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A RECONSTRUCTION OF PROTO-TANGKHULIC RHYMES

David R. Mortensen
University of Pittsburgh

James A. Miller
Independent Scholar

Abstract: This paper presents a reconstruction of the rhyme system of Proto-Tangkhulic, the putative ancestor of the Tangkhulic languages, a Tibeto-Burman subgroup. A reconstructed rhyme inventory for the proto-language is presented. Correspondence sets for each of the members of the inventory are then systematically presented, along with supporting cognate sets drawn from four Tangkhulic languages: Ukhrul, Huishu, Kachai, and Tusom. This paper also summarizes the major sound changes that relate Proto-Tangkhulic to the daughter languages on which the reconstruction is based. It is concluded that Proto-Tangkhulic was considerably more conservative than any of these languages. It preserved the Proto-Tibeto-Burman length distinction in certain contexts and reflexes of final **-l*, even though these are not preserved as such in Ukhrul, Huishu, Kachai, or Tusom. Proto-Tangkhulic is argued to be a potentially useful source of evidence in the reconstruction of Proto-Tibeto-Burman.

Keywords: Tangkhulic, comparative reconstruction, rhymes, vowel length

1. INTRODUCTION

The goal of this paper is to present a preliminary reconstruction of the rhyme system of Proto-Tangkhulic (PT), the ancestor of the Tangkhulic languages of Manipur and contiguous parts of India and Burma. It will show that Proto-Tangkhulic was a relatively conservative daughter language of Proto-Tibeto-Burman, preserving final **-l*, and the vowel length distinction (in some contexts), among other features. As such, we suggest that Proto-Tangkhulic has significant importance in understanding the history of Tibeto-Burman.

1.1. The Tangkhulic language group

All Tangkhulic languages are spoken in a compact area centered around Ukhrul District, Manipur State, India. The proper classification of these languages within Tibeto-Burman is still uncertain. They are widely agreed to be closely related to Maring (Grierson 1903; Burling 2003; Marrison 1967). Grierson (1903) placed them with Maram and Khoireng in a transitional Kuki-Naga group. Marrison (1967), on the other hand, placed them with Ao, Lotha, Yimchungrü, and other related "Naga" languages. More recently, Burling (2003) treated them as a potentially independent branch of Proto-Tibeto-Burman. The question of genetic affiliation cannot be fully resolved without careful examination of the phonological, morphological, and syntactic properties of Tangkhulic languages. This paper is intended to be a preliminary step in this process.

Contrary to some reports (Burling 2003) the internal diversity of Tangkhulic is great, especially in light of its compact geographic distribution. Tangkhulic is

confined to Ukhrul district, Manipur, and to immediately contiguous areas in Nagaland and Burma. Each village in the Tangkhul area is reported by our consultants to have a markedly different "village dialect". "Village dialects" are often not mutually intelligible between neighboring villages (p.c. Khan Lolly). The phonological and lexical diversification is somewhat evident from the data presented in this paper. However, there are also significant morphosyntactic differences among the languages. For example, Huishu has two nominalizing affixes with slightly different distributions where the other languages have only one.

1.2. Data

The data in this paper are drawn from four principal languages ("village dialects"): Ukhrul (Uk), Huishu (Hu), Kachai (Ka), and East Tusom (Tu). Each of them is named according to the village of origin. For Ukhrul, the data are drawn from Pettigrew 1918,[1] Bhat 1969, and notes from a UC Berkeley field methods course held from 2002–2003. For the other languages, the data are from the first authors' field notes based on work with native speaker consultants. Data from other Tangkhulic languages are drawn from Brown 1837 (for Champhung), and McCulloch 1859 (for Khanggoi).

Data are transcribed largely according to IPA conventions. The exceptions are in the transcription of tone. The absence of a diacritic indicates a mid-tone, a macron represents a low-mid tone, and—according to convention—acute represents a high tone, grave represents a low tone, and circumflex represents a falling tone. These tonal transcriptions should be viewed with caution since they were made in the absence of a complete knowledge of the tonal phonologies of the languages, which are apparently quite complex in some cases.

2. OVERVIEW OF RECONSTRUCTED RHYMES

We reconstruct proto-Tangkhulic as having a vowel system consisting of six monophthongs and seven diphthongs. These are represented as in Table 1 below. The gap at **-aaj* is probably accidental.

Monophthongs			Labial offglide			Palatal offglide		
*-i	*-ɨ	*-u	*-ew		*-ow	*-ej		*-oj
*-e		*-o		*-aw			*-aj	
	*-a			*-aaw				

Table 1. Reconstructed open-syllable rhymes

We reconstruct only monophthongs in closed syllables. The possible nuclei are **-i-*, **-u-*, **-uu-*, **-e-*, **-o-*, **-ɐ-*, **-a-*, and **-aa-*. These combine with codas **-l*,

[1] Data from Pettigrew 1918 are converted from his orthographic transcription to IPA but are, following the source, not marked for tone.

**-r*, **-m*, **-n*, **-ŋ*, **-p*, **-t*, and **-k* to yield the set of rhymes given in Table 2, minus gaps:

*-il	*-ul	*-uul		*-ol		*-al	*-aal
*-ir	*-ur	*-uur	*-er	*-or	*-ɐr	*-ar	*-aar
*-im	*-um		*-em	*-om	*-ɐm	*-am	*-aam
*-in	*-un					*-an	*-aan
*-iŋ	*-uŋ		*-eŋ	*-oŋ	*-ɐŋ	*-aŋ	*-aaŋ
*-ip	*-up		*-ep	*-op	*-ɐp	*-ap	*-aap
*-it	*-ut		*-et	*-ot	*-ɐt	*-at	*-aat
*-ik	*-uk		*-ek	*-ok	*-ɐk	*-ak	*-aak

Table 2. Reconstructed closed-syllable rhymes

In the following sections, we will proceed through the open-syllable, then the closed-syllable rhymes, justifying these reconstructions with data.

3. OPEN-SYLLABLE RHYMES

Because they are generally better attested, open-syllable rhymes are easier to reconstruct than closed syllable rhymes and monophthongs are generally easier to reconstruct than diphthongs.

3.1. Monophthongs

Correspondence sets for each of the reconstructed monophthongal rhymes is given in Table 3 below:

PT	Uk	Hu	Ka	Tu
*-i	-i	-ik	-ɐ	-ɯ/-i
*-ɨ	-u	-uk	-i/-e	-ɯ
*-u	-u	-uk	-ɐ	-ɯ
*-e	-e	-i	-i	-i
*-o	-o	-u	-ɐ	-u
*-a	-a	-e	-u	-i

*Table 3. Correspondence sets for PT *monophthongs in open syllables*

For all but one set, the reconstruction chosen is identical to the form attested in Ukhrul Tangkhul. This decision is based on both internal and external factors. Internally, the Ukhrul vowels provide a starting point from which the rhymes in other languages can be derived through plausible sound changes. In all of the other languages, for example, **-e* corresponding to Ukhrul *-e* has been raised to *-i*. In Huishu and Tusom, a parallel change has applied to PT **-o* (corresponding to Ukhrul *-o*). Externally, the Ukhrul vowels generally match vowels reconstructed for proto-Tibeto-Burman by Matisoff (2003). Take, for example, the **-i* set:

	PT *-i	Uk -i	Hu -ik	Ka -ɐ	Tu -ɯ/ -i
‘fear’	***ci**	kʰə-ŋə-**cì**	ká-**tsìk**	kʰá-ŋə-**tsɛ̄**	kə-**tsʉ̀**
‘horn’	***ci**	ʔà-ŋə-**ci**	ʔá-ná-**tsík**	ʔā-ŋə-**tsɛ̄**	ʔə-n-**tsɯ**
‘salt’	***ci**	mə-**cî**	ʔā-mə-**tsīk**	mə-**tsɛ̄**	mə-**tsú**
‘parrot’	***ci**	hut-**ci**	—	—	—
‘son-in-law’	***hri**	i-**rì**-ha	ú-**ré**-jè	ʔā-**rɛ̄**-hū-u	kə-**hrî**
‘steal’	***li**	kʰə-**lí**	kʰə-**lì**	kʰə-**lɛ̄**	—
‘give’	***mi**	kʰə-**mì**	kʰə-**mê**	kʰə-**mɛ̄**	—
‘cat’	***mi**	la-**mi**	—	—	lá-**mʉ̄̀**
‘man/human’	***mi**	**mi**	—	ʔa-**mɐ**	**mʉ̀**
‘mother-in-law/aunt’	***ni**	a-**ni**	ʔā-**nik**	ʔā-**nɛ̄**	ʔa-**nʉ́**
‘seven’	***ni**	ʃí-**ní**	tʰi-**nik**	ʃí-**nɛ̂**	sɯ-**ná**-hè
‘two’	***ni**	kʰá-**nî**	kʰə-**nîk**	kʰə-**nɛ̂**	kʰa-**ná**
‘sleep’	***pi**	kə-**pi**	—	—	kə-**pzʉ̀**
‘cloth’	***pʰi**	—	—	—	**psʉ́**
‘blow’	***ri**	kʰə-mə-**ri**	ká-má-**lîk**	—	—
‘medicine’	***ri**	ʔà-**rì**	ʔā-**rîk**	ʔa-**rɛ̂**	—
‘iron’	***ri**	mə-**ri**	—	mə-**ré**	—
‘comb’	***si**	rik-**si**	ʔā-rōʔ-**sìk**	ré̱k-**sɐ**	n̩-**tsʉ́**
‘one’	***si**	—	kə-**sík**-à	kə-**sɛ̄**	—
‘four’	***ti**	mə-**tì**	mə-**kìk**	pə-**tsɛ̄**	mə-**lʉ́**-a
‘tight’	***tsi**	kʰə-ŋə-**tsi**	tsá-nə-**tsík**-kʰé	—	—
‘bile’	***tʰi**	ʔa-**tʰì**	—	ʔā-**tʰé**	n̩-**tsɯ**
‘die’	***tʰi**	kə-**tʰì**	kə-**tìk**	kə-**sɐ**	kə-**tsʉ̀**
‘numb/paralyzed’	***tʰi**	—	kə-**tik**	—	kə-**tsɯ**
‘blood’	***ʃi**	ʔa-**ʃi**	ʔá-**sìk**	ʔā-**sɛ̀**	n̩-**sɯ**
‘wind (n.)’	***ʃi**	mə-**ʃi**	—	—	mɯ-**ʃùe**
‘1st person’	***ʔi**	**ʔi**	—	**ʔi**	—

