiatic.

The comparative word list in Appendix 2 also has syllables highlighted in bold to indicate which syllables have been used in this reconstruction.

## 5.1. Onset correspondences and reconstructions

Onset correspondences and the justifications for their reconstructions are given in this section.

Onset correspondences are presented in the following order. They are separated by slashes, with missing sound correspondences marked by dashes. Slashes are used instead of colons in order to avoid confusion with long vowels.

*Bolyu / Bugan (Nala) / Bugan (Manlong)*

The numbers listed correspond to the word list numbers in Appendices 1 and 2.

*b- is reconstructed to fill in the phonological gap between *p- and *ɓ-. Where Bolyu has /p/ but Bugan has /mb/, Proto-Pakanic *ɓ- is assumed. External reconstructions such as Proto-Khmuic *bəːr 'lips' (#125) and *ber (PMK, Shorto 2006) 'float' help support this reconstruction.

| Proto-Pakanic | Correspondences | Numbers | Notes (rationale for reconstruction; comparisons) |
|---------------|-----------------|---------|---------------------------------------------------|
| *b | p / - / mb | 169, 208 | |
| *b | p / b / mb | 60, 151 | |
| *b | p / m / m | 125 | Proto-Pakanic *ban 'lips'; cf. Proto-Khmuic *bəːr |
| *b | p / mb / mb | 31, 51 | |

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| *b | p / mb / p | 198 | Proto-Pakanic *buʔ 'float'; cf. *ber (PMK) |
|---|---|---|---|

The bilabial implosive *ɓ- is reconstructed for pre-nasalized /mb/. *ɓ- has been reconstructed for various Austroasiatic branch-level reconstructions, and is still attested in many synchronic Austroasiatic languages such as Vietnamese. Reflexes of *ɓ- in many modern-day Austroasiatic languages include /ɓ/, /b/, /mb/, or /ʔb/.

| *ɓ | mb / - / mb | 143, 199 | Straightforward correspondence (with gap in Nala Bugan) |
|---|---|---|---|
| *ɓ | mb / b / mb | 167, 102, 84, 66, 107, 86, 14, 10, 6 | |
| *ɓ | mb / md / bd | 24 | /mb/ in Bolyu is assumed to be more conservative. Irregular reflexes in Bugan. |

*ɗ- is similarly reconstructed like *ɓ-.

| *ɗ | nd / - / nd | 193 | |
|---|---|---|---|
| *ɗ | nd / - / t | 178 | |
| *ɗ | nd / d / - | 77 | |
| *ɗ | nd / d / nd | 56 | |
| *ɗ | nd / t / l | 171 | |
| *ɗ | nd / t / nd | 154 | |

The voiceless palatal stop *c is reconstructed for Proto-Pakanic, and is attested in Bolyu and Bugan as /tɕ/. *c is sometimes reflected as /ts/ or /ɕ/. *c has been reconstructed throughout many different Austroasiatic branch-level reconstruction.

| *c | t / tɕ / tɕ | 162 | |
|---|---|---|---|
| *c | tɕ / - / tɕ | 210, 211 | Straightforward correspondence (with gap in Nala Bugan) |
| *c | tɕ / ɕ / ɕ | 3, 134 | |
| *c | tɕ / tɕ / tɕ | 176 | Straightforward correspondence |

| *c | tɕ / ts / tɕ | 27, 28, 117 | |
|---|---|---|---|
| *c | tɕ / ts / ts | 131 | |
| *c | tɕ / tsʰ / tɕʰ | 163 | |
| *c | tɕ / ʐ / ɲdʑ | 136 | |
| *c | tɕʰ / tɕ / tɕ | 38 | |

*ɕ is straightforward to reconstructed.

| *ɕ | ɕ / ɕ / ɕ | 155, 93, 9, 2, 49 | Straightforward correspondence |
|---|---|---|---|
| *ɕ | ɕ / s / ɕ | 113 | |
| *ɕ | h / ɕ / ɕ | 40 | |

*dz- is assumed to be preserved better in Bugan.

| *dz | ts / ndz / ɲdʑ | 104 | |
|---|---|---|---|

The reconstruction of *g- complements *k-.

| *g | q / ŋg / ŋg | 39 | cf. PTB *k-ra(p/m) 'needle' |
|---|---|---|---|
| *g | q / ŋq / ŋg | 150 | |

*ɣ- is straightforward. Historically, it evolved from Pre-Pakanic *r-, as *r- frequently changes to /ɣ-/ in Austroasiatic languages, such as from Proto-Palaungic *r- to /ɣ-/ in many Angkuic languages  (Hsiu 2015). Pre-Pakanic *r- corresponds well with reconstructions in other branches.

- Proto-Pakanic *ɣiʔ 'root' < Pre-Pakanic *riʔ; cf. P-Vietic *k-riɛs
- Proto-Pakanic *ɣaŋ 'pillar' < Pre-Pakanic *raŋ < PAA *ɟraŋ
- Proto-Pakanic *ɣək 'strength' < Pre-Pakanic *rək < Old Chinese *k.rək

| *ɣ | ɣ / - / ɣ | 148, 103, 137 | |
|---|---|---|---|
| *ɣ | ʐ / ɣ / ɣ | 202, 55 | |

*h- is a straightforward reconstruction.

| *h | h / h / h | 74, 96 | Straightforward correspondence |
|----|-----------|--------|--------------------------------|

*k- is reconstructed instead of *q- for many sound correspondences with *q-. This is because /q-/ is assumed to be a later development in Bolyu and Bugan perhaps due to influence from Kra languages such as Buyang and Gelao. *q- is usually not reconstructed for Austroasiatic branches and is typologically not very common in Mainland Southeast Asia and southern China.

#112 ('snake') is problematic, and may possibly not be a true sound correspondence, or the result of more unusual sound changes.

| *k | ɣ / k / k | 203 | PP *kau 'deep'; cf. P-Vietic *kʰlu: |
|----|-----------|-----|-------------------------------------|
| *k | ɣ / kʰ / k | 157 | |
| *k | k / h / x | 127 | |
| *k | k / k / k | 65 | Straightforward correspondence |
| *k | k / kʰ / kʰ | 70 | |
| *k | k / q / q | 99 | |
| *k | k / tɕ / tɕ | 159 | |
| *k | kʰ / k / k | 175 | |
| *k | ɬ / q / q | 112 | |
| *k | q / - / q | 165 | Straightforward correspondence (with gap in Nala Bugan) |
| *k | q / k / k | 48, 168, 71 | |
| *k | q / q / k | 53, 58, 179 | |

Similarly, *kʰ- is reconstructed instead of *qʰ- for many sound correspondences with *qʰ-.

| *kʰ | q / - / kʰ | 188 | |
|-----|-----------|-----|---|
| *kʰ | q / - / qʰ | 128 | |
| *kʰ | q / kʰ / kʰ | 61 | |
| *kʰ | q / qʰ / qʰ | 184 | |
| *kʰ | qʰ / - / kʰ | 187 | |

*l- is a straightforward reconstruction.

| *l | l / - / l | 212, 144, 142, 205 | Straightforward correspondence (with gap in Nala Bugan) |
|----|-----------|--------------------|----------------------------------------------------------|
| *l | l / l / l | 189, 72, 101, 68, 147, 44, 54, 158, 119, 20, 129, 160, 181, 100, 97 | Straightforward correspondence |

*m- is a straightforward reconstruction.

| *m | m / - / m | 180 | Straightforward correspondence (with gap in Nala Bugan) |
|----|-----------|-----|----------------------------------------------------------|
| *m | m / m / b | 85 | |
| *m | m / m / m | 59, 83, 63, 94, 69, 29, 213, 89, 17, 37, 21, 80, 57, 120, 35 | Straightforward correspondence |

*n- is a straightforward reconstruction.

| *n | n / n / - | 75 | |
|----|-----------|----|------------------------------|
| *n | n / n / n | 139, 173, 140, 76, 170 | Straightforward correspondence |

*ɲ- is reconstructed and is assumed to be more conservative than /n-/ where /ɲ-/ occurs with /n-/ in sound correspondences.

| *ɲ | ɲ / - / ŋ | 132 | |
|----|-----------|-----|------------------------------|
| *ɲ | n / ɲ / ɲ | 33 | |
| *ɲ | ɲ / n / n | 30, 156, 11 | |
| *ɲ | ɲ / ɲ / ɲ | 36, 5, 50 | Straightforward correspondence |
| *ɲ | ʑ / ɲ / ɲ | 32, 52 | |

*ŋ- is a straightforward reconstruction.

| *ŋ | ŋ / ŋ / ŋ | 133 | Straightforward correspondence |
|----|-----------|-----|------------------------------|

*p- is generally a straightforward reconstruction. In the case of #87, *p- is reconstructed. /pts-/ is likely a cluster that arose as a later phonological development.

| *p | p / - / p | 7, 174 | |
|---|---|---|---|
| *p | p / p / p | 73, 145, 82, 166, 185, 91, 138, 90, 204, 183, 88, 34 | Straightforward correspondence |
| *p | p / pts / p | 87 | PP *paːi 'three'; cf. P-Vietic *paː 'three' |
| *p | pʰ / p / b | 141 | |

*p-c is reconstructed to account for all of the differences in synchronic Pakanic languages. The reconstruction of the second consonant is supported by Proto-Khmuic *cat 'sour'.

| *p-c | ts / pts / p | 130 | PP *p-cat 'sour'; cf. Proto-Khmuic *cat 'sour' |
|---|---|---|---|

*pʰ- is a straightforward reconstruction.

| *pʰ | pʰ / - / pʰ | 182 | |
|---|---|---|---|
| *pʰ | pʰ / pʰ / pʰ | 124, 153 | Straightforward correspondence |

*pj- and *pʰj- are more difficult to reconstruct. This is a tentative reconstruction that may well need to be revised later on.

| *pj | ɬ / pts / pts | 111, 110 | PP *pjeːiʔ; cf. P-Khmuic pleʔ 'fruit' |
|---|---|---|---|
| *pʰj | ɬ / ptsʰ / pʰtsʰ | 109 | |

*s- is a straightforward reconstruction.

| *s | s / s / s | 92, 13, 105, 195, 126, 46, 164, 116, 135, 15, 16, 186 | Straightforward correspondence |
|---|---|---|---|

\*t- is generally a straightforward reconstruction. #64 is problematic, as t : nd : nd could also be reconstructed as \*d- or as ɗ-.

| \*t | t / - / d | 197 | |
|---|---|---|---|
| \*t | t / - / d | 191 | |
| \*t | t / - / t$^h$ | 201 | |
| \*t | t / nd / nd | 64 | |
| \*t | t / t / d | 122, 78 | |
| \*t | t / t / nd | 123 | |
| \*t | t / t / t | 42, 98, 26, 193, 146, 19, 118, 1, 41, 172 | Straightforward correspondence |

\*t-c is reconstructed in order to account for the Bugan and Bolyu onsets. The Proto-Vietic reconstructed forms suggest that the \*t- is at least reconstructable, and that there may indeed also be a medial consonant.

| \*t-c | t / ts$^h$ / tɕ$^h$ | 115 | PP \*t-caːŋ 'urine'; cf. P-Vietic \*t-rn-neːʔ, t-ʔɔːʔ |
|---|---|---|---|

\*t$^h$- is a straightforward reconstruction.

| \*t$^h$ | t / t$^h$ / t$^h$ | 62, 108 | |
|---|---|---|---|
| \*t$^h$ | t$^h$ / t$^h$ / t$^h$ | 47, 67 | Straightforward correspondence |

\*ts- is a straightforward reconstruction.

| \*ts | ts / - / ts | 152 | Straightforward correspondence (with gap in Nala Bugan) |
|---|---|---|---|
| \*ts | ts / ts / tɕ | 190 | |
| \*ts | ts / ts / ts | 18, 207, 25, 177, 209, 149, 45 | Straightforward correspondence |

\*v- is assumed to be more conservative than /p-/. This is supported by comparisons such as P-Vietic \*vaɲʔ 'to twist, wring', which is cognate with Proto-Pakanic \*vanʔ 'to turn, spin'.

| *v | p / v / v | 200 | PP *vanʔ 'to turn, spin'; P-Vietic *vaɲʔ 'to twist, wring' |
|---|---|---|---|
| *v | v / pʰ / pʰ | 43 | PP *vaŋ 'to throw'; cf. P-Vietic *vət 'to throw' |

Proto-Pakanic *x- is likely to have developed from Pre-Pakanic *r-. External etyma correspond well to the Pre-Pakanic forms.

- Proto-Pakanic *xɔ 'taro' < *rɔ; cf. P-Vietic *s-roːʔ
- Proto-Pakanic *xaŋ 'centipede' < *raŋ; cf. Chong [Pearic branch] roːŋ

| *x | h / x / h | 121, 161 | |
|---|---|---|---|

Proto-Pakanic *ʑ- is reconstructed straightforwardly. It is likely to sometimes have developed from Pre-Pakanic *ɟ- and sometimes from Pre-Pakanic *j-. External etyma correspond well to the Pre-Pakanic forms.