*Table 4. Cognate sets for PT *-i*

This set corresponds to the union of PTB **-ɨ(s)* and **-əy* (compare **krɨ* ‘fear’, **m-t(s)i* ‘salt’, *mi ‘man/human’ **səy* ‘die’, etc.) (Matisoff 2003). Likewise, the **-u* set corresponds to PTB **-u(s)* and **-əw*. Compare, for example, PTB **g-rus* ‘bone’, **krəw* ‘dove’, and **pəw* ‘grandfather’:

	PT *-u	Uk -u	Hu -uk	Ka -ɐ	Tu -ɯ
‘grandfather/uncle’	***bu**	ʔa-**wo**	ʔā-**vuk**	hī-**vù**	ʔə-**pvʉ́**
‘grandchild’	***du**	ʔì-**rù**	ʔā-**rúk**-rè	ī-**ðɛ̄**	ko-**tsy**-nʉ̀
‘chop’	***du**	kʰə-**ru**	mə-**rùk**-kʰê	—	—
‘kiss’	***ju**	kʰə-mə-**ju**	—	—	kʰá-mə-**zʉ̀**
‘wet’	***ju**	kʰə-**ju**	—	—	kə-**zɯ**
‘insect’	***kʰu**	ʔà-**kù**	ʔā-**kʰúk**-kè	ʔa-**kʰɛ̀**	—
‘breast’	***nu**	à-**nù**	ʔá-nə-**nùk**	né-**tɛ̂**	—
‘elephant’	***pu**	mɐ-**fu**	mə-**hûk**	mā-**fù**	—

*Table 5. Cognate sets for PT *-u*

	PT *-u	Uk -u	Hu -uk	Ka -ɐ	Tu -ɯ
‘bone’	***ru**	ʔà-**rú**-kùj	ʔá-**rùk**	ʔā-**ré**	ʔɯ-**rú**-kuə̃
‘tie’	***su**	kʰə̀-mə-**sú**	kə-má-**sūk**	kʰə́-mə-**sī**	kʰá-n-**sɯ**
‘wash’	***su**	kʰə-ŋə-**su**	kə-nə-**sûk**	—	—
‘short (length or height)’	***tu**	—	**tùk**-kʰê	—	—
‘touch’	***tsu**	sa-kə-**tsu**	sé-**tsùk**-kʰê	—	—
‘carry (on shoulders)’	***wu**	kʰə̀-ŋə̀-**vù**	kə-nə-**vúk**	kə-**hɐ̄**	—
‘dove’	***ʃu**	na-**ʃu**	ʔā-mə-**tsūk**	—	nő-**sɯ**-le
‘short’	***ʃu**	kə-**ʃu**	—	—	kə-**sɯ**

Table 5. (cont.)

The contrast between this **-u* set and a set reconstructed as **-ɨ* is maintained in Kachai and Tusom but is lost in Ukhrul and Huishu. This set corresponds to PTB **-wəy*, **C^{w}əy*, etc. Compare, for example **k^{w}əy* ‘dog’, **nwi(y)* ‘laugh’, and **twəy* ‘water’.

	PT *-ɨ	Uk -u	Hu -uk	Ka -i/-e	Tu -y / -ɯ
‘grandmother/ female’	***bɨ**	ʔa-**vu**	—	ʔa-**we**	xu-**pvɯ**
‘augmentative’	***bɨ**	—	-**wuk**	-**we**	-**pvɯ**
‘egg’	***dɨ**	hə̀r-**ru**	ʔā-hó-pʰə̄-**rùk**	hàr-**ðí**	uə-**tsỳ**
‘water’	***dɨ**	té-**ru**	ʔā-**rūk**	tūŋ-**ðî**	n̩-**tsý**
‘dog’	***hwɨ**	**fu**	ʔā-**húk**	ʔā-**hwì**	**ŷ**
‘laugh/mock’	***nɨ**	kʰə̀-mə-**nù**	kə-mə-**núk**	kʰə́-mə-**ní**	kʰá-n-**nỳ**
‘exchange’	***tʰɨ**	kʰə̀-ŋə̀-**tʰu**	—	kʰə́-ŋə̀-**tʰí**	kʰá-n-**tsŷ**

*Table 6. Cognate sets for PT *-ɨ*

The Huishu reflexes for these three sets—the open rhymes with high nuclei–are worthy of some explanation. In all cases, the Huishu reflexes consist of the same vowel nucleus found in the Ukhrul from followed by *-k*. While this may seem like an odd development, a parallel development is known from elsewhere in Tibeto-Burman. Burling (1966) demonstrated that high vowels in Maru developed into similar vowel-stop sequences. Here, this development appears to have occurred after the merger of **-u* and **-ɨ* as **-u*, an innovation that Huishu shares with Ukhrul.

Since this is a somewhat unusual change, it is worthwhile to state in detail why the Huishu stops are treated as a secondary development rather than a conservative trait. First, if the stop is projected back to PT, there is no truly satisfactory reconstruction for it. The stops **-p*, **-t*, and **-k* are already “taken”—there are very compelling reasons for reconstructing these stops across a broad range of environments. The next best possibility, from a phonetic standpoint, would be *-c. However, this would be areally unusual and would undermine the symmetry that otherwise would unite the stop and nasal coda series. Even more compelling is the observation that cognate stops do not occur in any of the closely related (or at least, geographically contiguous) languages. In Proto-Kuki-Chin, for

instance, Huishu *-ik* generally corresponds to *-ii* and Huishu *-uk* generally corresponds to *-uu* (PT **-u*) or *-uy* (PT **-ɨ*) (VanBik 2005). As implied by Table 7, the cognates of Huishu *-ik* and *-uk* in neighboring languages (Proto-Kuki-Chin, ancestor of the Kuki-Chin languages; Khoirao, a Zeme language; and Sumi [or Sema], an Angami-Pochuri language) tend not to have final stops but rather high monophthongs or diphthongs in open syllables:

Proto-Kuki-Chin	Khoirao	Sumi	Huishu	
*tsii	n-**ci**	a-m-**ti**	ʔā-mə-**tsīk**	‘salt’
*kii	**ti**	a-**ki**-bo	ʔá-nə́-**tsík**	‘horn’
*puu	—	—	ʔā-**vuk**	‘grandfather’
*tuu	—	—	ʔā-**rúk**-rè	‘grandchild’
*tuy	dui	a-**zu**	ʔā-**rūk**	‘water’
*nuy	nui	nu	kʰə̀-mə-**núk**	‘laugh’

Table 7. Cognates of Huishu -ik and -uk in neighboring Tibeto-Burman languages

Finally, treating these Huishu stops as secondary allows us to treat the merger of the **-u* set and the **-ɨ* set as an innovation shared between Huishu and Ukhrul rather than parallel but independent innovations. This sound change, and others like it, are analyzed at length in Mortensen (2012).

The mid vowel rhymes are considerably less common than their high vowel counterparts. Only four cognate sets are reconstructed with **-e*. In all of the daughter languages except Ukhrul, **-e* has been raised to the high-front periphery of the vowel space. In Ukhrul, *-e is raised in ‘cattle/buffalo’ but not in ‘slap’:

	PT ***-e**	Uk **-e**	Hu **-i**	Ka **-i**	Tu **-i**
‘late’	***hwe**	—	kə́-**hwì**	—	kə-**xuì**
‘slap’	***pʰe**	kə-kə-**pʰe**	—	—	kʰa-kə-**pʃî**
‘toast’	***re**	—	—	kə́-kʰə̀-**ri**	kʰá-k-**rì**
‘cattle/buffalo’	***se**	**sì**-lùj	—	**si**-li	**ʃi**

*Table 8. Cognate sets for PT *-e*

Analogous raising applied to reflexes of **-o* in Huishu and Tusom but not in Kachai, where **-o* was centralized as **-ɐ*.

	PT	Uk	Hu	Ka	Tu
	*-o	-o	-u	-ɐ	-u
‘crawl’	***bo**	kʰə-ŋə-**wo**	nə̀-**vù**-kʰê	—	kʰá-m-**pù**
‘call’	***ho**	kə̀-**ho**	—	kə̄-**hɐ**	kə-**xû**
‘nine’	***ko**	ci-**ko**	tə̀-**kù**	cī-**kɐ̄**	ʃǎ-**kú**-hè
‘foot’	***kʰo**	—	—	—	ʔɯ-**kxú**
‘buy’	***lo**	kʰə̀-**ló**	kʰə-**lù**	kʰə̄-**lɐ́**	kʰə-**lú**
‘vomit’	***lo**	kʰə-mə-**lo**	kʰə̀-mə̀-**lú**	—	kʰə́-mə-**lu**
‘plural’	***rwo**	—	ʔu-**ju**	—	ʔə-**ru**
‘scoop out’	***so**	—	—	kə̄-**sɐ̄**	—
‘full/satiated’	***tʰo**	—	ʔá-wúʔ-kə̀-**tʰù**	—	kə-**txû**
‘open’	***ʃo**	kə-**ʃo**	**sù**-kʰe	—	kə-**sxú**

*Table 9. Cognate sets for PT *-o*

The most common Proto-Tangkhulic rhyme is **-a*, corresponding to PTB **-a* (compare PTB **pʷa* ‘man/father/husband’, **ya* ‘night’, and **ka* ‘bitter’). PT **-a* remains *-a* in Ukhrul, is raised and fronted to *-e* in Huishu and *-i* in Tusom, and is raised, rounded and backed to *-u* in Kachai:

	PT	Uk	Hu	Ka	Tu
		-a	-e	-u	-i
‘father/male’	***ba**	a-**va**	—	hī-**vù**	ʔə-**pî**
‘necklace’	***ca**	**ca**	ʔā-**cè**	ʔā-**cú**	**cì**
‘sharpen’	***da**	kə̀-kʰə̀-**ra**	kə̄-kə̄-**rê**	ká-kʰə̀-**ðù**	kʰə́-kə-**tí**
‘arrive’	***da**	—	kʰə̄-**ré**	—	vàŋ-kə-**ti**
‘tooth’	***ha**	ʔa-**ha**	ʔá-s-**wé**	ʔa-**fú**	ʔi-**ʃì**
‘shadow/spirit/soul’	***hla**	ku-**la**	—	kɐ̄-**lò**	kó-**ɬí**
‘song’	***hla**	**la**	ʔā-**le**-se-kʰe		**ʃɪ́**
‘axe’	***hwa**	**ha**	ʔā-r-**wè**	kə̄-**fú**	ŋə-**ʃì**
‘bamboo’	***hwa**	kə̀-**ha**-tʰiŋ	kʰ-**wē**-tʰɐ̄ŋ	kə̄-**fù**-tʰɐŋ	**sɯ**-tʰùə̃
‘hair (body)’	***hwa**	ʔà-**ha**	ʔā-vɐm-sé-**véj**	ʔā-**fū**	ʔì-**ʃí**
‘accept’	***ja**	kʰə̀-mə̀-**ja**	—	kʰə́-mə̀-**ju**	kʰə́-mə-**ʒì**
‘palm (hand)’	***ja**	paŋ-mə-**ja**	—	pón-mə̀-**jú**	kfúɯ-mə-**ʒì**
‘night’	***ja**	ŋə-**ja**	ʔā-nə-**je**	—	—
‘right side’	***ja**	—	ʔá-**jì**-è	—	—
‘respect’	***ja**	kʰə-**ja**	kʰə́-**jé**-sì-kʰê	—	—
‘climb/ascend’	***ka**	kə̀-**ka**	kə̄-**kê**	kə-**kú**	ki-**kí**
‘open (mouth)’	***ka**	kʰə-mə-**ka**	ʔá-**kè**-kʰé		
‘far’	***kla**	kə̀-**tà**	kə̄-**kē**	kə̄-**tú**	kə-**ɬí**
‘bitter’	***kʰa**	kə̀-**kʰà**	kə̄-**kʰè**	kə̄-**kʰú**	kə-kʃí
‘chin/jaw’	***kʰa**	mə-**kʰà**	ʔá-mə̀-**kʰé**	mə̄-**kʰù**	mó-**kʃì**
‘cough’	***kʰa**	kʰə̀-mə̀-**kʰá**	kə̄-mə́-**kʰè**	kʰə́-mə̀-**kʰú**	kʰá-ŋ-**kʃi**

*Table 10. Cognate sets for PT *-a*

	PT	Uk -a	Hu -e/-i	Ka -u	Tu -i
‘ashes’	***la**	hòt-**là**	—	fɐ̄t-**lū**	—
‘bow/arrow’	***la**	mə̀-**là**	ʔá-mə̀-**lè**	mə̀-**lú**	mə-**lé**-tʰɯ̃ə
‘daughter’	***la**	ŋə-**la**-naw	—	ŋə̀-**lù**-no	
‘untie/loose’	***la**	kə-kʰə-**ra**	—	ká-kʰə̀-**rù**-è	kʰa-k-**lí**
‘star’	***la**	—	ʔā-**lé**-vej-tsèj	—	si-pí-cɯə̃-**lè**
‘scar/wound’	***ma**	kʰə-**ma** kə-tsu	ʔá-kʰə́-**mì**	—	kʰə̀-**mì**
‘rice (in field)’	***ma**	**ma**	ʔà-**mí**-lòw	—	—
‘ear’	***na**	kʰə̀-**nà**	ʔá-kʰə́-**nì**	kʰə̄-**nē**	ʔi-kʰə-**nì**
‘hear’	***na**	kʰə̀-ŋə̀-**nà**	—	kʰə́-ŋə̀-**nē**	—
‘leaf’	***na**	ʔà-**na**	ʔā-**nì**	ʔā-**nē**	ʔí-**nə́**-ʃí
‘nose’	***na**	**ná**-tàŋ	ʔá-**ní**-sú	**nē**-put	ʔi-**nə**-ʃí
‘brother (younger)’	***pa**	ʔa-**pa**	—	ʔā-**pu**	ʔɯ-kə-túə-**pi**
‘seek’	***pʰa**	kə̀-**pʰa**	kə̄-**pʰē**	kə̄-**pʰù**	kə-**pʃì**
‘good’	***pʰra**	kə-**pʰa**	—	—	kə-**pʰrí**
‘be born’	***ra**	kə̀-pʰə̀-**ra**	kə̄-pə̄-**rê**	—	—
‘ten’	***ra**	tʰə̀-**ra**	sə̄-**rè**	ʃə-**rú**	t-**rí**-hè
‘come’	***ra**	kʰə-**ra**	kʰə̄-**rè**	—	ká-ʒì
‘do/make’	***sa**	kə-**sà**	kə̄-**sè**	kə̄-**sù**	kʰə́-**sə**-lì
‘flesh/meat/animal’	***sa**	**sà**	ʔá-**sè**	ʔà-**sú**	**ʃí**
‘lend’	***sa**	kʰuj kə-**sa**	méj-nə́-**sè**-kʰê	—	—
‘hot/spicy/pungent’	***sa**	kə-**sa**	—	—	**sɯ**-tχa
‘descend’	***ta**	kə̀-**ta**	ʔú-kə̄-**kè**	—	—
‘bird’	***ta**	—	—	—	ʔin-**tí**
‘eat’	***tsa**	kə̀-**tsà**	ká-**tsé**	ká-pʰə̄-**ðū**	kə-**zí**
‘ill/hurt’	***tsa**	kʰə̀-kə̀-**tsa**	kə̄-kə̀-**tsê**	kʰə́-kə̀-**ðu**	—
‘child/diminutive’	***tsa**	—	—	si-**ðu**	—
‘resemble’	***tʰa**	kə-**tʰa**	—	kə̄-**tʰā**	ká-**tʰì**
‘seed’	***tʰa**	ʔa-**tʰa**	—	—	ʔí-**cʃí**
‘bird’	***wa**	**và**-nàw	ʔā-pʰ-**wè**	**wú**-ðū	—
‘go’	***wa**	kʰə̀-**và**	—	kʰə-**wu**	—
‘five’	***ŋa**	pʰə-**ŋà**	pʰə̄-**nì**	pʰə́-**ŋé**	pʃí-**ŋi**-á
‘fish’	***ŋa**	—	—	—	sí-ŋí
‘hundred’	***ʃa**	**ʃá**-kʰà	**se**-kɐ̀	**ʃù**-kʰá	mə̀-**ʃí**-hé
‘thick’	***ʃa**	kə-**ʃa**	ká-**sè**	kə̄-**ʃú**	kə-**ʃî**
‘hear’	***ʃa**	kə-**ʃa**	**tsé**-kʰə-lòw	—	—
‘3rd person’	***ʔa**	**ʔà**	—	**ʔu**-e	—

Table 10 (cont.)

3.2. Diphthongs

Table 11 summarizes the correspondence sets for PT *diphthongs:

PT	Uk	Hu	Ka	Tu
*-ej	-ej	-u	-i	-a
*-ew	-ew	-ow	-i	-ɤ/-uə
*-oj	-uj	-u	-i	-y/-ui
*-ow	-uj	-ow	-e	-uə
*-aw	-aw	-ow	-o	-ɯ
*-aaw	-aw	-aw	-o	-uə
*-aj	-aj	-e/-ej	-we/-e	-ie

*Table 11. Correspondence sets for PT *diphthongs*

Except for **-oj*, **-ow*, and **-aaw* these rhymes are preserved without change in Ukhrul. PT **-ej*, corresponding to PTB **-ey*, is very common and well supported. Compare PTB **mey* 'fire', **syey* 'know', and **pey* 'leg'. This rhyme is backed to *-u* in Huishu, lowered to *-a* in Tusom, and raised to *-i* in Kachai:

	PT *-ej	Uk -ej	Hu -u	Ka -i	Tu -a
'large/big'	***dej**	—	—	kʰə-**ði**	-**tà**
'bite'	***kej**	kʰà-mə-**kej**	—	kʰə́-mə-**kī**	kʰá-ŋ-**ká**
'crooked'	***kʰej**	kʰà-mə-**kʰej**	kʰaʔ-kə-**kʰú**	kʰə́-mə-**kʰi**	kʰá-ŋ-**kuè**
'be/exist/have'	***lej**	kʰà-**lèj**	kʰə̄-**lù**	kʰə-**lí**	kʰə-**là**
'earth'	***lej**	ŋà-**lej**	ʔā-nə̄-**lù**	ŋə̄-**lì**	ŋə-**la**
'squirrel'	***lej**	kʰà-**léj**	ʔā-ku-**lù**	kʰə̄-**lì**	kʰ-**la**
'tongue'	***lej**	mə-**lèj**	ʔá-mə́-**lù**	mə-**lí**	ʔi-mə-**lì**
'brother/sister (older)'	***mej**	a-**mej**	—	hī-**mì**	ʔi-**ma**
'fire'	***mej**	**mej**	ʔā-**mū**	ʔā-**mì**	**mà**
'more than'	***mej**	kʰà-**mèj**	kʰə́-**mù**	kʰə̄-**mí**	kʰə-**mà**
'tail'	***mej**	kʰà-**mej**	ʔá-kʰà-**mù**	kʰə-**mì**	ʔə-kʰə-**má**
'foot/leg'	***pʰej**	ʔa-**pʰéj**	ʔá-**pʰù**	ʔā-**pʰì**	**—**
'twist'	***rej**	kʰə-ŋə-**rej**	—	—	kʰa-sə-**rá**
'spear'	***tsej**	kà-**tsej**	ʔā-kə-**tsù**	kə̄-**ðì**	**za**
'fruit'	***tʰej**	ʔà-**tʰej**	ʔá-tʰə̄-**tʰù**	ʔā-**tʰì**	ʔə-**tχa**
'know/see'	***tʰej**	kà-**tʰéj**	kə̄-**tʰù**	kə-**tʰī**	kə-**tχá**
'1st person'	***ʔej**	—	**ʔu**	—	**ʔa**

*Table 12 Cognate sets for PT *-ej*

The **-ew* rhyme group, reconstructed on the basis of the Ukhrul evidence, is less well supported:

	PT *-ew	Uk -ew	Hu -ow	Ka -i	Tu -ɤ/-uə
'blind'	***pew**	kʰə-ŋə-**pew**	—	ʔā-mék kʰə́-ŋə̀-**pì**	—
'wash'	***pʰrew**	kà-**pʰew**	—	kə̄-**pʰì**	ʔɯ-kxu kə-**pʰrə̂**
'crab'	***rew**	kʰáj-**rèw**	ʔá-kʰèj-**rów**	kʰu-**rì**	—
'thirst'	***rew**	kaw-kʰə-**rew**	—	—	—
'small/few'	***tew**	kə-**tew**	—	—	kə-**tûə**

*Table 13. Cognate sets for PT *-ew*

Given the two different reflexes in Tusom (for one of which, *-uə* ‘small/few’, there is no evidence from Kachai), it is possible that this group constitutes two sets rather than just one.

The following set is reconstructed as **-oj* on the basis of the Ukhrul (diphthong with palatal off-glide) and Tusom (front rounded vowel) reflexes. Compare PTB **hwaːy* ‘wither/fade’, **kwaːy* ‘bee’, and **lwaːy* ‘buffalo’.

	PT *-oj	Uk -uj	Hu -u	Ka -i	Tu -y / ui
‘wither/fade’	***hoj**	kʰə-ŋə-**hùj**	ká-nə-**hû**	kʰá-ŋə-**hí**	kʰá-ŋə-**xuì**
‘rope/string/thread needle’	***hroj**	kʰə-**ruj**	—	—	ʔə-**hry**
‘leftside’	***joj**	**júj**-vak	ʔá-**vú**-è	ʔā-**jì**-wá	—
‘bee’	***kʰoj**	**kʰùj**	—	ʔā-**kʰí**	**kxuì**
‘roll (in a roll)’	***loj**	**—**	kʰə-**lù**-kʰê	—	kʰó-kʰə-**lỳ**
‘water buffalo’	***loj**	sì-**lùj**	ʔā-sə-**lù**	sí-**lí**	sə-**lỳ**
‘fall (from a height)’	***loj**	koŋ-kʰə-**luj**	kʰā-**ló**-kā-sò	—	kóŋ-kʰə-**lỳ**
‘cloud’	***moj**	**mùj**-a	ʔā-**mú**-lē-tsò	—	**my**-ʒè
‘sister (older)’	***moj**	—	—	hī-**mì**	—
‘full/complete’	***poj**	kə-**púj**	kā-**pù**	kə-**pi**	—
‘tempt’	***soj**	kə-**súj**	kā-**su**-è	kā-**sī**	pə-**ʃỳ**
‘decay’	***ʃoj**	kə-**sùj**	kā-**sû**	kə-**ʃí**	kə-**ʃỳ**

*Table 14. Cognate sets for PT *-oj*

Ukhrul is uncharacteristically innovative in reflecting PT **-ow* as *-uj* and Huishu is uncharacteristically conservative in reflecting it as **-ow*:

	PT *-ow	Uk -uj	Hu -ow	Ka -e	Tu -uə
‘burn’	***cow**	kə-**cuj**	—	kā-**cè**	mà-kə-**cùə**
‘dig’	***cow**	kə-**cuj**	kā-**tsôw**	kā-**cè**	ŋə-la kə-**cûə**
‘tall’	***cow**	kə-**cùj**	ká-**tsòw**	kā-**cé**	—
‘head’	***kow**	ʔà-**kúj**	ʔá-**ków**	ʔā-**ké**	ʔu-**kúə**
‘pestle’	***kow**	si-**kùj**	—	sū-**kwé**	sú-**kuə́**
‘cold’	***kow**	kʰə-mə-**kuj**	—	kʰá-mə-**ke**	—
‘dirty’	***kʰow**	kʰə-mə-**kʰow**	kə-mə-**kʰów**	—	kʰá-ŋ-**kxùə**
‘field’	***low**	**luj**	sə-**lôw**	ʔā-**lè**	**lùə**
‘itchy’	***mow**	kʰə-**múj**	kʰā-**mòw**	—	kʰə-**múə**
‘sister-in-law’	***mow**	ʔa-**muj**	—	—	ʔɯ-**muə**
‘fry’	***now**	kʰə-**nuj**	**nòw**-kʰê	—	kʰə-**ŋùə**
‘roast’	***row**	kʰə-**ruj**	**ròw**-kʰê	kʰā-**re**	—
‘word/speech’	***tow**	**tuj**	—	ʔā-**te**	ʔɯ-**lùə**
‘younger relative’	***tow**	a-kə-**to**	—	hī-àw-**tè**	—
‘awaken’	***tʰow**	kə-**tʰuj**	kə-**tʰów**	kā-**tʰè**	ká-**tʰúə**

*Table 15. Cognate sets for PT *-ow*

The reconstruction of this set as **-ow* is based on both internal and external evidence. Internally, **-ow* sits between Ukhrul *-uj*, Kachai *-e*, and Tusom *-uə*.

Externally, members of this set reflect PTB **-ow*, as exemplified by PTB **m-sow* ‘awake/arise’ and **low* ‘field’. However, as pointed out by an anonymous reviewer, ‘fry’ is reconstructed in PTB as **naw* rather than **now*.

Evidence from Tusom forces us to reconstruct a contrast between PT **-aw* and **-aaw*. Length is chosen somewhat arbitrarily as the locus of contrast, as is the direction of the contrast. In Ukhrul, these two sets have been neutralized to *-aw* and they are likewise indistinct in Huishu and Kachai, but Tusom reflects one subset of this group as *-ɯ* and another as *-uə*.

	PT *-aw	Uk -aw	Hu -ow	Ka -o	Tu -ɯ
‘deer’	***caw**	**caw**	ʔā-**tsòw**	ʔa-**cō**	sə-**cûɯ**
‘rough’	***haw**	kʰə-mə-**haw**	—	—	tá-**xú**-xɯ̀
‘thin’	***kaw**	kə-**kàw**	—	kə-**kó**	—
‘dry (v.t.)’	***kaw**	kʰə-mə-**kaw**	—	—	kʰá-ŋ-**kûɯ**
‘grasshopper’	***kʰaw**	**kʰaw**	ʔā-kúŋ-**kòw**	—	**kxúɯ**
‘child/young’	***naw**	ʃì-**nàw**	kū-**nòw**	no	ʔi-**nɯ̀ɯ**
‘fat’	***tʰaw**	**tʰàw**	ʔā-**tʰòw**	ʔā-**tʰō**	ʔɯ-**txɯɯ**
‘shout’	***waw**	kʰə-**vaw**	**vow**-kʰê	—	—

*Table 16. Cognate sets for PT *-aw*

	PT *-aaw	Uk -aw	Hu -aw	Ka -o	Tu -uə
‘start’	***haaw**	kə-**haw**	**háw**-púʔ-kʰê	—	kə-**xúə**
‘drive’	***tʰaaw**	kà-**tʰàw**	ká-**tʰòw**	kā-**tʰō**	kə-**tʰùə**

*Table 17. Cognate sets for PT *-aaw*

Cognate sets where Ukhrul has **-aj* and there is no evidence of PT **-l* are reconstructed as PT **-aj*:

	PT *-aj	Uk -aj	Hu -e/-ej	Ka -we/-e	Tu -ie
‘lip’	***caj**	mor-**caj**	ʔá-mó-**tsè**	mōr-**cē**	—
‘vagina’	***haj**	**haj**	—	—	ʔí-**ʃiê**
‘break’	***kaj**	kà-**kaj**	kā-**kêj**	kā-**kwè**	tsɯ-kə-**kiê**
‘fish/aquatic creature’	***kʰaj**	**kʰáj**	ʔā-**kʰéj**-ʃè	ʔa-**kʰwe**	**kʃié**-fy
‘knife’	***kʰaj**	**kʰaj**	ʔā-**kʰū**-rè	ʔā-**kʰwé**	**kʃiè**
‘scoop out’	***kʰaj**	**kʰaj**-kə-ʃok	**kʰèj**-kʰê	—	—
‘forget’	***laj**	kʰà-mə-**laj**	kə-má-**lè**	kʰá-mə-**lwe**	kʰá-mə-**lié**
‘navel’	***laj**	—	ʔā-pú-**lè**	ʔà-úk-**lé**	ʔi-pʰ-**liè**
‘face’	***maj**	**maj**	ʔá-**mèj**	ʔā-**mwè**	ʔi-**miè**
‘near’	***naj**	kʰà-ŋə-**náj**	kə-nə-**nêj**	kʰá-ŋə-**nwè**	—

Table 18. Cognate sets for PT -aj

	PT *-aj	Uk -aj	Hu -e/-ej	Ka -we/-e	Tu -ie
‘pus’	***naj**	ʃi-**naj**	ʔá-**nèj**	—	ʔɯ-**ɲuè**
‘yam’	***paj**	kə-**paj**	—	—	—
‘shallow’	***paj**	kə-**paj**	ká-**pèj**	—	—
‘easy/cheap’	***plaj**	kà-**paj**	kā-**pēj**-rè	kā-**pwè**	k^{h}ə-**liè**
‘fly’	***praj**	kà-**pàj**	ká-**pej**	kā-**pwé**	kə-**priè**
‘wait’	***raj**	k^{h}ə-ŋə-**raj**	—	k^{h}ə́-ŋə̀-**rē**	—
‘pound/crush’	***taj**	k^{h}ə̀-ŋə̀-**tàj**	sè-**k^{h}éj**-k^{h}ê	—	—
‘hungry’	***t^{h}aj**	kə-**t^{h}aj**	—	—	zúɯ-kə-**cʃiê**
‘desire/want’	***ŋaj**	k^{h}ə-**ŋaj**	—	k^{h}ə̄-**mwē**	k^{h}ə-**ŋiè**
‘twist/knead’	***ŋaj**	k^{h}ə̀-ŋə̀-**naj**	k^{h}ə̄-**nêj**	k^{h}ə̄-**nwē**	—
‘eat (fruit)’	***ʃaj**	kà-**ʃaj**	—	kā-**ʃwè**	—

Table 18. (cont.)