Proto-Pakanic *ʑ- < Pre-Pakanic *ɟ-
- Proto-Pakanic *ʑoŋʔ foot < Pre-Pakanic *ɟoŋʔ; cf. P-Vietic *ɟiːŋ
- Proto-Pakanic *ʑaʔ bone < Pre-Pakanic *ɟaʔ; cf. P-Vietic *ɟaːŋ
- Proto-Pakanic *ʑɔ hundred < Pre-Pakanic *ɟɔ; cf. P-Pearic *coːs
- Proto-Pakanic *ʑɔʔ go, to < Pre-Pakanic *ɟɔʔ; cf. P-Bahnaric *ceːₐw

Proto-Pakanic *ʑ- < Pre-Pakanic *j-
- Proto-Pakanic *ʑu fear, to < Pre-Pakanic *ju; cf. P-Palaungic *jɔʔ
- Proto-Pakanic *ʑaːm weep, to < Pre-Pakanic *jaːm; cf. P-Vietic *jaːmʔ / ɲaːmʔ

| *ʑ | ʑ / ç / ç | 12 | |
|---|---|---|---|
| *ʑ | ʑ / ç / ʑ | 8 | |
| *ʑ | ʑ / j / ʑ | 196 | |
| *ʑ | ʑ / ʑ / ʑ | 22, 95, 4 | Straightforward correspondence |

*ʔ- is a straightforward reconstruction.

| | | | |
|---|---|---|---|
| *ʔ | - / ʔ / - | 106 | |
| *ʔ | ʔ / - / - | 79, 114, 81, 23, 206, 192 | |

## 5.2. Rime correspondences and reconstructions

Rime correspondences and the justifications for their reconstructions are given in this section. Proto-Pakanic rimes are more difficult to reconstruct than Proto-Pakanic consonants, due to the much more irregular nature of rime correspondences between Bolyu and Bugan varieties.

Bolyu vowels and final nasals are usually assumed to be more conservative, but in some cases, the Bugan vowels are taken to be more conservative than the Bolyu ones. For instance, since non-central vowels are considered to more conservative than central ones, if Bugan has /-a/ while Bolyu has /-ə/, *-a will usually be reconstructed. Nevertheless, in most cases, the reconstructed Proto-Pakanic vowel will be derived from the Bolyu vowel. Additionally, external etyma are sometimes used in helping to reconstruct Proto-Pakanic rimes.

Onset correspondences are presented in the following order. They are separated by slashes, with missing sound correspondences marked by dashes.

> *Bolyu : Bugan (Nala) : Bugan (Manlong)*

Tense vowels in Bugan (marked by underscores) go back to either the Proto-Pakanic final oral stops *-p, *-t, *-k or the final glottal shop *-ʔ. The final glottal shop *-ʔ may occur after vowels or final nasals, but not the final oral stops *-p, *-t, *-k. Below is an example of Bugan tense vowels corresponding to a final oral stop in Bolyu and Proto-Pakanic.

| Gloss | B | NB | MB | PP |
|---|---|---|---|---|
| 'eye' | ɬaːi5**mat8** | pə$^{55}$**mɛ$^{33}$** | puɯ$^{55}$**mɛ$^{31}$** | *mat |

*mat 'eye' is a highly common form in Austroasiatic languages, and is reconstructable to the Khmuic, Vietic, Bahnaric, Katuic, and other branches.

Below is a an example of the Nala Bugan nasalized vowel corresponding to a final nasal in Bolyu and Proto-Pakanic, and the Manlong tense vowel corresponding to the final glottal stop in Proto-Pakanic.

| Gloss | B | NB | MB | PP |
|-------|-----|-----|-----|-----|
| 'eight' | saːm5 | sã³³ | sa̱⁴⁴ | *saːmʔ |

This reconstruction is identical to P-Vietic *saːmʔ 'eight', and is an example of how each of the 3 Pakanic varieties can preserve parts of Proto-Pakanic phonological features that the other varieties have already lost. The Proto-Pakanic final glottal stop is reconstructed whenever a tense vowel occurs in either of the two Bugan dialects.

Also, the medial glide /-j-/ is treated as part of the rime, as it is often transcribed as /-i-/. *-j- is often not reconstructed, especially if it follows a palatal or alveolo-palatal consonant in one of the synchronic languages.

Sometimes the Bugan form preserves a final nasal that has been dropped in Bolyu.

Non-central vowels are presumed to be more conservative. For instance, if Bugan has /-a/ while Bolyu has /-ə/, *-a will usually be reconstructed.

Rime correspondences and reconstructions are presented below.

| Proto-Pakanic | Correspondences | No. | Notes (rationale for reconstruction; comparisons) |
|---------------|-----------------|-----|----------------------------------------------------|
| *a | ɔ / a / ou | 143 | |
| *a | e / a / a | 56, 109 | #56 cf. P-Vietic *ɗaːk 'water' |
| *a | o / a / ã | 78 | cf. P-Vietic *s-ɗəː 'near' |
| *aːt | iːt / a / a̱ | 110 | |
| *aːi | aːi / ai / ei | 59 | cf. P-Vietic *paː 'three' |
| *aːi | aːi / e / i | 87, 189 | |
| *aːi | aːi / i / ei | 83 | |
| *aːiʔ | aːi / - / a̱i | 178 | |
| *aːiʔ | aːi / o / o̱ | 73 | Bolyu assumed to be more conservative. |
| *aːiʔ | aːi / o̱ / o | 145 | |
| *aːiʔ | aːi / o̱ / o̱ | 63 | |

| Proto-Pakanic | Correspondences | No. | Notes (rationale for reconstruction; comparisons) |
|---|---|---|---|
| *aːiʔ | jaːi / ɛ / ɛ̱ | 28 | /j-/ follows a palatal consonant in Bolyu, and may be conditioned. Thus, it is not reconstructed. |
| *aːm | aːm / ɑ / a | 13, 22 | |
| *aːɯ | aːu / ɯ / ɯ | 72 | |
| *aːmʔ | aːm / - / a̱ | 174 | |
| *aːmʔ | aːm / ã / a̱ | 92 | |
| *aːɯʔ | aːu / aɯ / ɯ̱ | 105 | Similar to vowel developments in Tai languages. |
| *aːn | aːn / - / a | 128, 165, 191 | |
| *aːn | aːn / ã / a | 94 | cf. P-Vietic *maːl 'ten' |
| *aːn | jaːn / a / a | 104 | |
| *aːnʔ | aːn / ɑ / a̱ | 64 | |
| *aːŋ | jaːŋ / - / aŋ | 210 | /-j-/ follows /dz-/ in Bolyu, and is not reconstructed. |
| *aːŋ | jaːŋ / a / a | 116, 124 | |
| *aːŋ | jaːŋ / ə / ɯ | 115 | |
| *aːŋʔ | jaːŋ / ou / o̱u | 160 | |
| *aːp | aːp / a̱ / a | 39 | |
| *aːt | aːt / a̱i / e̱i | 184 | |
| *ai | ai / ɛ / ɛ | 82, 84 | |
| *aiʔ | ai / i / e̱i | 101 | |
| *ak | ak / - / a̱ŋ | 180 | |
| *am | am / - / o | 132 | |
| *am | am / a / a | 32, 133 | |
| *am | am / am / en | 47 | |
| *am | əm / a / a | 3 | cf. P-Vietic *tam 'night' |
| *amʔ | am / am / e̱i | 75 | |
| *an | an / - / a | 193 | |
| *an | an / an / en | 125 | |
| *an | an / ɑn / en | 42 | |
| *an | an / au / au | 98 | |

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| Proto-Pakanic | Correspondences | No. | Notes (rationale for reconstruction; comparisons) |
|---|---|---|---|
| *an | an / ən / ən | 69 | |
| *an | an / ɛ / ɛ | 74 | |
| *anʔ | an / - / e̱i | 152 | |
| *anʔ | an / a̱i / ei | 195 | |
| *anʔ | an / an / e̱n | 126 | |
| *anʔ | an / a̱n / en | 122 | |
| *anʔ | an / au / a̱u | 46 | |
| *anʔ | ən / a̱ / a̱ | 27 | Bugan preserves -a-, while Bolyu preserves -n |
| *anʔ | in / a̱n / e̱n | 200 | cf. P-Vietic *vaɲʔ 'to twist, wring' |
| *aŋ | aːi / aŋ / aŋ | 167 | Final nasal presumed to have been preserved in Bugan. |
| *aŋ | aŋ / aŋ / aŋ | 155, 137, 112, 48, 164, 26 | Straightforward correspondence |
| *aŋ | ə / aŋ / aŋ | 161 | |
| *aŋ | əŋ / - / aŋ | 197 | |
| *aŋ | əŋ / an / en | 43 | Bolyu is assumed to have the more conservative final nasal. |
| *aŋ | əŋ / aŋ / aŋ | 62 | |
| *aŋ | i / aŋ / aŋ | 37 | *miŋ may also be a possible reconstruction. cf. Mandarin Chinese miŋ[35] 'name'. |
| *aŋ | jiŋ / - / aŋ | 142 | |
| *aŋ | juŋ / a / a | 134 | |
| *aŋʔ | aŋ / aŋ / a̱ŋ | 131 | |
| *aŋʔ | ɔŋ / aŋ / a̱ŋ | 107 | *- aŋ for 'bamboo shoot' is reconstructed in other branches. |
| *aŋʔ | əŋ / aŋ / a̱ŋ | 30, 156 | |
| *aŋʔ | i / ã̱ / aŋ | 17 | |
| *aŋʔ | jiŋ / aŋ / a̱ŋ | 100 | cf. P- Palaungic *mraŋ 'horse'; in many cases Bugan -a- is more conservative than Bugan -i. |

| Proto-Pakanic | Correspondences | No. | Notes (rationale for reconstruction; comparisons) |
|---|---|---|---|
| *aŋʔ | ɯ / aŋ / e̱i | 41 | |
| *ap | ap / a̱ / ã̱ | 68 | |
| *ap | ap / o̱u / au | 147 | |
| *at | at / a̱i / ɛi | 44 | |
| *at | at / ɛ̱ / ɛ | 29 | |
| *at | jat / ɛ / je | 130 | |
| *at | jit / a̱ / a̱ | 183 | Bugan -a is often more conservative than -i in Bolyu. |
| *au | au / - / ou | 169 | |
| *au | au / a / ua | 52 | |
| *au | au / ə / ɯ | 213 | |
| *au | au / ɯ / au | 157 | |
| *au | au / ou / au | 203 | |
| *au | uɔ / ou / ou | 35 | |
| *auʔ | au / a̱u / a̱u | 139 | |
| *auʔ | uɔ / au / o̱u | 34 | |
| *aʔ | ɔ / a / a̱ | 38 | |
| *aʔ | e / a / a̱ | 8 | |
| *aʔ | e / a̱ / a̱ | 5 | |
| *aʔ | e / a̱ / ua | 185 | |
| *ɔ | au / ɔ / o | 67 | |
| *ɔ | au / u / o | 206 | |
| *ɔ | ɔ / iu / ou | 95 | |
| *ɔ | ɔ / ou / au | 61 | |
| *ɔ | ɔ / ou / ou | 53, 173 | |
| *ɔ | ɔ / ou / u | 58, 179 | |
| *ɔ | ɔ / u / u | 150 | |
| *ɔ | u / au / au | 45, 121 | |
| *ɔk | ɔk / aŋ / a̱ŋ | 166 | -k is more conservative than -ŋ, since Bolyu makes a k/ŋ distinction, while Bugan merges them. |