In this set, there is not clear evidence motivating a contrast between **-aj* and **-aaj*. This is likely to be an accidental gap.

4. CLOSED SYLLABLE RHYMES

4.1. Liquid-final rhymes

Two final liquids have to be reconstructed for PT: **-r*, which is attested in Ukhrul and Kachai and **-l*, which is not attested in any of the principal languages but which must be reconstructed based on indirect evidence and evidence from other Tangkhulic languages.

PT	Uk	Hu	Ka	Tu
*-il	-i	-ɐŋ	-ɐ	-ɯə
*-ir	-ir	-u	—	—
*-ul	-u	-ɐn	-wi	-u
*-ur	-ur	-u	-ur	-ɯ
*-uul	-u	-ɐŋ	-wi	ɯ
*-er	-or	-ɐr	-ir	-y
*-ol	-uj	-ɐŋ	-we	-ue
*-or	-or	-u	-or	-o
*-al	-aj	-ej	-i	-a
*-aal	-aj	—	-we	-ie/-ɯə
*-ar	-ɐr	-o	-ar	-uə
*-aar	-ar	-a	-or	-ɯə

Table 19. Correspondence sets for liquid-final rhymes

The cognate set for ‘intestines’ is one case where **-l* is reconstructed based on indirect evidence:

	PT *-il	Uk -i	Hu -ɐŋ	Ka -ɐ	Tu -ɯe
‘intestines’	*ril	ʔa-kʰə-**rì**	ʔá-kʰə́-**rèŋ**	ʔā-kʰə-**ré**	ʔú-kʰ-**rɯè**

*Table 20. Cognate sets for PT *-il*

In this set, only Huishu has a final coda, a velar nasal. This is unlikely to reflect a PT final nasal since other, well-supported, sets with final **-m*, **-n*, and **-ŋ* must be reconstructed. **ril* is a reasonable reconstruction for this set since final *-l* is acoustically similar to a nasal (both have a vowel-like formant structure but with anti-formants) yet it is also prone to vocalization and deletion. This etymon is also reconstructed for PTB as **riːl*, providing external evidence for our internal conjecture.

This **-il* rhyme contrasts with **-ir*, reconstructed for one etymon:

	PT *-ir	Uk -ir	Hu -u	Ka —	Tu —
‘wrinkle’	***nir**	kʰə-ŋə-**nir**	kā-nā-**nû**	—	—

*Table 21. Cognate sets for PT *-ir*

One etymon, ‘twenty’, is also reconstructed with **-ul*, with similar motivations as for ‘intestines’ above. In this case, the PTB reconstruction is **m-kul*:

	PT *-ul	Uk -u	Hu -ɐn	Ka -wi	Tu -u
‘twenty’	***kul**	mə-**ku**	mə-**kèn**	mā-**kwí**	mə-**kù**-hè

*Table 22. Cognate sets for PT *-ul*

PT **-ur* is somewhat better supported, with six etyma in the set:

	PT *-ur	Uk -ur	Hu -u	Ka -ur	Tu -ɯ
‘fan’	***hur**	kə-**hur**	—	kā-**hur**	—
‘hole/anus’	***kʰur**	kʰə-ráŋ-**kʰùr**	—	**-kʰúr**	pó-tí-**kfùɯ**
‘fight’	***nur**	—	kə-nə́-**nù**	kʰə́-ŋə-**nùr**	—
‘sour’	***tʰuur**	kə-**tʰur**	kā-**tʰū**	kā-**tʰùr**	kə-**tʰûɯ**
‘swell/be swollen’	***wuur**	—	**wù**-kʰê	—	kə-**pû**
‘follow’	***ʃuur**	tʰi-kə-**ʃur**	—	tʰī-kā-**ʃur**	—

*Table 23. Cognate sets for PT *-uur*

Comparatively weak evidence exists for reconstructing a contrast between **-ul* and **-uul*. Etyma are reconstructed with PT **-uul* rather than **-ul* where Huishu has *-ɐŋ* rather than *-ɐn* and Tusom has *-ɯ* rather than *-u*:

	PT *-uul	Uk -u	Hu -ɐŋ	Ka -wi	Tu ɯ
‘village’	***kʰuul**	**kʰu**	—	—	**kfúɯ**
‘snake’	***ruul**	pʰə́-**rù**	ʔa-pʰə-**rèŋ**	kə̀-pʰ-**wí**	**rúɯ**-tə̃̀

*Table 24. Cognate sets for PT *-uul*

The Tangkhulic language Khanggoi[2] has *kʰul* for ‘village’. This provides additional support for the PT reconstruction of this etymon with final **-l*.

**-er* is reconstructed on the basis of very weak evidence from a single cognate set:

	PT *-er	Uk -or	Hu -ɐr	Ka -ir	Tu -y
‘saliva’	***cer**	mə-**cor**-ru	ʔá-tsám-**tsér**-rúk	mə̄-**cīr**-ðî	má-**tsỳ**-tsý

*Table 25. Cognate sets for PT *-er*

**-ol* is reconstructed where Ukhrul has *-uj*, Huishu has *-ɐŋ*, and Tusom has *-ue* or *-uɾ*.

	PT *-ol	Uk -uj	Hu -ɐŋ	Ka -we	Tu -ue
‘skin/bark’	***hol**	sà-**húj**	ʔá-**hèŋ**	—	ʔúɯ-**xuí**
‘ginger’	***hol**	**huj**	—	—	**xue**-ə̃
‘horse’	***kol**	sì-**kùj**	sɐŋ-**kèŋ**	sī-**kwē**	sə-**kué**

*Table 26. Cognate sets for PT *-ol*

The Tangkhulic language Champhung has *a-hul* for ‘skin’, supporting the reconstruction of final **-l*. Furthermore, Champhung[3] has *sa-gol* and Khanggoi has *sɨ-gol* for ‘horse’, providing direct evidence for final **-l*. However, as an anonymous review points out, these forms are very similar to Indo-Aryan forms for ‘horse’, including Hindi and Assamese *gʰora* ‘horse’ and are probably borrowed. If this borrowing occurred later than the PT stage, this would weaken evidence for final **-l*.

The rhyme **-or* is reconstructed where Ukhrul and/or Kachai have *-or* and Huishu has *-u*:

[2] Unfortunately, the data available for this dialect is quite limited and is not consistently transcribed. See McCulloch 1859.

[3] Data for Champhung is unfortunately even more limited than that for Khanggoi. See Brown 1837.

	PT *-or	Uk -or	Hu -u	Ka -or	Tu -o
‘light/shine’	***hwor**	kə-**hor**	—	—	—
‘sell’	***jwor**	kʰə-**jòr**	kʰə̄-**jù**	kʰə̄-**wōr**	kʰə́-**zỳ**
‘bark’	***kor**	tʰiŋ-**kor**	ʔā-tʰéŋ-**kù**	—	—
‘mouth’	***mor**	kʰə̀-**mor**	ʔá-mú-**sú**	**mòr**-sɛ́	ʔə́-kʰə-**mó**

*Table 27. Cognate sets for PT *-or*

There is weak internal evidence for reconstructing a contrast between **-al* and **-aal*. **-al* is reconstructed where Ukhrul has **-aj* or **-ej*, Huishu has *-ej*, and Tusom has *-a*. The reconstruction of **-l* is supported by external evidence in the form of PTB *kal ‘kidney’.

	PT *-al	Uk -aj	Hu -ej	Ka -i	Tu -a
‘shout’	***hal**	kə-kə-**haj**	—	—	kʰá-tsə-**χà**
‘kidney’	***kal**	a-mə-**kej**	ʔá-má-**kèj**	mə̄-**kì**	ŋ-**ká**-tχà

*Table 28. Cognate sets for PT *-al*

A similar set, in which Tusom has *-ie* or *-ɯe* is reconstructed as **-aal*:

	PT *-aal	Uk *-aj	Hu —	Ka -we	Tu -ie/-ɯə
‘defecate’	***paal**	kə-**páj**	—	kə-**pwè**	kə-**pie**
‘enemy/war’	***raal**	**raj**	—	—	**rɯè**

*Table 29. Cognate sets for PT *-aal*

The reconstruction of **-l* in this set is confirmed by comparison with Khanggoi *rel* ‘enemy’ and PTB **g-ral* ‘enemy/quarrel/war/strife/sword.’

Finally, a contrast can be reconstructed between PT **-ar* and PT **-aar*. For etyma reconstructed with PT **-ar*, Ukhrul has *-ɐr*, Huishu has *-o*, Kachai has *-ar*, and Tusom has *-ue* or *-ɯə*:

	PT *-ar	Uk -ɐr	Hu -o	Ka -ar	Tu -uə/-ɯə
‘fowl’	***ar**	**hèr**	ʔa-**hò**	ʔā-**hár**	**uə̀**
‘white’	***car**	kə-**cér**	—	kə-**càr**	—
‘older relative’	***dar**	a-va-kʰə-**rɐr**	—	hī-àw-**ðar**	ʔə-pí-**tuə́**
‘strong’	***kar**	—	**kó**-kʰê	—	kʰá-ŋ-**kuə́**
‘sister/sibling’	***tsar**	a-**tsɐr**-vu	—	ʔā-**ðār**-ì	ʔə-**zuə**-pvù
‘new’	***tʰar**	kə-**tʰèr**	kə̄-**tʰô**	kə̄-**tʰár**	kə-**tʰuə̀**
‘snore’	***ŋar**	kʰə-**ŋɐr**	—	—	—
‘clean’	***tʰar**	kə-**tʰɐr**	kə̄-**tʰó**	kə̄-**tʰàr**	kə-**tʰɯə̃̀**

*Table 30. Cognate sets for PT *-ar*

In the three etyma reconstructed with PT **-aar*, Ukhrul has *-ar*, Huishu has *-a*, and Kachai has *-or*:

	PT *-aar	Uk -ar	Hu -a	Ka -or	Tu -ɯə
‘lung’	***pʰaar**	ʔà-**pʰar**	—	ʔā-**pʰòr**	—
‘old’	***saar**	kə-**sàr**	kə-**sà**	kə-**sór**	—
‘mushroom’	***waar**	**var**	ʔá-**và**	**hór**-tsɐ́	**pɯə́**-tuə́

*Table 31. Cognate sets for PT *-aar*

4.2. Nasal-final rhymes

The nasal codas *-m*, *-n*, and *-ŋ* are in contrastive distribution in both Ukhrul and Kachai. This is taken as sufficient evidence for reconstructing these three codas for PT. Once the nasal reflexes of **-l* in Huishu are accounted for, these three nasals are sufficient to explain all of the nasal-final correspondence sets in Tangkhulic. A summary of these sets is given in Table 32.