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| Proto-Pakanic | Correspondences | No. | Notes (rationale for reconstruction; comparisons) |
|---|---|---|---|
| *ɔk | ɔk / ṵi / o̰ŋ | 19 | -k is more conservative than -ŋ, since Bolyu makes a k/ŋ distinction, while Bugan merges them. |
| *ɔŋ | - / ɔŋ / - | 106 | |
| *ɔŋ | ɔŋ / y / ui | 70 | |
| *ɔʔ | au / ɔ / o̰ | 60 | *-ɔ is assumed to be more conservative than /-au/. |
| *ɔʔ | au / ɔ̰ / o | 154 | |
| *ɔʔ | au / ɔ̰ / o̰ | 33 | |
| *ɔʔ | ɔ / o̰u / o̰u | 54 | |
| *ɔʔ | ɔ / o̰u / ṵ | 25 | |
| *ɔʔ | ɔ / u / o̰u | 36 | |
| *ɔʔ | ɯ / ɔ̰ / - | 77 | |
| *ɔʔ | u / au / a̰u | 196 | |
| *e | e / - / ɛ | 212 | |
| *eːi | aːi / e / ei | 186 | |
| *eːiʔ | aːi / ḛ / ei | 111 | cf. P-Khmuic pleʔ 'fruit' |
| *eːŋ | eːŋ / ə / ɯ | 168 | |
| *eiʔ | ei / o̰u / o̰u | 91 | |
| *ək | ək / - / o | 148 | |
| *en | an / en / eŋ | 103 | cf. P-Vietic *gɛːnʔ 'ant' |
| *en | ən / en / en | 140 | |
| *en | i / an / ɛn | 51 | /e/ is in phonetically in between. |
| *en | u / - / en | 201 | |
| *enʔ | ən / ḛn / in | 113 | |
| *eŋʔ | an / a̰n / ḛŋ | 18, 207 | |
| *eʔ | je / ṵ / i | 141 | |
| *ɛ | i / ɛ / e | 9 | |
| *ɛmʔ | jim / ɛ / ɛ̰ | 181 | |
| *ɛnʔ | jɔ / - / ɛ̰n | 199 | |
| *ɛʔ | i / ɛ̰ / ɛ̰ | 138 | |

| Proto-Pakanic | Correspondences | No. | Notes (rationale for reconstruction; comparisons) |
|---|---|---|---|
| *i | ɔ / i / i | 194 | |
| *i | e / i / i | 89, 190 | |
| *i | i / i / ei | 76 | |
| *i | i / i / i | 50, 81 | Straightforward correspondence |
| *i | i / i(ɔ) / jo | 86 | |
| *i | i / ie / je | 1 | |
| *im | im / ai / ei | 20 | |
| *im | im / ɛi / ai | 129 | |
| *imʔ | im / i / i̱ | 117 | |
| *imʔ | jim / - / e̱n | 144 | |
| *inʔ | ən / i / i̱ | 93 | |
| *inʔ | in / ɛ / ɛ̱ | 11 | |
| *it | it / i̱ / i̱ | 2 | |
| *iʔ | i / a̱i / ai | 114 | cf. PP *ʔiʔ; cf. PAA *ʔic 'excrement' |
| *iʔ | i / a̱ɯ / ɯ | 55 | cf. P-Vietic *k-riɛs 'root' |
| *iʔ | i / a̱ɯ / ɯ̱ | 118 | |
| *iʔ | i / i̱ / e̱i | 96 | |
| *ja | jaːi / - / ja | 182 | |
| *jaːn | jaːn / ia / ja | 57 | |
| *jo | jɔ / iou / jau | 120 | |
| *jo | jɔ / u / ou | 49 | |
| *joʔ | i / i̱o / jo̱ | 21 | |
| *joʔ | jai / io / jo̱ | 204 | |
| *joʔ | jai / iu / o̱ | 162 | |
| *joʔ | jɔ / de̱ / ei | 24 | |
| *juʔ | iu / i̱o / jo̱ | 90 | |
| *ɯ | i / ɯ / ɯ | 80 | |
| *ɯŋ | əŋ / - / ɯ | 211 | |
| *ɯŋʔ | əŋ / ɯ / ɯ̱ | 163 | |
| *o | ɔ / o / o | 146 | |
| *o | ə / ə / o | 85 | |

| Proto-Pakanic | Correspondences | No. | Notes (rationale for reconstruction; comparisons) |
|---|---|---|---|
| *oː | aːu / - / au | 187 | |
| *oː | aːu / o / o | 31 | |
| *oːʔ | aːu / - / o̱ | 188 | |
| *oːʔ | aːu / ɔ / o̱ | 79 | |
| *oːʔ | aːu / o / o̱ | 102 | |
| *om | ou / am / en | 209 | |
| *oŋ | an / ai / oŋ | 171 | |
| *oŋ | ɔ / o / oŋ | 127 | |
| *oŋ | ɔŋ / ioŋ / oŋ | 159 | |
| *oŋ | ɔŋ / oŋ / oŋ | 158, 176, 177, 119 | |
| *oŋʔ | ɔŋ / uŋ / o̱ŋ | 4 | |
| *oŋʔ | ɔŋ / u̱ŋ / o̱ŋ | 136 | |
| *ouʔ | ai / o̱u / o̱u | 66 | cf. P-Vietic *ɓuːɲ; P- Khmuic *bɔh 'ash' |
| *oʔ | ɔu / o / o̱ | 202 | |
| *oʔ | iu / - / o̱ | 192 | |
| *oʔ | o / o̱u / o | 149 | |
| *u | u / ɔ / ɔ | 153 | |
| *u | u / ɔ / o | 12, 71 | |
| *uːk | uːk / a̱u / u̱ | 23 | |
| *uːk | uːk / - / u | 205 | |
| *uːn | uːn / au / au | 88 | |
| *uːn | uːn / ou / ou | 97 | |
| *uːŋ | uːŋ / - / ou | 208 | |
| *uːŋ | uːŋ / ou / ou | 10 | |
| *ui | ui / ui / ui | 65 | |
| *uiʔ | ui / ɔ̱ / o̱ | 99 | |
| *uk | uk / a̱ŋ / a̱ŋ | 15, 16 | |
| *uk | uk / oŋ / o̱ŋ | 123 | |
| *un | un / an / en | 175 | |
| *uŋ | uŋ / uŋ / oŋ | 6 | |
| *uŋʔ | uŋ / - / o̱ŋ | 7 | |

| Proto-Pakanic | Correspondences | No. | Notes (rationale for reconstruction; comparisons) |
|---|---|---|---|
| *uŋʔ | uŋ / am / e̱n | 151 | |
| *uŋʔ | uŋ / ɔŋ / o̱ŋ | 172 | |
| *uʔ | i / u̱ / ou | 170 | |
| *uʔ | u / ɔ / o̱ | 135 | |
| *uʔ | u / ɔ̱ / ua̱ | 40 | |
| *uʔ | u / op / o̱u | 14 | -op in Nala may have developed secondarily from *-ʔ |
| *uʔ | u / ou / o̱u | 198 | |
| *uʔ | u / u / u̱ | 108 | Straightforward correspondence |

## 6. Sound changes

Some regular sound changes from Proto-Pakanic to synchronic Pakanic languages are listed below.

| Sound change | Name / Type of sound change | Description | Examples |
|---|---|---|---|
| *b > p | Devoicing | Bolyu devoices PP *b to p. | 31, 51, 60, 125, 151, 169, 198, 208 |
| *ɓ > mb | Pre-nasalization | Bolyu and Manlong Bugan develop mb from *ɓ. | 6, 10, 14, 66, 84, 86, 102, 107, 167 |
| *ɓ > b | Lenition | Nala Bugan develops b from *ɓ. | 6, 10, 14, 66, 84, 86, 102, 107, 167 |
| *ɗ > nd | Pre-nasalization | Bolyu and Manlong Bugan develop nd from *ɗ. | 56, 154, 193 |
| *ɗ > d | Lenition | Nala Bugan develops d from *ɗ. | 56, 77 |
| *k > q | Uvularization | Bolyu, Manlong Bugan, and Nala Bugan all develop q from *k. | 48, 53, 58, 71, 99, 112, 165, 168, 179, 61, 128, 184, 187, 188 |
| *c > tɕ | Affrication | Bolyu affricates the PP palatal stop *c to form tɕ. | 3, 27, 28, 117, 131, 134, 136, 163, 176, 210, 211 |

| *VC > V̱ | Final stop deletion | Bugan dialects delete PP final stops, which are instead reflected as the tense registers of vowels, oing through the changes *VC > Vʔ > V̱ . | various |
|---|---|---|---|
| *-VN > Ṽ | Nasalization | Nasalized vowels in Bugan dialects originate from PP final nasal consonants *-m, *-n, -*ŋ that came after the vowel. | various |
| *-k > -ŋ | Nasalization | In Bugan dialects, PP *-k becomes a velar nasal -ŋ. | 15, 16, 19, 23, 123, 166, 205 |
| *Vː > V | Vowel length shortening | Bugan dialects shorten all Proto-Pakanic long vowels. There is no vowel length contrast in Bugan. | various |
| *oː > aːu | Diphthongization | Bolyu diphthongizes PP *oː as aːu. | 31, 187, 102, 188, 79 |

## 7. Conclusion

Proto-Pakanic is significant in that it is the geographically most northeastern branch of Austroasiatic. Pakanic languages must have had a much wider distribution in China than it did in the past. Today, they are spoken by a total of no more than 3,500 people located among scattered villages in the highlands of southern China.

Since most publications on Pakanic languages have been published in Chinese, they have not been very accessible to western academics. This paper will hopefully help close some of these gaps and present some new data and information about Pakanic languages to non-Chinese-reading scholars.

Proto-Pakanic appears to show the most lexical similarities with Proto-Vietic, and also with Proto-Khmuic and Proto-Palaungic. This may be due to lexical diffusion due to Pakanic forming part of a historical dialect chain with Vietic, as well as Khmuic and Palaungic, before the incursions of Tai, Vietnamese, and Chinese cut off Pakanic speakers from their Austroasiatic-speaking neighbors. Today, Pakanic languages are geographically isolated from

other Austroasiatic languages, with no other Austroasiatic languages being spoken within a radius of hundreds of kilometers.

Proto-Pakanic has been reconstructed here as a non-tonal language. Pre-Pakanic has also been posited in order to help explain the development of Proto-Pakanic from Proto-Austroasiatic. This preliminary reconstruction represents an initial step towards better understanding the Austroasiatic contribution to the prehistory of southern China and the mainland Southeast Asian region in general. Many questions remain to be resolved, including the relationship of Pakanic to Mang, the tonogenesis of Mangic languages.

## 8. Acknowledgements

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# Appendix 1: Proto-Pakanic and Pre-Pakanic reconstructions and comparisons

Comparisons are from the Mon-Khmer Etymological Dictionary (MKED), available online at <http://sealang.net/monkhmer/dictionary/>. Branch names in parentheses refer to reconstructions cited in the MKED.

*Abbreviations*: PAA = Proto-Austroasiatic; PTB = Proto-Tibeto-Burman; OC = Old Chinese; P- = Proto-

| No. | English gloss | Proto-Pakanic | Pre-Pakanic | Comparisons |
|---|---|---|---|---|
| 1 | hand | *ti | | PAA *t₁iiʔ |
| 2 | left | *ɕit | < *cit | |
| 3 | right | *cam | | P-Vietic *tam |
| 4 | foot | *ʑoŋʔ | < *ɟoŋʔ | P-Vietic *ɟiːŋ |
| 5 | walk, to | *ɲaʔ | | |
| 6 | skin | *ɓuŋ | < *ɓur | *-puːr (Khmuic) |
| 7 | belly | *puŋʔ | | P-Vietic *buŋʔ |
| 8 | bone | *ʑaʔ | < *ɟaʔ | P-Vietic *ɟaːŋ |
| 9 | intestines | *ɕɛ | < *cɛ | |
| 10 | liver | *ɓuːŋ | | |
| 11 | breast | *ɲinʔ | | |
| 12 | fear, to | *ʑu | < *ju | P-Palaungic *jɔʔ |
| 13 | blood | *saːm | | P-Vietic *ʔa-saːmʔ |
| 14 | head | *ɓuʔ | | |
| 15 | hair (of head) | *suk | | |
| 16 | feather | *suk | | |
| 17 | nose | *maŋʔ | | P-Vietic *muːs |
| 18 | smell, to (detect odor) | *tseŋʔ | < *ceŋʔ | *tsoːr (Bahnaric); *ciiŋ (Katuic) |
| 19 | mouth | *tɔk | | |
| 20 | tongue | *lim | | P-Vietic *-lɛːmʔ 'to lick' |
| 21 | laugh, to | *mjoʔ | | |
| 22 | weep, to | *ʑaːm | < *jaːm | P-Vietic *jaːmʔ / ɲaːmʔ |

| 23 | vomit, to | *ʔuːk | | |
| 24 | spit, to | *ɓjoʔ | < ɓroʔ | *bruːh (S. Bahnaric) |
| 25 | eat, to | *tsɔʔ | < *cɔʔ | PAA *caːʔ |
| 26 | cook, to | *taŋ | | P-Vietic *ɗuŋ |
| 27 | bite, to | *canʔ | < *camʔ | P-Vietic *gamʔ / kamʔ |
| 28 | ear | *caːiʔ | | |
| 29 | eye | *mat | | P-Vietic *mat |
| 30 | sleep, to | *ɲaŋʔ | | |
| 31 | dream | *boː | | P-Vietic *s-poː |
| 32 | sit, to | *ɲam | | *jəːm (Khmuic) |
| 33 | stand, to | *ɲɔʔ | | *ɲɔːŋ (Pray-Pram) |
| 34 | male; man | *pauʔ | | |
| 35 | female; woman | *mau | | |
| 36 | house | *ɲɔʔ | | P-Vietic *ɲaː |
| 37 | name | *maŋ | | |
| 38 | rope | *caʔ | | P-Vietic *ɟaːk; *cə̣ɨk (Mon) |
| 39 | needle | *gaːp | | #5398 PTB *k-ra(p/m) NEEDLE; Buyang (Langjia) ŋaːt11 |
| 40 | hunt, to | *ɕuʔ | | |
| 41 | shoot, to | *taŋʔ | | |
| 42 | pound, to | *tan | < *tam | P-Vietic *təm |
| 43 | throw, to | *vaŋ | | P-Vietic *vət; *plɔŋ (Palaungic) |
| 44 | fall, to | *lat | | |
| 45 | dog | *tsɔ | < *cɔ | P-Vietic *ʔa-cɔːʔ |
| 46 | bird | *sanʔ | | P-Vietic *-ciːm |
| 47 | egg | *tʰam | | *ktam (Palaungic) |
| 48 | wing | *kaŋ | | P-Vietic *kɛːŋʔ |
| 49 | meat | *ɕjo | < *cjo | *sac (Khmuic / Katuic / Bahnaric) |
| 50 | oil | *ɲi | | |
| 51 | louse | *ben | | P-Vietic *m-rəɲʔ |
| 52 | mosquito | *ɲau | | |
| 53 | fish | *kɔ | | P-Vietic *ʔa-kaːʔ |
| 54 | leaf | *lɔʔ | | P-Vietic *s-laːʔ |

| 55 | root | *ɣiʔ | < *riʔ | P-Vietic *k-riɛs |
|----|------|------|--------|------------------|
| 56 | water | *ɗa | | P-Vietic *ɗaːk |
| 57 | salt | *mjaːn | | P-Vietic *ɓɔːjʔ |
| 58 | sky | *kɔ | | |
| 59 | month | *maːi | | |
| 60 | star | *bɔʔ | | |
| 61 | rain | *kʰɔ | | |
| 62 | wind | *tʰaŋ | | |
| 63 | heavy | *maːiʔ | | |
| 64 | light | *taːnʔ | | |
| 65 | smoke | *kui | | P-Vietic *kʰɔːjʔ |
| 66 | ash | *ɓouʔ | | P-Vietic *ɓuːɲ; *bɔh (Khmuic) |
| 67 | big | *tʰɔ | | |
| 68 | thin | *lap | | |
| 69 | thick | *man | | *-ba$_1$l (Khmuic) |
| 70 | narrow | *kɔŋ | | |
| 71 | sick | *ku | | |
| 72 | good | *laːɯ | | |
| 73 | night | *paːiʔ | | |
| 74 | daytime | *han | | |
| 75 | year | *nam | | |
| 76 | this | *ni | | |
| 77 | that | *ɗɔʔ | | |
| 78 | near | *ta | | P-Vietic *s-ɗəː |
| 79 | I | *ʔoːʔ | | |
| 80 | you (sg.) | *mɯ | | |
| 81 | he/she | *ʔi | | |
| 82 | we (excl.) | *pai | | |
| 83 | you (pl.) | *maːi | | |
| 84 | who? | *ɓai | | |
| 85 | one | *mo | | P-Vietic *moːc |
| 86 | two | *ɓi | | P-Vietic *haːr |
| 87 | three | *paːi | | P-Vietic *paː |
| 88 | four | *puːn | | P-Vietic *poːnʔ |

| 89 | five | *mi | | P-Vietic *ɗam |
|---|---|---|---|---|
| 90 | six | *pjuʔ | < *pruʔ | P-Vietic *pʰruːʔ |
| 91 | seven | *peiʔ | | P-Vietic *pəs |
| 92 | eight | *saːmʔ | | P-Vietic *saːmʔ |
| 93 | nine | *ɕinʔ | < *cinʔ | P-Vietic *ciːnʔ |
| 94 | ten | *maːn | < *maːl | P-Vietic *maːl |
| 95 | hundred | *ʑɔ | < *ɟɔ | *coːs (Pearic) |
| 96 | gold | *hiʔ | | |
| 97 | iron | *luːn | | |
| 98 | pig | *tan | | cf. Mienic, Bai |
| 99 | tiger | *kuiʔ | | |
| 100 | horse | *laŋʔ | | *mraŋ (Palaungic); *hmraŋ (Khmuic) |
| 101 | cattle | *laiʔ | | *ɟləw (Pramic) |
| 102 | pangolin | *ɓoːʔ | | *km-ɓoːr; *-bor/-bu(ə)r (Khmuic) |
| 103 | ant | *ɣen | < *gen | P-Vietic *gɛːnʔ |
| 104 | grasshopper | *dzaːn | < *dzaːr < *caːr | P-Vietic *coːʔ; *caar (Palaungic) |
| 105 | tree | *saːɯʔ | | |
| 106 | sugarcane | *ʔɔŋ | | |
| 107 | bamboo shoot | *ɓaŋʔ | | |
| 108 | vegetables | *tʰuʔ | | *təʔ 'meat, vegetables, foodstuffs, curry' (proto Wa-Lawa) |
| 109 | face | *pʰja | | |
| 110 | die, to | *pjaːt | | |
| 111 | fruit | *pjeːiʔ | | |
| 112 | snake | *kaŋ | | |
| 113 | steal, to | *ɕenʔ | < *cenʔ | |
| 114 | excrement | *ʔiʔ | | PAA *ʔic |
| 115 | urine | *t-caːŋ | | P-Vietic *t-rn-neːʔ / t-ʔɔːʔ |
| 116 | fart | *saːŋ | | P-Vietic *k-səmʔ |
| 117 | snow | *cimʔ | | |
| 118 | field | *tiʔ | | *tuh 'harvested field, old field' (Khmuic) |

| 119 | well | *loŋ | | P-Vietic *-ciɛŋʔ |
| 120 | flea | *mjo | | P-Vietic *s-maː |
| 121 | taro | *xɔ | < *rɔ | P-Vietic *s-roːʔ |
| 122 | melon | *tanʔ | | |
| 123 | bean | *tuk | | < Old Chinese 豆 |
| 124 | mushroom | *pʰaːŋ | | |
| 125 | lips | *ban | | *bəːr (Khmuic); *ɓar (Palaungic); *ɓər (Bahnaric) |
| 126 | navel | *sanʔ | | P-Vietic *p-suːɲʔ |
| 127 | road | *koŋ | | *gruəŋ (Khmuic); *kra (Palaungic) |
| 128 | fox | *kʰaːn | | |
| 129 | sweet | *lim | | |
| 130 | sour | *p-cat | | *cat (Khmuic) |
| 131 | bitter | *caŋʔ | | P-Vietic *taŋʔ; *ʔcaŋ (Palaungic); *caŋ (Khmuic); *-tsaŋ (Bahnaric) |
| 132 | spicy | *ɲam | | |
| 133 | salty | *ŋam | | *ŋaam 'sweet' (Palaungic/Katuic) |
| 134 | drunk | *caŋ | | |
| 135 | medicine | *suʔ | | |
| 136 | door | *coŋʔ | | |
| 137 | pillar | *ɣaŋ | < *raŋ | PAA *ɟraŋ |
| 138 | trousers | *pɛʔ | | |
| 139 | shoes | *nauʔ | | |
| 140 | cloth | *nen | | |
| 141 | clothing | *peʔ | | |
| 142 | umbrella | *laŋ | | *ɗɔŋ (Palaungic) |
| 143 | arrow | *ɓa | | |
| 144 | suona | *limʔ | | |
| 145 | dinner | *paːiʔ | | |
| 146 | speech | *to | | cf. Loloish |
| 147 | grave | *lap | | P-Vietic *g-roʔ/h |
| 148 | strength | *ɣək | < *rək | < Old Chinese *k.rək |
| 149 | beam | *tsoʔ | < *coʔ | |
| 150 | village | *gɔ | | *kuŋ (Khmuic) |

| 151 | drum | *buŋʔ | | |
| 152 | gong | *tsanʔ | | |
| 153 | blow, to | *pʰu | | |
| 154 | burn, to (intr.) | *ɗɔʔ | | |
| 155 | green | *çaŋ | < *caŋ | |
| 156 | bed | *ɲaŋʔ | | |
| 157 | pond, pool | *kau | | |
| 158 | cave | *loŋ | | |
| 159 | muntjac | *koŋ | | |
| 160 | eagle | *laːŋʔ | | |
| 161 | centipede | *xaŋ | < *raŋ | cf. Chong roːŋ |
| 162 | claw | *cjoʔ | | |
| 163 | ginger | *cɯŋʔ | | |
| 164 | millet | *saŋ | | |
| 165 | ears (of grain) | *kaːn | | *-gɔr (Palaungic); *keːʔ (Khmuic); *[h/ʔ]kɔŋ (W. Bahnaric) |
| 166 | thorn | *pɔk | | *pʔɔɔk (Palaungic) |
| 167 | body | *ɓaŋ | | P-Vietic *bɔːk |
| 168 | chin | *keːŋ | | P-Vietic *kaːŋʔ |
| 169 | fist | *bau | | |
| 170 | chest | *nuʔ | | |
| 171 | stomach | *ɗoŋ | | *dul (Katuic); *-dɨl (Bahnaric) |
| 172 | pus | *tuŋʔ | | |
| 173 | orphan | *nɔ | | |
| 174 | blanket | *paːmʔ | | |
| 175 | axe | *kun | | *swaːn (Pramic); *cuuŋ (Katuic / Bahnaric) |
| 176 | plow | *coŋ | | |
| 177 | drill | *tsoŋ | < *coŋ | |
| 178 | basket | *ɗaːiʔ | | *-ɗoːŋ (Bahnaric) |
| 179 | candle | *kɔ | | |
| 180 | ink | *mak | | |
| 181 | lick, to | *lɛmʔ | | P-Vietic *-lɛːmʔ |

| 182 | twist, to (a rope) | *pʰja | | |
| --- | --- | --- | --- | --- |
| 183 | wring, to (a towel) | *pat | | |
| 184 | run, to | *kʰaːt | | |
| 185 | carry on back, to | *paʔ | | |
| 186 | sell, to | *seːi | | *tac (Khmuic / Katuic / Bahnaric); *təc (Palaungic) |
| 187 | steam, to | *kʰoː | | |
| 188 | scoop, to (water) | *kʰoːʔ | | |
| 189 | wash, to | *laːi | | *liiw (Monic) |
| 190 | comb, to | *tsi | | P-Vietic *k-ɟiːk |
| 191 | weave, to (basket) | *taːn | | P-Vietic *taːɲ |
| 192 | answer, to | *ʔoʔ | | |
| 193 | borrow, to (money) | *ɗan | | |
| 194 | give, to | *ti | | *ɗɛh (Palaungic) |
| 195 | divide, to | *sanʔ | | *coːŋ (Pramic); *sɔːŋ (Bahnaric) |
| 196 | go, to | *ʐɔʔ | < *ɟɔʔ | *ceː₃w (Bahnaric) |
| 197 | soak, to | *taŋ | | *dam; *tam (Palaungic) |
| 198 | float, to | *buʔ | | *pɛr (Khasic); *ber (PMK) |
| 199 | split, to (intr.) | *ɓɛnʔ | | |
| 200 | turn, spin, to | *vanʔ | | P-Vietic *vaɲʔ 'to twist, wring' |
| 201 | lay, to (egg) | *ten | | |
| 202 | tall | *ɣoʔ | < *roʔ | |
| 203 | deep | *kau | | P-Vietic *kʰluː |
| 204 | straight (not crooked) | *pjoʔ | | |
| 205 | gray | *luːk | | |
| 206 | raw (meat) | *ʔɔ | | |

| 207 | stinky | *tseŋʔ | < *ceŋʔ | *tsoːr (Bahnaric); *ciiŋ (Katuic) |
|-----|--------|--------|---------|-------------------------------------|
| 208 | classifier (general) | *buːŋ | | |
| 209 | pair | *tsom | < *com | *cuum (Palaungic) |
| 210 | double | *caːŋ | | |
| 211 | just now | *cɯŋ | | |
| 212 | also, too | *le | | |
| 213 | no, not | *mau | | |