PT	Uk	Hu	Ka	Tu
*-im	-im	-ɐm	-im	-ɯə̃
*-in	-in	-ɐn	-ɐn	-ɯə̃
*-iŋ	-iŋ	-ɐŋ	-ɐŋ	-ɯə̃
*-um	-um	-ɐm	-um	-ũ
*-un	-un	-ɐŋ	-un	-ũ
*-uŋ	-uŋ	-uŋ	-uŋ	-ũ
*-ɐm	-ɐm	-em	—	—
*-en	-en	—	-ɐn	—
*-om	-om	—	—	-õ
*-oŋ	-oŋ	-u	-oŋ	-õ
*-eŋ	-eŋ	-e	-eŋ	-ɯə̃
*-ɐm	-am	-ɐm	-am	-ɯ
*-ɐŋ	-ɐŋ	-ɐŋ	-ɐŋ	-õ
*-aam	-am	-am	-om	-ɯə̃
*-am	-ɐm	-am	-am	-õ
*-aan	-aŋ	-ej	-on	-ɯə̃
*-an	-ɐn	-ej	-ɐn/-on	-ẽ
*-aaŋ	-aŋ	-i	-o	-ɯə̃
*-aŋ	-ɐŋ	-o	-a	-ã

Table 32. Nasal-final correspondence sets

The correspondence sets reconstructed for PT **-im*, **-in*, and **-iŋ* are largely identical except for the place of articulation of the nasal. These rhymes are reflected as *-im*, *-in*, and *-iŋ* in Ukhrul, *-ɐm*, *-ɐn*, and *-ɐŋ* in Huishu, *-ɯə̃* in Tusom, and as *-im*, *-in*, and *-iŋ* in Kachai:

	PT *-im	Uk -im	Hu -ɐm	Ka -im	Tu -ɯə̃
‘bear’	***him**	—	ʔā-**hɛ̀m**	tɕī-**hím**	—
‘damp/gentle’	***nim**	kʰà-**nîm**	—	kʰà-**nîm**	—
‘needle’	***prim**	kà-**pìm**	ʔā-jém-**pèm**	rēm-**pim**	kə-**prɯə̀**
‘suck (as a leech)’	***tsim**	kə-**tsim**	kà-mə-**tsém**	—	kʰə́-mə-**zɯə̀**
‘house’	***ʃim**	**ʃim**	—	ʔā-**ʃīm**	**sɯə̀**
‘sweet’	***ʃim**	kà-**ʃim**	—	kā-**ʃīm**	kə-**sɯə̀**

*Table 33. Cognate sets for PT *-im*

	PT *-in	Uk -in	Hu -ɐn	Ka -ɐn	Tu -ɯə̃
‘ripe/well-cooked’	***min**	kʰà-**mìn**	kʰə́-**mèŋ**	kʰə̄-**mén**	kʰə-**mɯə̃**
‘liver’	***tʰin**	ʔa-mə-**tʰin**	ʔā-mā-**tʰèn**	ʔā-mā-**tʰēn**	ən-**tsʰɯə̂**

*Table 34. Cognate sets for PT *-in*

	PT *-iŋ	Uk -iŋ	Hu -ɐŋ	Ka -ɐŋ	Tu -ɯə̃
‘alive’	***hriŋ**	kʰà-**rìŋ**	kʰə́-**rèŋ**	kʰə̄-**réŋ**	kə-**hrɯə̀**
‘ant’	***liŋ**	ca-**liŋ**	—	—	zá-**lɯə̀**
‘name’	***miŋ**	ʔà-**mìŋ**	ʔā-**mèŋ**	ʔā-**mêŋ**	ʔɯ-**mɯə̀**
‘stand’	***niŋ**	kʰà-ŋà-**nîŋ**	—	kʰə́-ŋà-**nēŋ**	—
‘think’	***niŋ**	kà-pʰà-**niŋ**	—	ká-pʰà-**nēŋ**	kʰə́-pʰə-**nɯə̃**
‘mind’	***niŋ**	—	ʔá-**nèŋ**	—	ʔɯ-**nɯə̀**
‘spin’	***niŋ**	kʰə-ŋə-**niŋ**	—	ká-kʰà-**naŋ**	—
‘marrow’	***tliŋ**	—	ʔá-nā-**lèŋ**	ʔa-ŋə-**tèŋ**	ʔɯ-kə-**tsɯə́**
‘sky/heaven/rain’	***tsiŋ**	kà-**tsiŋ**	kā-**tséŋ**-ràm	kə-**ðèŋ**	kə-**zɯə́**
‘wood’	***tʰiŋ**	**tʰiŋ**	**tʰéŋ**-rùŋ	**tʰèŋ**-kē	**tʰùm**-pá

*Table 35. Cognate sets for PT *-iŋ*

The reflexes of PT **-um*, **-un*, and **-uŋ* are also quite systematic: Uhkrul and Kachai *-um*, *-un*, *-uŋ*; Huishu *-ɐm*, *-ɐŋ*, and *-uŋ* (PT **-uŋ* > Huishu *-uŋ*); and Tusom *-ũ*.

	PT *-um	Uk -um	Hu -ɐm	Ka -um	Tu -ũ
‘year’	***kum**	tsiŋ-**kúm**	tséŋ-**kêm**	ðèŋ-**kūm**	záŋ-**kű**
‘back’	***k^{h}um**	**k^{h}ùm**-k^{h}or	ʔá-lá?-**k^{h}èm**	**k^{h}ùm**-k^{h}or	—
‘warm’	***lum**	k^{h}à-**lùm**	k^{h}ā-**lèm**	k^{h}ə-**lúm**	k^{h}ə-**lṹ**
‘add together’	***rum**	k^{h}à-ŋà-**rùm**	nà-**rèm**-k^{h}ê	k^{h}á-ŋà-**rúm**	k^{h}ə-**rṹ**
‘mortar’	***sum**	**ʃim**-k^{h}ur	ʔā-**súŋ**-k^{h}ù	**ʃīm**-k^{h}ūr	—
‘hide’	***t^{h}um**	k^{h}à-ŋà-**t^{h}úm**	kā-nā-**t^{h}êŋ**	k^{h}á-ŋà-**t^{h}ùm**	k^{h}á-n-**cùɯ**
‘three’	***t^{h}um**	kà-**t^{h}ùm**	kā-**t^{h}èm**	kā-**t^{h}ûm**	ka-**t^{h}ő**
‘round’	***ŋum**	k^{h}ā-**ŋúm**	ʔá-**vém**-t^{h}ù	k^{h}ā-**ŋúm**	—

*Table 36. Cognate sets for PT *-um*

‘Mortar’ is irregular in all three dialects and should perhaps be reconstructed with a different rhyme.

	PT *-un	Uk -un	Hu -ɐŋ	Ka -un	Tu -ũ
‘join’	***sun**	k^{h}à-ŋà-**sun**	ká-ná-**sèŋ**	k^{h}á-ŋà-**sún**	—
‘day’	***sun**	kə-ŋə-**ʃun**	—	—	ná-**sxṹ**
‘corpse’	***ŋun**	ʔa-**ŋún**	ʔā-**ŋun**	ʔā-**ŋùn**	—

*Table 37. Cognate sets for PT *-un*

In Huishu, corpse has the irregular reflex *-un* rather than the expected *-ɐŋ*. This could be the result of borrowing from Ukhrul.

	PT ***-uŋ**	Uk **-uŋ**	Hu **-uŋ**	Ka **-uŋ**	Tu **-ũ**
‘many’	***cuŋ**	kə-**cuŋ**-k^{h}a	—	**cúŋ**-mūj	**cű**-k^{h}ə-mà
‘pound (v.t.)’	***duŋ**	k^{h}à-**ruŋ**	—	k^{h}ā-**ðèŋ**	—
‘root’	***juŋ**	ʔà-ŋà-**juŋ**	ʔá-nə-**jùŋ**	ʔa-ŋə-**lèŋ**	—
‘heart’	***luŋ**	mà-**lùŋ**	ʔá-mà-**lùŋ**	mà-**lúŋ**	ʔɯ-mə-**lṹ**
‘stone’	***luŋ**	ŋà-**luŋ**	sā-**lûŋ**	kà-**lùŋ**	**lũ**-kuá
‘mountain’	***p^{h}uŋ**	kà-**p^{h}ùŋ**	ʔá-ká-**p^{h}ùŋ**	kà-**p^{h}úŋ**	kə-**p^{h}ũ**
‘carry (on shoulders)’	***p^{h}uŋ**	kə-**p^{h}uŋ**	—	—	kə-**p^{h}ṹ**
‘correct’	***ʃuŋ**	kà-mà-**ʃùŋ**	kā-mā-**sūŋ**	k^{h}á-mà-**ʃúŋ**	—
‘close/shut’	***ʃuŋ**	kə-**ʃuŋ**	—	—	ke-**sxṹ**
‘arrive’	***ʃuŋ**	va-kə-**ʃuŋ**	—	ʔā-kā-**ʃùŋ**	—