Appendix 2: Comparative vocabulary list – Proto-Pakanic, Bolyu, Bugan (Nala), and Bugan (Manlong)

| No. | English gloss | Proto-Pakanic | Bolyu | Bugan (Nala) | Bugan (Manlong) |
|---|---|---|---|---|---|
| 1 | hand | *ti | tjɔ3**ti3**;**ti3** | tie$^{55}$ | tje$^{44}$ |
| 2 | left | *ɕit | ɕit7 | pə$^{0}$**ɕi̱$^{55}$** | pɯ$^{55}$**ɕi̱$^{55}$** |
| 3 | right | *cam | tɕəm3 | pə$^{0}$**ɕa$^{55}$** | pɯ$^{55}$**ɕa$^{55}$** |
| 4 | foot | *ʐoŋʔ | ʐɔŋ3 | ʐuŋ$^{31}$ | ʐo̱ŋ$^{55}$ |
| 5 | walk, to | *ɲaʔ | ɲe6 | ɲa̱$^{55}$ | ɲa̱$^{31}$ |
| 6 | skin | *ɓuŋ | mbuŋ3 | buŋ$^{55/31}$ | mboŋ$^{55}$ |
| 7 | belly | *puŋʔ | **puŋ4**ɕi5 | | ɕe$^{44}$**po̱ŋ$^{24}$** |
| 8 | bone | *ʐaʔ | pau4**ʐe3** | ɕa$^{35}$ | ʐa̱$^{24}$ |
| 9 | intestines | *ɕɛ | la:i6**ɕi5** | ŋguaŋ$^{13}$**ɕɛ$^{13}$** | ŋguaŋ$^{24}$**ɕe$^{24}$** |
| 10 | liver | *ɓu:ŋ | mbu:ŋ3 | bou$^{31}$ | mbou$^{31}$ |
| 11 | breast | *ɲinʔ | ɲin5 | nɛ$^{35}$ | nɛ̱$^{55}$ 'milk' |
| 12 | fear, to | *ʐu | ʐu6 | ɕɔ$^{33}$ | ɕo$^{44}$ |
| 13 | blood | *sa:m | sa:m5 | sɑ$^{33}$ | sa$^{44}$ |
| 14 | head | *ɓuʔ | mbu3 | pə$^{55}$**bop$^{31}$** | mbo̱u$^{31}$ |
| 15 | hair (of head) | *suk | **suk7**mbu3 | sa̱ŋ$^{55}$ | **sa̱ŋ$^{31}$**mbou$^{31}$ |
| 16 | feather | *suk | suk7 | sa̱ŋ$^{35}$ | sa̱ŋ$^{31}$ |
| 17 | nose | *maŋʔ | lɔŋ2**mi6** | pə$^{55}$**mã̱$^{31}$** | pɯ$^{55}$**maŋ$^{31}$** |
| 18 | smell, to (detect odor) | *tseŋʔ | tsan5 | tsa̱ŋ$^{35}$ | tse̱ŋ$^{24}$ |
| 19 | mouth | *tɔk | lɔŋ2**tɔk7** | tũi$^{55}$ | to̱ŋ$^{31}$ |
| 20 | tongue | *lim | lɔ6**lim4** | pə$^{55}$**lai$^{33}$** | pu$^{55}$**lei$^{44}$** |
| 21 | laugh, to | *mjoʔ | mi1 | mi̱o$^{31}$ | mjo̱$^{31}$ |
| 22 | weep, to | *ʐa:m | ʐa:m4 | ʐɑ$^{33}$ | ʐa$^{44}$ |
| 23 | vomit, to | *ʔu:k | ʔu:k7 | a̱u$^{55}$ | a̱u$^{31}$ |
| 24 | spit, to | *ɓjoʔ | mbjɔ3 | mde̱$^{13}$ | bdei$^{24}$ |
| 25 | eat, to | *tsɔʔ | tsɔ3 | tso̱u$^{31}$ | tsu̱$^{31}$ |
| 26 | cook, to | *taŋ | taŋ3 | taŋ$^{31}$ | taŋ$^{31}$ |
| 27 | bite, to | *canʔ | tɕən5 | tsa̱$^{13}$ | tɕa̱$^{24}$ |
| 28 | ear | *ca:iʔ | lɔ6**tɕja:i3** | pə$^{55}$**tsɛ$^{35}$** | pɯ$^{55}$**tɕɛ$^{24}$** |

| No. | English gloss | Proto-Pakanic | Bolyu | Bugan (Nala) | Bugan (Manlong) |
|---|---|---|---|---|---|
| 29 | eye | *mat | ła:i5mat8 | pə$^{55}$mɛ$^{33}$ | pɯ$^{55}$mɛ$^{31}$ |
| 30 | sleep, to | *ɲaŋʔ | ɲəŋ4 | naŋ$^{33}$ | na̠ŋ$^{44}$ |
| 31 | dream | *boː | paːu2 | mbo$^{31}$ | mbo$^{31}$ |
| 32 | sit, to | *ɲam | ʑam5 | ɲa$^{33}$ | ɲa$^{44}$ |
| 33 | stand, to | *ɲɔʔ | nau2 | ɲɔ̠$^{55/13}$ | ɲo$^{31}$ |
| 34 | male; man | *pauʔ | qa0puɔ3 | pə$^{55}$pau$^{55}$ | pɯ$^{44}$po̠u$^{31}$ |
| 35 | female; woman | *mau | qa0muɔ4 | pə$^{55}$mou$^{33}$ | pɯ$^{44}$mou$^{44}$ |
| 36 | house | *ɲɔʔ | ɲɔ2 | ɲu$^{55}$ | ɲo̠u$^{55}$ |
| 37 | name | *maŋ | mi6 | pə$^{55}$maŋ$^{33}$ | maŋ$^{31}$ |
| 38 | rope | *caʔ | tɕʰɔ6ʔɔ5 | tɕa$^{33}$ | tɕa̠$^{44}$ |
| 39 | needle | *gaːp | qaːp8 | ŋga$^{55}$ | ŋga$^{24}$ |
| 40 | hunt, to | *ɕuʔ | tsi4hu1 | tsɔ̠$^{31}$ɕɔ̠$^{35}$ | dou$^{44}$ɕu̠a̠$^{24}$ |
| 41 | shoot, to | *taŋʔ | tɯ2 | taŋ$^{31}$ | te̠i$^{24}$ |
| 42 | pound, to | *tan | tan5 | tɑn$^{35}$ | ten$^{24}$ |
| 43 | throw, to | *vaŋ | vəŋ2 | pʰan$^{31}$ | pʰen$^{31}$ |
| 44 | fall, to | *lat | lat8 | la̠i$^{55}$ | le̠i$^{31}$ |
| 45 | dog | *tsɔ | tsu5 | tsau$^{33}$ | tsau$^{44}$ |
| 46 | bird | *sanʔ | san5 | sau$^{33}$ | sa̠u$^{44}$ |
| 47 | egg | *tʰam | tʰam1 | tʰam$^{33}$ | tʰen$^{55}$ |
| 48 | wing | *kaŋ | qaŋ3 | kaŋ$^{55}$mba̠n$^{35}$ | kaŋ$^{55}$ |
| 49 | meat | *ɕjo | ɕjɔ5 | ɕu$^{33}$ | ɕou$^{44}$ |
| 50 | oil | *ɲi | ɲi4 | ɲi$^{33}$ | ɲi$^{44}$ |
| 51 | louse | *ben | pi5 | mban$^{33}$ | mbɛn$^{44}$ |
| 52 | mosquito | *ɲau | ɕaːp7ʑau5 | ɲa$^{31}$ | ɲua$^{31}$ |
| 53 | fish | *kɔ | qɔ5 | se$^{55}$qou$^{33}$ | ɕi̠$^{31}$kou$^{44}$ |
| 54 | leaf | *lɔʔ | lɔ6ʔɔ5 | lo̠u$^{13}$ | lo̠u$^{24}$ |
| 55 | root | *ɣiʔ | ʑi6 | ɣa̠u$^{13}$ | ɣu$^{24}$ |
| 56 | water | *ɗa | nde5 | da$^{35}$ | nda$^{24}$ |
| 57 | salt | *mjaːn | mjaːn1 | mia$^{31}$ | mja$^{31}$ |
| 58 | sky | *kɔ | qɔ3 | pə$^{0}$qou$^{55}$ | pu$^{44}$ku$^{44}$ |
| 59 | month | *maːi | maːi1 | mai$^{55}$ | mei$^{44}$ |

| No. | English gloss | Proto-Pakanic | Bolyu | Bugan (Nala) | Bugan (Manlong) |
|---|---|---|---|---|---|
| 60 | star | *bɔʔ | pau4 | **bɔ$^{55}$**mo$^{33}$ | **mbo̱$^{44}$**mo$^{44}$ |
| 61 | rain | *kʰɔ | qɔ3muɔ2; nde5**qo3** | kʰou$^{35}$ | kʰau$^{55}$ |
| 62 | wind | *tʰaŋ | qa3**təŋ3** | tʰaŋ$^{35}$ | tʰaŋ$^{55}$ |
| 63 | heavy | *maːiʔ | maːi1 | mo̱$^{31}$ | mo̱$^{31}$ |
| 64 | light | *taːnʔ | taːn4 | ndɑ̱$^{33}$ | ndᴀ̱$^{44}$ |
| 65 | smoke | *kui | se5**kui5** | kui$^{33}$ | kui$^{44}$ |
| 66 | ash | *ɓouʔ | mbai3 | **bo̱u$^{31}$**se$^{31}$ | mbo̱u$^{31}$ |
| 67 | big | *tʰɔ | tʰau1 | tʰɔ$^{31}$ | tʰo$^{31}$ |
| 68 | thin | *lap | lap10 | lᴀ̱$^{55}$ | lᴀ̱̃$^{31}$ |
| 69 | thick | *man | man1 | mən$^{31}$ | mən$^{31}$ |
| 70 | narrow | *kɔŋ | kɔŋ3 | kʰy$^{55}$ | kʰui$^{44}$ |
| 71 | sick | *ku | qu3 | kɔ$^{31}$ | ko$^{31}$ |
| 72 | good | *laːɯ | laːu2 | lɯ$^{31}$ | lɯ$^{31}$ |
| 73 | night | *paːiʔ | qa4**paːi5** | po$^{55}$ | po̱$^{31}$ |
| 74 | daytime | *han | qa3**han1** | o$^{33}$**hɛ$^{55}$** | ɯ$^{44}$**hɛ$^{55}$** |
| 75 | year | *nam | nam1 | nam$^{55}$ | *he̱i$^{31}$* (Loloish loanword) |
| 76 | this | *ni | ni3 | ni$^{33}$ | nei$^{44}$ |
| 77 | that | *ɗɔʔ | ndɯ3 | dɔ̱$^{13}$ | |
| 78 | near | *ta | to3 | ta$^{31}$ | dᴀ̃$^{31}$ |
| 79 | I | *ʔoːʔ | ʔaːu3 | ɔ$^{31}$ | o̱$^{31}$ |
| 80 | you (sg.) | *mɯ | mi2 | mɯ$^{31}$ | mɯ$^{31}$ |
| 81 | he/she | *ʔi | ʔi3 | i$^{31}$ | i$^{31}$ |
| 82 | we (excl.) | *pai | pai3 | pɛ$^{31}$ | pɛ$^{31}$ |
| 83 | you (pl.) | *maːi | maːi2 | mi$^{31}$ | mei$^{31}$ |
| 84 | who? | *ɓai | mbai5 | bɛ$^{35}$ | mbɛ$^{24}$ |
| 85 | one | *mo | mə2 | mə$^{55}$; **bɔ$^{55}$** | bo$^{44}$ |
| 86 | two | *ɓi | mbi3 | biɔ$^{31}$; **bi$^{31}$** | mbjo$^{31}$ |
| 87 | three | *paːi | paːi3 | ptse$^{31}$ | pi$^{31}$ |
| 88 | four | *puːn | puːn5 | pau$^{33}$ | pau$^{44}$ |
| 89 | five | *mi | me4 | mi$^{33}$ | mi$^{44}$ |

| No. | English gloss | Proto-Pakanic | Bolyu | Bugan (Nala) | Bugan (Manlong) |
|---|---|---|---|---|---|
| 90 | six | *pjuʔ | piu5 | $\text{p}\underline{\text{i}}\text{o}^{33}$ | $\text{pj}\underline{\text{o}}^{31}$ |
| 91 | seven | *peiʔ | pei3 | $\text{p}\underline{\text{o}}\text{u}^{31}$ | $\text{p}\underline{\text{o}}\text{u}^{31}$ |
| 92 | eight | *sa:mʔ | sa:m5 | $\text{s}\tilde{\text{a}}^{33}$ | $\text{s}\underline{\text{a}}^{44}$ |
| 93 | nine | *ɕinʔ | ɕən5 | $\text{ɕi}^{33}$ | $\text{ɕ}\underline{\text{i}}^{44}$ |
| 94 | ten | *ma:n | ma:n2 | $\text{m}\tilde{\text{a}}^{31}$ | $\text{ma}^{31}$ |
| 95 | hundred | *ʐɔ | mə0ʐɔ2 | $\text{ʑiu}^{31}$ | $\text{ʑou}^{31}$ |
| 96 | gold | *hiʔ | hi3 | $\text{h}\underline{\text{i}}^{35}$ | $\text{h}\underline{\text{ei}}^{24}$ |
| 97 | iron | *lu:n | lu:n2 | $\text{lou}^{33}$ | $\text{lou}^{44}$ |
| 98 | pig | *tan | tan5 | $\text{tau}^{33}$ | $\text{tau}^{24}$ |
| 99 | tiger | *kuiʔ | kui5 | $\text{t}\underline{\text{ə}}^{55}\text{q}\underline{\text{o}}^{33}\text{t}^\text{h}\text{ɔ}^{55}$ | $\text{tɯ}^{55}\text{q}\underline{\text{o}}^{44}$ |
| 100 | horse | *laŋʔ | ljiŋ2 | $\text{l}\tilde{\text{a}}^{31}; \text{laŋ}^{31}$ | $\text{l}\underline{\text{a}}\text{ŋ}^{31}$ |
| 101 | cattle | *laiʔ | lai1 | $\text{li}^{55}$ | $\text{l}\underline{\text{ei}}^{55}$ |
| 102 | pangolin | *ɓo:ʔ | mba:u3 | $\text{bo}^{31}$ | $\text{mb}\underline{\text{o}}^{31}$ |
| 103 | ant | *ɣen | ɣan2 | $\text{ɣen}^{31}$ | $\text{ɣeŋ}^{31}$ |
| 104 | grasshopper | *dza:n | muɔ4tsja:n4 | $\text{ndza}^{33}$ | $\text{ɲdʐa}^{44}\text{s}\underline{\text{e}}\text{n}^{31}$ |
| 105 | tree | *sa:ɯʔ | sa:u3 | $\text{sau}^{31}$ | $\text{s}\underline{\text{ɯ}}^{31}$ |
| 106 | sugarcane | *ʔɔŋ | *ʑe3pai3* | $\text{ʔɔŋ}^{13}$ | $\text{oŋ}^{24}\text{pjo}^{24}$ |
| 107 | bamboo shoot | *ɓaŋʔ | mbɔŋ3 | $\text{baŋ}^{31}$ | $\text{mb}\underline{\text{a}}\text{ŋ}^{31}$ |
| 108 | vegetables | *tʰuʔ | tu3 | $\text{t}^\text{h}\text{u}^{55}$ | $\text{t}^\text{h}\underline{\text{u}}^{44}$ |
| 109 | face | *pʰja | ɬe1 | $\text{pts}^\text{h}\text{a}^{33}$ | $\text{p}^\text{h}\text{ts}^\text{h}\text{a}^{44}$ |
| 110 | die, to | *pja:t | ɬi:t7 | $\text{ptsa}^{55}$ | $\text{pts}\underline{\text{a}}^{31}$ |
| 111 | fruit | *pje:iʔ | ɬa:i5ʔɔ5 | $\text{pts}\underline{\text{e}}^{33}$ | $\text{ptsei}^{44}$ |
| 112 | snake | *kaŋ | ɬaŋ3 | $\text{qaŋ}^{35}$ | $\text{qaŋ}^{55}$ |
| 113 | steal, to | *ɕenʔ | ɕən5 | $\text{s}\underline{\text{e}}\text{n}^{35}$ | $\text{ɕin}^{24}$ |
| 114 | excrement | *ʔiʔ | ʔi5 | $\underline{\text{a}}\text{i}^{33}$ | $\text{ai}^{44}$ |
| 115 | urine | *t-ca:ŋ | tja:ŋ4 | $\text{ts}^\text{h}\text{ə}^{31}$ | $\text{tɕ}^\text{h}\text{ɯ}^{31}$ |
| 116 | fart | *sa:ŋ | sja:ŋ5 | $\text{sa}^{33}$ | $\text{sa}^{44}$ |
| 117 | snow | *cimʔ | qa3tɕim5 | $\text{te}^{55}\text{tsi}^{33}$ | $\text{ti}^{55}\text{tɕ}\underline{\text{i}}^{44}$ |
| 118 | field | *tiʔ | mat8ti3 | $\text{t}\underline{\text{a}}\text{ɯ}^{35}$ | $\text{t}\underline{\text{ɯ}}^{24}$ |
| 119 | well | *loŋ | lɔŋ2nde5 | $\text{luŋ}^{33}\text{da}^{35}$ | $\text{loŋ}^{44}$ |
| 120 | flea | *mjo | mjɔ2 | $\text{miou}^{31}$ | $\text{mjau}^{31}$ |
| 121 | taro | *xɔ | muɔ4hu5; | $\text{ɲa}^{33}\text{xau}^{33}$ | $\text{ɲa}^{44}\text{hau}^{44}$ |

| No. | English gloss | Proto-Pakanic | Bolyu | Bugan (Nala) | Bugan (Manlong) |
|-----|---------------|---------------|-------|--------------|-----------------|
| | | | ła:i5**hu5** | | |
| 122 | melon | *tanʔ | ła:i5**tan5** | te$^{55}$**ta̠n$^{33}$** 'pumpkin' | ti$^{55}$**den$^{44}$** |
| 123 | bean | *tuk | tuk8 | toŋ$^{55}$ | ndo̠n$^{31}$ |
| 124 | mushroom | *pʰa:ŋ | pʰja:ŋ6 | pʰa$^{33}$ | pʰa$^{44}$ |
| 125 | lips | *ban | pan2 | man$^{31}$ | men$^{31}$ |
| 126 | navel | *sanʔ | loŋ2**san5** | pə$^{55}$**san$^{33}$** | pɯ$^{55}$**se̠n$^{44}$** |
| 127 | road | *koŋ | kɔ5 | ho$^{55}$tɕu$^{33}$ | xoŋ$^{44}$tɕou$^{44}$ |
| 128 | fox | *kʰa:n | qa:n5 | | tei$^{55}$**qʰa$^{44}$** |
| 129 | sweet | *lim | lim5 | lɛi$^{33}$ | lai$^{44}$ |
| 130 | sour | *p-cat | tsjat7 | ptsɛ$^{31}$ | pje$^{31}$ |
| 131 | bitter | *caŋʔ | tɕaŋ5 | tsaŋ$^{33}$ | tsa̠ŋ$^{44}$ |
| 132 | spicy | *ɲam | ɲam2 | | ŋo$^{44}$ |
| 133 | salty | *ŋam | ŋam2 | ŋa$^{33}$ | ŋa$^{44}$ |
| 134 | drunk | *caŋ | ɕa:n3**tɕjuŋ5** | ɕa$^{31}$ | ɕa$^{31}$ |
| 135 | medicine | *suʔ | su3 | so$^{31}$ | so̠$^{31}$ |
| 136 | door | *coŋʔ | tɔk7**tɕɔŋ2** | ŋa$^{55}$**ʐu̠n$^{31}$** | ŋa$^{44}$**ɳdʐon$^{31}$** |
| 137 | pillar | *ɣaŋ | muɔ4**ɣaŋ2** | ɣaŋ$^{31}$ | ɣaŋ$^{31}$ |
| 138 | trousers | *pɛʔ | pi3 | pɛ$^{13}$ | pɛ̠$^{24}$ |
| 139 | shoes | *nauʔ | nau6 | na̠u$^{55}$ | na̠u$^{31}$ |
| 140 | cloth | *nen | nən4 | nen$^{33}$ | nen$^{44}$ |
| 141 | clothing | *peʔ | pʰje1 | **pɯ̠$^{55}$**lio̠$^{31}$ | bi$^{44}$ |
| 142 | umbrella | *laŋ | ljiŋ1 | | laŋ$^{44}$ |
| 143 | arrow | *ɓa | mbɔ3 'bow' | sa$^{55}$ | nau$^{44}$**mbou$^{44}$** |
| 144 | suona | *limʔ | le3**ljim5** | | le̠n$^{31}$ |
| 145 | dinner | *pa:iʔ | qʰe1**pa:i5** | tso̠u$^{55}$**po̠$^{31}$** | po$^{31}$ |
| 146 | speech | *to | tɔ2 | to$^{55}$ | to$^{44}$ |
| 147 | grave | *lap | lap8 | mə$^0$**lo̠u$^{31}$** | mu$^{44}$**lau$^{31}$** |
| 148 | strength | *ɣək | ɣək8 | | ɣo$^{44}$ |
| 149 | beam | *tsoʔ | ʐe3**tso3** | **tso̠u$^{13}$**ɲiu$^{13}$ 'beam wood' | **tso$^{24}$**ɲou$^{55}$ |
| 150 | village | *gɔ | qɔ2 | ŋqu$^{33}$ | ŋgu$^{44}$ |

| No. | English gloss | Proto-Pakanic | Bolyu | Bugan (Nala) | Bugan (Manlong) |
|---|---|---|---|---|---|
| 151 | drum | *buŋʔ | **puŋ2**lai6 | bam$^{35}$ | mb**e̱**n$^{24}$ |
| 152 | gong | *tsanʔ | **tsuŋ2**tsan2 | | ts**e̱i**$^{44}$ |
| 153 | blow, to | *pʰu | pʰu1 | pʰɔ$^{31}$ | pʰɔ$^{31}$ |
| 154 | burn, to (intr.) | *ɗɔʔ | ndau5 | t**o̠**$^{13}$ | t**o̠**$^{44}$ (of fire); ndo$^{44}$ (of mountains) |
| 155 | green | *çaŋ | çan3 | çaŋ$^{31}$ | çaŋ$^{31}$ |
| 156 | bed | *ɲaŋʔ | kɔ5**ɲə̱ŋ4** | hɔŋ$^{13}$**na̱ŋ$^{33}$** | xɔŋ$^{55}$**na̱ŋ$^{44}$** |
| 157 | pond, pool | *kau | nde5**ɣau2** | kʰɯ$^{35}$ 'large pond' | kau$^{31}$ |
| 158 | cave | *loŋ | **lɔŋ2**tɔ5 | loŋ$^{33}$ | loŋ$^{44}$ |
| 159 | muntjac | *koŋ | kɔŋ5 | tɕioŋ$^{33}$ | tɕoŋ$^{44}$ |
| 160 | eagle | *laːŋʔ | muɔ4**lja:ŋ4** | lou$^{35}$ | l**o̠**u$^{24}$ |
| 161 | centipede | *xaŋ | hə6 | se$^{31}$**xaŋ$^{55}$**; ptsi$^{31}$**xaŋ$^{55}$**; pə$^{0}$ta$^{55}$ | pi$^{31}$**haŋ$^{55}$** |
| 162 | claw | *cjoʔ | tjai6 | bi**a̠**n$^{35}$; pə$^{0}$**tɕiu$^{55}$** | pu$^{44}$**tɕo̠**$^{31}$ |
| 163 | ginger | *cɯŋʔ | tɕəŋ3 | tsʰɯ$^{13}$ | tɕʰ**ɯ̠**$^{24}$ |
| 164 | millet | *saŋ | saŋ5 | saŋ$^{33}$ | saŋ$^{44}$ |
| 165 | ears (of grain) | *kaːn | qa:n5 | | qa$^{24}$ |
| 166 | thorn | *pɔk | pɔk7 | paŋ$^{55}$ | p**a̠**ŋ$^{31}$ |
| 167 | body | *ɓaŋ | mbu3**mba:i5** | baŋ$^{33}$ | mbaŋ$^{44}$ |
| 168 | chin | *keːŋ | la:p8**qeːŋ5** | la$^{0}$**kə$^{33}$** | ti$^{31}$**kɯ$^{44}$** |
| 169 | fist | *bau | **pau4**tsʰap10 | | tje$^{44}$**mbou$^{44}$** |
| 170 | chest | *nuʔ | qɔ4**ni6** | ha$^{55}$**nu̠$^{31}$** | x**a̠**$^{55}$**nou$^{31}$** |
| 171 | stomach | *ɗoŋ | ndan3 | tai$^{31}$ | loŋ$^{55}$ |
| 172 | pus | *tuŋʔ | tuŋ3 | t**ə̠**ŋ$^{35}$ | toŋ$^{44}$ |
| 173 | orphan | *nɔ | qa0**nɔ6** | ɲa$^{33}$**nou$^{33}$** | ɲa$^{44}$**nou$^{44}$** |
| 174 | blanket | *paːmʔ | pa:m2 | | p**a̠**$^{24}$ |
| 175 | axe | *kun | kʰun1 | bou$^{31}$**kan$^{13}$** | ken$^{44}$ |
| 176 | plow | *coŋ | tɕɔŋ2 | tɕuŋ$^{33}$ | tɕoŋ$^{44}$ |
| 177 | drill | *tsoŋ | tsɔŋ2 | tsoŋ$^{55}$ | tsoŋ$^{44}$ |
| 178 | basket | *ɗaːiʔ | nda:i5 | | t**a̠i**$^{31}$ |