*Table 38. Cognate sets for PT *-uŋ*

Only a few etyma can be reconstructed with PT **-ɐm* and **-ɐn*, and these only tenuously, on the basis of evidence from Ukhrul, Huishu, and Kachai:

	PT	Uk	Hu	Ka	Tu
	***-ɐm**	**-ɐm**	**-em**	—	—
‘low’	***nem**	kʰə-**nɐm**	kʰə̀-**nèm**	—	—

*Table 39. Cognate sets for PT *-ɐm*

	PT	Uk	Hu	Ka	Tu
	***-ɐn**	**-ɐn**	—	**-ɐn**	—
‘belly’	***pʰen**	ʔa-**pʰen**	—	ʔa-**pʰén**	—

*Table 40. Cognate sets for PT *-ɐn*

On the other hand, there is strong evidence for PT **-eŋ*, reconstructed on the basis of the Ukhrul and Kachai forms:

	PT	Uk	Hu	Ka	Tu
	***-eŋ**	**-eŋ**	**-e**	**-eŋ**	**-ɯə̃**
‘lightweight’	***beŋ**	kʰə̀-ŋə̀-**vèŋ**	kā-nā-**vî**	kʰə́-ŋə̀-**vēŋ**	kʰá-m-**pɯə̀̃**
‘lizard’	***deŋ**	ci-**reŋ**	—	—	sʊ̀n-tí-**tā́**
‘finger/toe’	***reŋ**	-mə̀-**reŋ**	-mə̀-**ré**	—	-mə-**rɯə̃**
‘hunt’	***reŋ**	sa-kʰə̀-**reŋ**	kʰə̄-rè	kʰə̄-**réŋ**	—
‘dry’	***tʰeŋ**	kə̀-**tʰeŋ**	kə̄-**tʰē**	kə̄-**tʰèŋ**	kə-**tχɯə̃**

*Table 41. Cognate sets for PT *-eŋ*

The Tusom reflex for ‘lizard’ does not have the expected rhyme *-ɯə,* suggesting that this set may need to be reconstructed differently.

Evidence for PT **-oN* is generally stronger than for **-eN*, though evidence for **-om* is very weak:

	PT	Uk	Hu	Ka	Tu
	*-om	**-om**	**—**	**—**	**-õ**
‘wrap’	*dom	kʰə-**rom**	—	—	—
‘bear’	*ŋom	ʃi-**ŋòm**	—	—	sə-**ŋ̀̃**

*Table 42. Cognate sets for PT *-om*

Larger sets of etyma can be marshaled in support of PT **-on* and **-oŋ*, but the paucity of cognates outside of Ukhrul make it difficult to establish correspondence sets with any degree of precision:

	PT ***-on**	Uk **-on**	Hu **-ɐŋ**	Ka **-on/-ɐn**	Tu **-ɯə**
‘flower’	***bon**	ʔà-**wón**	ʔá-və-**vɐ̄ŋ**-rē	ʔa-**vén**	ʔɯ-**pɯə́**
‘clothes’	***con**	kə̀-**con**	—	—	—
‘help’	***con**	k^{h}ə̀-ŋə̀-**con**	—	k^{h}ə́-ŋə̀-**con**	—
‘sister’	***con**	a-**con**	—	—	—
‘wrong, be’	***jon**	k^{h}ə-**jon**	k^{h}ə-**jêŋ**	—	—
‘weak’	***ʃon**	kə-**ʃon**	—	—	—

*Table 43. Cognate sets for PT *-on*

	PT ***-oŋ**	Uk **-oŋ**	Hu **-u**	Ka **-oŋ**	Tu **-õ**
‘monkey’	***joŋ**	nà-**jòŋ**	ʔā-**jù**	—	nə́-**zõ̀**
‘river’	***koŋ**	**koŋ**	—	—	**kõ̀**
‘boat’	***k^{h}oŋ**	mə-ri-**k^{h}oŋ**	—	—	—
‘neck’	***k^{h}oŋ**	ʔa-**k^{h}oŋ**	ʔá-**k^{h}ú**	—	ʔə-**k^{h}õ̀**
‘slingshot’	***roŋ**	—	—	ʃáj-**rōŋ**	sɯ-kí-**lṹ**
‘road’	***ʃoŋ**	**ʃoŋ**-fu	—	—	**sa̋**-pu

*Table 44. Cognate sets for PT *-oŋ*

Cognate set for ‘road’ may belong to a different correspondence set, given its irregular pattern of correspondence.

Two nasal-final rhymes are reconstructed with nuclear *-ɐ-*: **-ɐm* and **-ɐŋ*. In both of these sets, reflexes have *-ɐN* in Huishu and either *-aN* or *-ɐN* in Ukhrul and Kachai:

	PT ***-ɐm**	Uk **-am**	Hu **-ɐm**	Ka **-am**	Tu **-õ/-ɯ**
‘uterus/womb’	***bɐm**	—	ʔá-nów-**vém**	—	nù-**bő**
‘door’	***k^{h}ɐm**	**k^{h}ám**-moŋ	ʔā-**k^{h}èm**-t^{h}ū	nèŋ-**k^{h}ām**	—
‘sit’	***tsɐm**	—	kə̄-mə̄-**tsêm**	—	k^{h}á-n-**tsù**

*Table 45. Cognate sets for PT *-ɐm*

	PT ***-ɐŋ**	Uk **-ɐŋ**	Hu **-ɐŋ**	Ka **-ɐŋ**	Tu **-õ**
‘boil’	***hɐŋ**	kə-**hɐŋ**	—	—	kə-**χõ̀**
‘sister-in-law’	***nɐŋ**	—	ʔú-**nèŋ**	ʔā-**néŋ**-*i*	—
‘clothes’	***ʃɐŋ**	kə̀-**ʃɐŋ**	ʔā-p^{h}ik-kə̄-**sɐŋ**	—	—

*Table 46. Cognate sets for PT *-ɐŋ*

A long-short contrast is reconstructed for *-a-* before all three nasal codas. In general, these may be distinguished by their Ukhrul and Tusom reflexes. In Ukrul, PT **-aaN* is reflected as *-aN* and **-aN* is reflected as *-ɐN*. In Tusom, **-aaN* is

reflected as *-ɯə̃* and PT **-am*, **-an*, and **-aŋ* are reflected as *-õ*, *-ẽ*, and *-ã*, respectively.

PT **-aan* and **-an* are relatively well supported. In addition to the criterial contrasts in Ukhrul and Hushui described above, they also contrast in their Kachai reflexes (*-om* and *-am*, respectively):

	PT ***-aam**	Uk **-am**	Hu **-am**	Ka **-om**	Tu **-ɯə̃**
‘hungry’	***caam**	—	—	kə̄-**com**	—
‘run/flee’	***jaam**	k^{h}ə-**jam**	k^{h}ə̄-**jâm**	—	—
‘placenta’	***laam**	—	ʔá-nów-**làm**	—	ʔə-**lɯə̃**
‘chase’	***saam**	—	kə̄-kə̄-**sàm**	ká-kə̀-**ʃàm**	kə-**zɯə́**
‘rice (hulled)’	***saam**	**sàm**	—	ʔa-s**ōm**	zú-**sxɯə̀**

*Table 47. Cognate sets for PT *-aam*

	PT ***-am**	Uk **-ɐm**	Hu **-am**	Ka **-am**	Tu **-õ**
‘pot’	***am**	**hèm**	—	ʔā-**hàm**	**ʔõ**-ə
‘yawn’	***ham**	—	**hàm**-mèj-k^{h}ê	**ham**-hwe	**hő**-mə-ʃiè
‘basket strap’	***nam**	—	ʔá-k^{h}ə̄-**nàm**	ʔā-**nàm**	—
‘deceive’	***nam**	k^{h}ə̀-**nèm**	—	k^{h}ə̀-**nàm**	—
‘smell’	***nam**	k^{h}ə̀-ŋə̀-**nèm**	kə̄-mə̄-**nâm**	k^{h}ə́-ŋə̀-**nám**	k^{h}ə́-**nõ̀**
‘sit’	***pam**	kə̀-**pɐm**	—	kə-**pàm**	—
‘otter’	***ram**	si-**rɐm**	ʃə̄-**rām**	—	—
‘village/land’	***ram**	**rèm**	ʔā-**ràm**	ʔā-**rám**	**rã**
‘hair (head)’	***sam**	kúj-**sɐm**	ʔá-ków-nə̀-**sàm**	ké-**sam**	—
‘run/flee’	***sam**	k^{h}ə̀-ŋə̀-**sèm**	—	kə̄-**sām**	—

*Table 48. Cognate sets for PT *-am*

The reconstruction of the short-long contrast given here aligns with that given for Proto-Kuki-Chin (PKC) by VanBik (2009):

PKC	PT	Ukhrul	Tusom	
*yaam	*jaam	k^{h}ə-**jâm**	—	‘run/flee’
*hram	*ram	si-**rɐm**	—	‘otter’
*ram	*ram	**rèm**	**rã**	‘village/land’
*s^{h}am	*sam	kúj-**sam**	—	‘hair (head)’

Table 49. Long -aam and short -am in PKC and Tangkhulic

In contrast to PT **-aam* and **-am*, there are relatively few reflexes of **-aan* and **-an*:

	PT ***-aan**	Uk **-aŋ**	Hu **-ej**	Ka **-on**	Tu **-ɯ̃**
‘hand/arm’	***paan**	ʔà-**pàŋ**	ʔā-**vèj**	ʔā**pón**	ʔɯ-**pɯ̀ɜ̃**
‘sharp’	***tsaan**	kə-**tsɐ́n**	kə̄-**tsèj**	—	k^{h}ə́-mə-**ʃxɯ̀ɜ̃**