| No. | English gloss | Proto-Pakanic | Bolyu | Bugan (Nala) | Bugan (Manlong) |
|-----|---------------|---------------|-------|--------------|-----------------|
| 179 | candle | *kɔ | qaːn2qɔ3 | qou$^{35}$ | ku$^{24}$ |
| 180 | ink | *mak | mak8 | | ma̠ŋ$^{31}$ |
| 181 | lick, to | *lɛmʔ | ljim4 | lɛ$^{13}$ | lɛ̠$^{24}$ |
| 182 | twist, to (a rope) | *pʰja | pʰjaːi1 | | pʰja$^{31}$ |
| 183 | wring, to (a towel) | *pat | pjit7 | pa̠$^{35}$ | pa̠$^{31}$ |
| 184 | run, to | *kʰaːt | qaːt8 | qʰa̠i$^{55}$ | qʰe̠i$^{31}$ |
| 185 | carry on back, to | *paʔ | pe5 | pa̠$^{33/35}$ | pua$^{24}$ |
| 186 | sell, to | *seːi | saːi3 | se$^{31}$ | sei$^{31}$ |
| 187 | steam, to | *kʰoː | qʰaːu4 | | kʰau$^{31}$ |
| 188 | scoop, to (water) | *kʰoːʔ | qaːu3 | | kʰo̠$^{24}$ |
| 189 | wash, to | *laːi | laːi4 | le$^{13}$ | li$^{44}$ |
| 190 | comb, to | *tsi | tse4 | tsi$^{31}$ | tɕi$^{31}$ |
| 191 | weave, to (basket) | *taːn | taːn3 | | da$^{31}$ |
| 192 | answer, to | *ʔoʔ | ʔiu3 | | o̠$^{31}$ |
| 193 | borrow, to (money) | *ɗan | ndan5 | | nda$^{24}$ |
| 194 | give, to | *ti | tɔ5 | ta̠$^{35}$**ti**$^{55}$ | ti$^{55}$ |
| 195 | divide, to | *sanʔ | san5 | sa̠i$^{35}$ | sei$^{24}$ |
| 196 | go, to | *ʑɔʔ | ʑu2 | jau$^{31}$ | ʑa̠u$^{31}$ |
| 197 | soak, to | *taŋ | təŋ3 | | da̠ŋ$^{24}$ |
| 198 | float, to | *buʔ | pu2 | mbou$^{31}$ | po̠u$^{31}$ |
| 199 | split, to (intr.) | *ɓɛnʔ | mbjɔ5 | | **mbɛ̠n**$^{44}$; bjaŋ$^{24}$ |
| 200 | turn, spin, to | *vanʔ | pin$^{33}$ | va̠n$^{35}$ | ve̠n$^{31}$ |
| 201 | lay, to (egg) | *ten | tu4 | | tʰen$^{31}$ |
| 202 | tall | *ɣoʔ | ʑɔu4 | ɣo$^{33}$ | ɣo̠$^{44}$ |
| 203 | deep | *kau | ɣau2 | kou$^{31}$ | kau$^{31}$ |
| 204 | straight (not | *pjoʔ | pjai3 | pio$^{31}$ | pjo̠$^{31}$ |

| No. | English gloss | Proto-Pakanic | Bolyu | Bugan (Nala) | Bugan (Manlong) |
|-----|--------------|---------------|-------|--------------|-----------------|
| | crooked) | | | | |
| 205 | gray | *luːk | luːk8 | | lu[31] |
| 206 | raw (meat) | *ʔɔ | ʔau5 | ɔ[33]; ɲu[33] | o[44] |
| 207 | stinky | *tseŋʔ | tsan5 | tsa̱n[33] | tse̱ŋ[44] |
| 208 | classifier (general) | *buːŋ | puːŋ3 | | mbou[44] |
| 209 | pair | *tsom | tsɔu4 | tsam[33] | tsen[24] |
| 210 | double | *caːŋ | tɕjaːŋ2 | | tɕaŋ[55] |
| 211 | just now | *cɯŋ | **tɕəŋ5**mbaːi5 | | tɕɯ[31] |
| 212 | also, too | *le | le2 | | lɛ[24] |
| 213 | no, not | *mau | mau4 | mə[55] | mɯ[55] |

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## Appendix 3: Onset correspondences

Onset correspondences are presented in the following order.

*Bolyu : Bugan (Nala) : Bugan (Manlong)*

| Correspondences | Proto-Pakanic | No. |
|---|---|---|
| - / ʔ / - | *ʔ | 106 |
| ç / ç / ç | *ç | 155 |
| ç / ç / ç | *ç | 93 |
| ç / ç / ç | *ç | 9 |
| ç / ç / ç | *ç | 2 |
| ç / ç / ç | *ç | 49 |
| ç / s / ç | *ç | 113 |
| ɣ / - / ɣ | *ɣ | 148 |
| ɣ / ɣ / ɣ | *ɣ | 103 |
| ɣ / ɣ / ɣ | *ɣ | 137 |
| ɣ / k / k | *k | 203 |
| ɣ / kʰ / k | *k | 157 |
| h / ç / ç | *ç | 40 |
| h / h / h | *h | 74 |
| h / h / h | *h | 96 |
| h / x / h | *x | 161 |
| h / x / h | *x | 121 |
| k / h / x | *k | 127 |
| k / k / k | *k | 65 |
| k / kʰ / kʰ | *k | 70 |
| k / q / q | *k | 99 |
| k / tç / tç | *k | 159 |
| kʰ / k / k | *k | 175 |
| l / - / l | *l | 212 |
| l / - / l | *l | 144 |
| l / - / l | *l | 142 |
| l / - / l | *l | 205 |

| | | |
|---|---|---|
| l / l / l | *l | 189 |
| l / l / l | *l | 72 |
| l / l / l | *l | 101 |
| l / l / l | *l | 68 |
| l / l / l | *l | 147 |
| l / l / l | *l | 44 |
| l / l / l | *l | 54 |
| l / l / l | *l | 158 |
| l / l / l | *l | 119 |
| l / l / l | *l | 20 |
| l / l / l | *l | 129 |
| l / l / l | *l | 160 |
| l / l / l | *l | 181 |
| l / l / l | *l | 100 |
| l / l / l | *l | 97 |
| ł / pts / pts | *pj | 111 |
| ł / pts / pts | *pj | 110 |
| ł / pts$^h$ / p$^h$ts$^h$ | *p$^h$j | 109 |
| ł / q / q | *k | 112 |
| m / - / m | *m | 180 |
| m / m / b | *m | 85 |
| m / m / m | *m | 59 |
| m / m / m | *m | 83 |
| m / m / m | *m | 63 |
| m / m / m | *m | 94 |
| m / m / m | *m | 69 |
| m / m / m | *m | 29 |
| m / m / m | *m | 213 |
| m / m / m | *m | 89 |
| m / m / m | *m | 17 |
| m / m / m | *m | 37 |
| m / m / m | *m | 21 |
| m / m / m | *m | 80 |
| m / m / m | *m | 57 |

| | | |
|---|---|---|
| m / m / m | *m | 120 |
| m / m / m | *m | 35 |
| mb / - / mb | *ɓ | 143 |
| mb / - / mb | *ɓ | 199 |
| mb / b / mb | *ɓ | 167 |
| mb / b / mb | *ɓ | 102 |
| mb / b / mb | *ɓ | 84 |
| mb / b / mb | *ɓ | 66 |
| mb / b / mb | *ɓ | 107 |
| mb / b / mb | *ɓ | 86 |
| mb / b / mb | *ɓ | 14 |
| mb / b / mb | *ɓ | 10 |
| mb / b / mb | *ɓ | 6 |
| mb / md / bd | *ɓ | 24 |
| ɲ / - / ŋ | *ɲ | 132 |
| n / n / - | *n | 75 |
| n / n / n | *n | 139 |
| n / n / n | *n | 173 |
| n / n / n | *n | 140 |
| n / n / n | *n | 76 |
| n / n / n | *n | 170 |
| n / ɲ / ɲ | *ɲ | 33 |
| ɲ / n / n | *ɲ | 30 |
| ɲ / n / n | *ɲ | 156 |
| ɲ / n / n | *ɲ | 11 |
| ɲ / ɲ / ɲ | *ɲ | 36 |
| ɲ / ɲ / ɲ | *ɲ | 5 |
| ɲ / ɲ / ɲ | *ɲ | 50 |
| nd / - / nd | *ɗ | 193 |
| nd / - / t | *ɗ | 178 |
| nd / d / | *ɗ | 77 |
| nd / d / nd | *ɗ | 56 |
| nd / t / l | *ɗ | 171 |
| nd / t / nd | *ɗ | 154 |

| | | |
|---|---|---|
| ŋ / ŋ / ŋ | *ŋ | 133 |
| p / - / mb | *b | 169 |
| p / - / mb | *b | 208 |
| p / - / p | *p | 174 |
| p / - / p | *p | 7 |
| p / b / mb | *b | 60 |
| p / b / mb | *b | 151 |
| p / m / m | *b | 125 |
| p / mb / mb | *b | 31 |
| p / mb / mb | *b | 51 |
| p / mb / p | *b | 198 |
| p / p / p | *p | 73 |
| p / p / p | *p | 145 |
| p / p / p | *p | 82 |
| p / p / p | *p | 166 |
| p / p / p | *p | 185 |
| p / p / p | *p | 91 |
| p / p / p | *p | 138 |
| p / p / p | *p | 90 |
| p / p / p | *p | 204 |
| p / p / p | *p | 183 |
| p / p / p | *p | 88 |
| p / p / p | *p | 34 |
| p / pts / p | *p | 87 |
| p / v / v | *v | 200 |
| pʰ / - / pʰ | *pʰ | 182 |
| pʰ / p / b | *p | 141 |
| pʰ / pʰ / pʰ | *pʰ | 124 |
| pʰ / pʰ / pʰ | *pʰ | 153 |
| q / - / kʰ | *kʰ | 188 |
| q / - / q | *k | 165 |
| q / - / qʰ | *kʰ | 128 |
| q / k / k | *k | 48 |
| q / k / k | *k | 168 |

| | | |
|---|---|---|
| q / k / k | *k | 71 |
| q / kʰ / kʰ | *kʰ | 61 |
| q / ŋg / ŋg | *g | 39 |
| q / ŋq / ŋg | *g | 150 |
| q / q / k | *k | 53 |
| q / q / k | *k | 58 |
| q / q / k | *k | 179 |
| q / qʰ / qʰ | *kʰ | 184 |
| qʰ / - / kʰ | *kʰ | 187 |
| s / s / s | *s | 186 |
| s / s / s | *s | 92 |
| s / s / s | *s | 13 |
| s / s / s | *s | 105 |
| s / s / s | *s | 195 |
| s / s / s | *s | 126 |
| s / s / s | *s | 46 |
| s / s / s | *s | 164 |
| s / s / s | *s | 116 |
| s / s / s | *s | 135 |
| s / s / s | *s | 15 |
| s / s / s | *s | 16 |
| t / - / d | *t | 197 |
| t / - / da | *t | 191 |
| t / - / tʰ | *t | 201 |
| t / nd / nd | *t | 64 |
| t / t / d | *t | 122 |
| t / t / d | *t | 78 |
| t / t / nd | *t | 123 |
| t / t / t | *t | 42 |
| t / t / t | *t | 98 |
| t / t / t | *t | 26 |
| t / t / t | *t | 194 |
| t / t / t | *t | 146 |
| t / t / t | *t | 19 |

59

| | | |
|---|---|---|
| t / t / t | *t | 118 |
| t / t / t | *t | 1 |
| t / t / t | *t | 41 |
| t / t / t | *t | 172 |
| t / tɕ / tɕ | *c | 162 |
| t / tʰ / tʰ | *tʰ | 62 |
| t / tʰ / tʰ | *tʰ | 108 |
| t / tsʰ / tɕʰ | *t-c | 115 |
| tɕ / - / tɕ | *c | 211 |
| tɕ / - / tɕ | *c | 210 |
| tɕ / ɕ / ɕ | *c | 3 |
| tɕ / ɕ / ɕ | *c | 134 |
| tɕ / tɕ / tɕ | *c | 176 |
| tɕ / ts / tɕ | *c | 27 |
| tɕ / ts / tɕ | *c | 117 |
| tɕ / ts / tɕ | *c | 28 |
| tɕ / ts / ts | *c | 131 |
| tɕ / tsʰ / tɕʰ | *c | 163 |
| tɕ / ʐ / ɲdʑ | *c | 136 |
| tɕʰ / tɕ / tɕ | *c | 38 |
| tʰ / tʰ / tʰ | *tʰ | 47 |
| tʰ / tʰ / tʰ | *tʰ | 67 |
| ts / - / ts | *ts | 152 |
| ts / ndz / ɲdʑ | *dz | 104 |
| ts / pts / p | *p-c | 130 |
| ts / ts / tɕ | *ts | 190 |
| ts / ts / ts | *ts | 18 |
| ts / ts / ts | *ts | 207 |
| ts / ts / ts | *ts | 25 |
| ts / ts / ts | *ts | 177 |
| ts / ts / ts | *ts | 209 |
| ts / ts / ts | *ts | 149 |
| ts / ts / ts | *ts | 45 |
| v / pʰ / pʰ | *v | 43 |

| | | |
|---|---|---|
| ʐ / ɕ / ɕ | *ʐ | 12 |
| ʐ / ɕ / ʐ | *ʐ | 8 |
| ʐ / ɣ / ɣ | *ɣ | 202 |
| ʐ / ɣ / ɣ | *ɣ | 55 |
| ʐ / j / ʐ | *ʐ | 196 |
| ʐ / ɲ / ɲ | *ɲ | 32 |
| ʐ / ɲ / ɲ | *ɲ | 52 |
| ʐ / ʐ / ʐ | *ʐ | 22 |
| ʐ / ʐ / ʐ | *ʐ | 95 |
| ʐ / ʐ / ʐ | *ʐ | 4 |
| ʔ / - / - | *ʔ | 79 |
| ʔ / - / - | *ʔ | 114 |
| ʔ / - / - | *ʔ | 81 |
| ʔ / - / - | *ʔ | 23 |
| ʔ / - / - | *ʔ | 206 |
| ʔ / - / o̠ | *ʔ | 192 |

## Appendix 4: Rime correspondences

Onset correspondences are presented in the following order.

*Bolyu : Bugan (Nala) : Bugan (Manlong)*

| Correspondences | Proto-Pakanic | No. |
|---|---|---|
| - / ɔŋ / - | *ɔŋ | 106 |
| aːi / e̠ / ei | *eːiʔ | 111 |
| aːi / - / a̠i | *aːiʔ | 178 |
| aːi / ai / ei | *aːi | 59 |
| aːi / aŋ / aŋ | *aŋ | 167 |
| aːi / e / ei | *eːi | 186 |
| aːi / e / i | *aːi | 189 |
| aːi / e / i | *aːi | 87 |
| aːi / i / ei | *aːi | 83 |
| aːi / o / o̠ | *aːiʔ | 73 |
| aːi / o̠ / o | *aːiʔ | 145 |
| aːi / o̠ / o̠ | *aːiʔ | 63 |
| aːm / - / a̠ | *aːmʔ | 174 |
| aːm / ã / a̠ | *aːmʔ | 92 |
| aːm / ɑ / a | *aːm | 13 |
| aːm / ɑ / a | *aːm | 22 |
| aːn / - / a | *aːn | 165 |
| aːn / - / a | *aːn | 128 |
| aːn / - / a | *aːn | 191 |
| aːn / ã / a | *aːn | 94 |
| aːn / ɑ̠ / a̠ | *aːnʔ | 64 |
| aːp / a̠ / a | *aːp | 39 |
| aːt / a̠i / e̠i | *aːt | 184 |
| aːu / - / au | *oː | 187 |
| aːu / - / o̠ | *oːʔ | 188 |
| aːu / aɯ / ɰ | *aːɯʔ | 105 |
| aːu / ɔ / o̠ | *oːʔ | 79 |

62

| | | |
|---|---|---|
| aːu / ɯ / ɯ | *aːɯ | 72 |
| aːu / o / o | *oː | 31 |
| aːu / o / o̱ | *oːʔ | 102 |
| ai / ɛ / ɛ | *ai | 84 |
| ai / ɛ / ɛ | *ai | 82 |
| ai / i / e̱i | *aiʔ | 101 |
| ai / o̱u / o̱u | *ouʔ | 66 |
| ak / - / a̱ŋ | *ak | 180 |
| am / - / o | *am | 132 |
| am / a / a | *am | 133 |
| am / a / a | *am | 32 |
| am / am / - | *am | 75 |
| am / am / en | *am | 47 |
| an / - / a | *an | 193 |
| an / - / e̱i | *anʔ | 152 |
| an / a̱i / ei | *anʔ | 195 |
| an / ai / oŋ | *oŋ | 171 |
| an / an / en | *an | 125 |
| an / an / e̱n | *anʔ | 126 |
| an / a̱n / en | *anʔ | 122 |
| an / ɑn / en | *an | 42 |
| an / a̱n / e̱ŋ | *eŋʔ | 18 |
| an / a̱n / e̱ŋ | *eŋʔ | 207 |
| an / au / au | *an | 98 |
| an / au / a̱u | *anʔ | 46 |
| an / ən / ən | *an | 69 |
| an / en / eŋ | *en | 103 |
| an / ɛ / ɛ | *an | 74 |
| aŋ / aŋ / aŋ | *aŋ | 155 |
| aŋ / aŋ / aŋ | *aŋ | 137 |
| aŋ / aŋ / aŋ | *aŋ | 112 |
| aŋ / aŋ / aŋ | *aŋ | 48 |
| aŋ / aŋ / aŋ | *aŋ | 164 |
| aŋ / aŋ / aŋ | *aŋ | 26 |

63

| | | |
|---|---|---|
| aŋ / aŋ / a̠ŋ | *aŋʔ | 131 |
| ap / a̠ / ã̠ | *ap | 68 |
| ap / o̠u / au | *ap | 147 |
| at / a̠i / ɛi | *at | 44 |
| at / ɛ / ɛ | *at | 29 |
| au / - / ou | *au | 169 |
| au / a / ua | *au | 52 |
| au / a̠u / a̠u | *auʔ | 139 |
| au / ɔ / o | *ɔ | 67 |
| au / ɔ / o̠ | *ɔʔ | 60 |
| au / ɔ̠ / o | *ɔʔ | 154 |
| au / ɔ̠ / o̠ | *ɔʔ | 33 |
| au / ə / ɯ | *au | 213 |
| au / ɯ / au | *au | 157 |
| au / ou / au | *au | 203 |
| au / u / o | *ɔ | 206 |
| ɔ / a / a̠ | *aʔ | 38 |
| ɔ / a / ou | *a | 143 |
| ɔ / i / i | *i | 194 |
| ɔ / iu / ou | *ɔ | 95 |
| ɔ / o / o | *o | 146 |
| ɔ / o / oŋ | *oŋ | 127 |
| ɔ / ou / au | *ɔ | 61 |
| ɔ / ou / ou | *ɔ | 173 |
| ɔ / ou / ou | *ɔ | 53 |
| ɔ / o̠u / o̠u | *ɔʔ | 54 |
| ɔ / ou / u | *ɔ | 58 |
| ɔ / ou / u | *ɔ | 179 |
| ɔ / o̠u / u̠ | *ɔʔ | 25 |
| ɔ / u / o̠u | *ɔʔ | 36 |
| ɔ / u / u | *ɔ | 150 |
| ɔk / aŋ / a̠ŋ | *ɔk | 166 |
| ɔk / ũ̠i / o̠ŋ | *ɔk | 19 |
| ɔŋ / aŋ / a̠ŋ | *aŋʔ | 107 |

| ɔŋ / ioŋ / oŋ | *oŋ | 159 |
|---|---|---|
| ɔŋ / oŋ / oŋ | *oŋ | 158 |
| ɔŋ / oŋ / oŋ | *oŋ | 177 |
| ɔŋ / uŋ / oŋ | *oŋ | 119 |
| ɔŋ / uŋ / oŋ | *oŋ | 176 |
| ɔŋ / uŋ / o̠ŋ | *oŋʔ | 4 |
| ɔŋ / u̠ŋ / oŋ | *oŋʔ | 136 |
| ɔŋ / y / ui | *ɔŋ | 70 |
| ɔu / am / en | *om | 209 |
| ɔu / o / o̠ | *oʔ | 202 |
| e / - / ɛ | *e | 212 |
| e / a / a | *a | 109 |
| e / a / a | *a | 56 |
| e / a / a̠ | *aʔ | 8 |
| e / a̠ / a̠ | *aʔ | 5 |
| e / a̠ / ua | *aʔ | 185 |
| ə / aŋ / aŋ | *aŋ | 161 |
| ə / ə / o | *o | 85 |
| e / i / i | *i | 89 |
| e / i / i | *i | 190 |
| eːŋ / ə / ɯ | *eːŋ | 168 |
| ei / o̠u / o̠u | *eiʔ | 91 |
| ək / - / o | *ək | 148 |
| əm / a / a | *am | 3 |
| ən / a̠ / a̠ | *anʔ | 27 |
| ən / en / en | *en | 140 |
| ən / e̠n / in | *enʔ | 113 |
| ən / i / i̠ | *inʔ | 93 |
| əŋ / - / aŋ | *aŋ | 197 |
| əŋ / - / ɯ | *ɯŋ | 211 |
| əŋ / an / en | *aŋ | 43 |
| əŋ / aŋ / aŋ | *aŋ | 62 |
| əŋ / aŋ / a̠ŋ | *aŋʔ | 30 |
| əŋ / aŋ / a̠ŋ | *aŋʔ | 156 |

| | | |
|---|---|---|
| əŋ / ɯ / ɯ̠ | *ɯŋʔ | 163 |
| i / ã̠ / aŋ | *aŋʔ | 17 |
| i / a̠i / ai | *iʔ | 114 |
| i / a̠ɯ / ɯ | *iʔ | 55 |
| i / a̠ɯ / ɯ̠ | *iʔ | 118 |
| i / an / ɛn | *en | 51 |
| i / aŋ / aŋ | *aŋ | 37 |
| i / ɛ / e | *ɛ | 9 |
| i / ɛ̠ / ɛ̠ | *ɛʔ | 138 |
| i / i / ei | *i | 76 |
| i / i̠ / e̠i | *iʔ | 96 |
| i / i / i | *i | 50 |
| i / i / i | *i | 81 |
| i / i(ɔ) / jo | *i | 86 |
| i / ie / je | *i | 1 |
| i / i̠o / jo̠ | *joʔ | 21 |
| i / ɯ / ɯ | *ɯ | 80 |
| i / u̠ / ou | *uʔ | 170 |
| iːt / a / a̠ | *aːt | 110 |
| im / ai / ei | *im | 20 |
| im / ɛi / ai | *im | 129 |
| im / i / i̠ | *imʔ | 117 |
| in / a̠n / e̠n | *anʔ | 200 |
| in / ɛ / ɛ̠ | *inʔ | 11 |
| it / i̠ / i̠ | *it | 2 |
| iu / - / o̠ | *oʔ | 192 |
| iu / i̠o / jo̠ | *juʔ | 90 |
| jaːi / - / ja | *ja | 182 |
| jaːi / ɛ / ɛ̠ | *aːiʔ | 28 |
| jaːn / a / a | *aːn | 104 |
| jaːn / ia / ja | *jaːn | 57 |
| jaːŋ / - / aŋ | *aːŋ | 210 |
| jaːŋ / a / a | *aːŋ | 124 |
| jaːŋ / a / a | *aːŋ | 116 |

66

| | | |
|---|---|---|
| jaːŋ / ə / ɯ | *aːŋ | 115 |
| jaːŋ / ou / o̠u | *aːŋʔ | 160 |
| jai / io / jo̠ | *joʔ | 204 |
| jai / iu / o̠ | *joʔ | 162 |
| jat / ɛ / je | *at | 130 |
| jɔ / - / ɛn | *ɛnʔ | 199 |
| jɔ / de̠ / ei | *joʔ | 24 |
| jɔ / iou / jau | *jo | 120 |
| jɔ / u / ou | *jo | 49 |
| je / ɯ / i | *eʔ | 141 |
| jim / - / e̠n | *imʔ | 144 |
| jim / ɛ / ɛ̠ | *ɛmʔ | 181 |
| jiŋ / - / aŋ | *aŋ | 142 |
| jiŋ / aŋ / a̠ŋ | *aŋʔ | 100 |
| jit / a̠ / a̠ | *at | 183 |
| juŋ / a / a | *aŋ | 134 |
| ɯ / aŋ / e̠i | *aŋʔ | 41 |
| ɯ / ɔ̠ / - | *ɔʔ | 77 |
| o / a / ã | *a | 78 |
| o / o̠u / o | *oʔ | 149 |
| u / - / en | *en | 201 |
| u / au / au | *ɔ | 121 |
| u / au / au | *ɔ | 45 |
| u / au / a̠u | *ɔʔ | 196 |
| u / ɔ / ɔ | *u | 153 |
| u / ɔ / o | *u | 71 |
| u / ɔ / o | *u | 12 |
| u / ɔ / o̠ | *uʔ | 135 |
| u / ɔ̠ / ua̠ | *uʔ | 40 |
| u / op / o̠u | *uʔ | 14 |
| u / ou / o̠u | *uʔ | 198 |
| u / u / u̠ | *uʔ | 108 |
| uːk / a̠u / u̠ | *uːk | 23 |
| uːk / - / u | *uːk | 205 |

| u:n / au / au | *u:n | 88 |
|---|---|---|
| u:n / ou / ou | *u:n | 97 |
| u:ŋ / - / ou | *u:ŋ | 208 |
| u:ŋ / ou / ou | *u:ŋ | 10 |
| uɔ / au / o̱u | *auʔ | 34 |
| uɔ / ou / ou | *au | 35 |
| ui / ɔ̱ / o̱ | *uiʔ | 99 |
| ui / ui / ui | *ui | 65 |
| uk / a̱ŋ / a̱ŋ | *uk | 15 |
| uk / a̱ŋ / a̱ŋ | *uk | 16 |
| uk / oŋ / o̱ŋ | *uk | 123 |
| un / an / en | *un | 175 |
| uŋ / - / o̱ŋ | *uŋʔ | 7 |
| uŋ / am / e̱n | *uŋʔ | 151 |
| uŋ / ɔ̱ŋ / oŋ | *uŋʔ | 172 |
| uŋ / uŋ / oŋ | *uŋ | 6 |

**Appendix 5: List of abbreviations**

| Abbreviation | |
|---|---|
| AA | Austroasiatic |
| B | Bolyu |
| MB | Bugan (Manlong) |
| NB | Bugan (Nala) |
| P- | Proto- |
| PAA | Proto-Austroasiatic |
| PMK | Proto-Mon-Khmer (Shorto 2006) |
| PP | Proto-Pakanic |
| PTB | Proto-Tibetan-Burman |