*Table 50. Cognate sets for PT *-aan*

	PT ***-an**	Uk **-ɐn**	Hu **-ej**	Ka **-ɐn/-on**	Tu **-ɛ̃**
‘curry/green vegetable’	***an**	**hɐn**	—	ʔa-**hèn**	ʔə-**hɛ̃**
‘expect’	***han**	kə-cì-**hén**	kə̄-tsé-**hèj**	ká-tɕì-**hón**	k^{h}ə́-ci-**hɛ́̃**
‘price’	***man**	—	—	—	ʔi-mɛ́̃
‘blow’	***p^{h}an**	kə-p^{h}**ɐn**	**p^{h}ej**-kə̄-tsèjʔ	kə̄-**p^{h}én**	—

*Table 51. Cognate sets for PT *-an*

The best supported **-aaN/*-aN* pair is **-aaŋ/*-aŋ*. These also display a fairly robust contrast in the Kachai reflexes, in addition to that between the Ukhrul and Huishu reflexes of the two correspondence sets:

	PT ***-aaŋ**	Uk **-aŋ**	Hu **-i**	Ka **-o**	Tu **-ɯ̃**
‘moon’	***caaŋ**	kə-**caŋ**	—	kə̀-**tsɐ̀**	kə-**cɯ̃**
‘mosquito’	***caaŋ**	—	—	—	ʃí-**cɯ́̃**
‘like/want’	***caaŋ**	niŋ kə-**caŋ**	nɛ̄ŋ-ká-**tsà**	—	níŋ-kə-**cɯ́̃**
‘wing’	***caaŋ**	ʔa-ŋə-**caŋ**	—	—	n-**cɯ̀ɜ̃**
‘bracelet’	***daaŋ**	—	—	kə-**ðo**	kɔ̋-**sɯ̀ɜ̃**
‘bright’	***haaŋ**	kə-**haŋ**	—	—	kə-**xɯ̀ɜ̃**
‘lift’	***k^{h}aaŋ**	kə-**k^{h}aŋ**	**k^{h}ì**-tə-kéjʔ-k^{h}ê	—	**k^{h}ɯə̂ŋ**-kə-ki
‘raptor’	***laaŋ**	k^{h}ə-**lɐŋ**	—	—	k^{h}-**lɯ̀ɜ̃**
‘lost’	***maaŋ**	k^{h}ə-**maŋ**	—	—	k^{h}ə-**mɯ́̃**
‘branch’	***p^{h}aaŋ**	ʔa-**p^{h}aŋ**	ʔá-ná-**p^{h}ì**	t^{h}ɛ̀ŋ-**p^{h}ɔ̄**	—
‘long’	***saaŋ**	kə-**saŋ**	ká-**sì**	kə̄-**só**	kə-**sɯ̀ɜ̃**

*Table 52. Cognate sets for PT *-aaŋ*

Tusom ***ʃí-cɯ́̃*** ‘mosquito’ has no know parallels in Tangkhulic, but may probably be compared to PTB **kraŋ* ‘mosquito/firefly’.

	PT	Uk	Hu	Ka	Tu
	***-aŋ**	**-ɐŋ**	**-o**	**-a**	**-ã**
‘thirst’	***caŋ**	—	rúk-ká-**tsò**	kʰá-ðì-**cà**	—
‘look’	***jaŋ**	kʰə-**jɐŋ**	—	kʰā-**já**	kʰá-ŋə-**hā́**
‘burn/scorch’	***kaŋ**	kə-**kaŋ**	—	—	—
‘dream’	***maŋ**	**mèŋ**-soŋ	sá-**mó**	ʔā-**mà**	**mā́**-sxom-pa
‘drink’	***maŋ**	kʰà-**mèŋ**	—	kʰà-**ma**	kʰə-**mà̃**
‘2nd person’	***naŋ**	**(nɐ)**	**no**	**nɐŋ**	**nã**
‘swallow’	***saŋ**	—	mə-néŋ-**só**-kʰê	—	pʰ-lá-kə-**sā́**
‘pine (tree)’	***taŋ**	mə-**tɐŋ**	—	ŋə̄-**tà**	—
‘enter’	***tsaŋ**	kə-**tsɐŋ**	rē-kə̄-**tsô**	kʰə̄-**ðà**	kə-**zā́**
‘clan’	***ʃaŋ**	**ʃèŋ**	—	ʔā-**ʃā**	—
‘penis’	***ʃaŋ**	**ʃɐŋ**-kuj	ʔá-**sò**	—	ʔə-**sχā́**
‘husband’	***ʃaŋ**	—	—	ʔú-lú-**ʃá**	ʔi-ti-**sxā́**

*Table 53. Cognate sets for PT *-aŋ*

Again, the length distinction reconstructed here aligns with that reconstructed for PKC:

PKC	PT	Ukhrul	Tusom	
*sʰaaŋ	*saaŋ	kə-**saŋ**	kə-**sɯ̀ɜ̀**	‘long/tall’
*waaŋ	*haaŋ	kə-**haŋ**	kə-**xɯ̀ɜ̀**	‘bright’
*maŋ	*maŋ	**mèŋ**-soŋ	**mā́**-sxom-pa	‘dream’
*yaŋ	*ʃaŋ	**ʃɐŋ**-kuj	—	‘penis’
*naŋ	*naŋ	**(nɐ)**	**nã**	‘2nd person’

Table 54. Long -aam and short -am in PKC and Tangkhulic

4.3. Stop-final rhymes

In most respects, the stop-final rhymes parallel the nasal final rhymes. The relevant correspondence sets are summarized in Table 55:

PT	Uk	Hu	Ka	Tu
*-ip	-ip	-ep	-ip	-ɯ
*-it	-it	-ejʔ	-ɐt	-ɯ
*-ik	-ik	-oʔ	-ɐk	-ɯ
*-up	-up	-ɐp	-up	-u
*-ut	-ut	-uʔ	-ut	-ɯ
*-uk	-uk	-uʔ	-uk	-u
*-ep	—	-ɐp	—	-a/-ɯ
*-et	-et	-ejʔ	-ɐt	-e
*-ek	-ek	-eʔ	-ek	-ɯə
*-op	-op	-ɐp	-ip	-u
*-ot	-ot	-oʔ	-ɐt	-e
*-ok	-ok	-uʔ	-ɐk	-u
*-ɐp	-ɐp	-eʔ	—	—

Table 55. Correspondence sets for stop-final syllables

PT	Uk	Hu	Ka	Tu
*-ɐt	-at	-ejʔ	-at	-e/-i
*-ɐk	-ɐk	-oʔ	-ɐk	—
*-ap	-ɐp	-aʔ	-ap	-o
*-at	-ɐt	-ejʔ	-ɐt	-e
*-aat	-at	—	-ot	ɯə
*-ak	-ɐk	-oʔ	-ak	-a
*-aak	-ak	-aʔ	-ok	-ɯə

Table55. (cont.)

In general, the final stops are preserved in Ukhrul and Kachai. In Huishu, there is a pervasive pattern of debuccalization that affects **-t* and **-k* in all environments and **-p* except when following non-low vowels. In Tusom, final stops disappear entirely, but not without affecting the color in the preceding vowel.

Rhymes having nuclear *-i-* can be reconstructed with all three stop codas. For all of these correspondence sets, Ukhrul preserves the PT form. Kachai preserves the PT form except that the nuclear vowel usually becomes *-ɐ-*. Huishu is less conservative. While it preserves the final stops in reflexes of **-ip*, **-t* and **-k* are debuccalized to **-ʔ*. In all sets, Tusom has **-ɯ*.

	PT ***-ip**	Uk **-ip**	Hu **-ep**	Ka **-ip**	Tu **-ɯ**
‘scale (of fish)’	***hlip**	ʔà-**rìp**	—	—	sí-ŋí ʔɯ-**ɬxɯ**
‘sleep/lie down’	***jip**	—	kʰə̄-**jép**	kʰə-**jíp**	—
‘gather/together’	***tsip**	kʰə-kə-**tsip**	—	—	—

*Table 56. Cognate sets for PT *-ip*

	PT ***-it**	Uk **-it**	Hu **-ejʔ**	Ka **-ɐt**	Tu **-ɯ**
‘heavy’	***hrit**	kʰə-**rìt**	kʰə-**rèjʔ**	kʰə-**rét**	kə-**hrú**
‘rub’	***mit**	kʰə-**mit**	—	—	kʰə-**mú**
‘hit’	***pʰit**	kə-ŋə-**pʰit**	—	—	kʰá-kə-**psɯ**

*Table 57. Cognate sets for PT *-it*

	PT ***-ik**	Uk **-ik**	Hu **-oʔ**	Ka **-ɐk**	Tu **-ɯ**
‘wash (hands)’	***cik**	kʰə-mə-**cik**	kə̄-mə̄-**tsoʔ**	—	kə-**cûɯ**
‘burn’	***dik**	kʰə̀-**rìk**	—	kʰə̄-**ðék**	—
‘louse’	***hrik**	**rìk**	ʔā-**roʔ**	ʔā-**rēk**	ʔɯ-kuə-**hruə́**
‘eye’	***mik**	ʔa-**mìk**	ʔā-**moʔ**	ʔa-**mɐk**	ʔɯ-**mɯ**
‘armpit’	***rik**	**rik**-kʰa	—	tʰaw-**lɐk**	—
‘pinch’	***sik**	kʰə-mə-**sik**	—	—	—
‘cold’	***sik**	kə-**sik**	—	—	kə-**sxɯə**
‘black’	***tsik**	kə̀-**tsìk**	kə̄-**tsōʔ**	kʰə̄-**ðék**	kə-**zûɯ**
‘lung/chest’	***tʰik**	mə-**tʰik**	ʔá-má-**tʰòʔ**	mə̀-**tʰék**	—

*Table 58. Cognate sets for PT *-ik*

Ukhrul and Kachai faithfully preserve PT **-up*, **-ut*, and **-uk*. Huishu retains the **-p* in **-up*, but **-ut* and **-uk* both become *-uʔ*. Tusom has *-u* or *-ɯ* in all three sets:

	PT ***-up**	Uk **-up**	Hu **-ɐp**	Ka **-up**	Tu **-u**
‘finish’	***kup**	kə̀-**kùp**	kə̄-**kɐ̀p**	kə̄-**kūp**	—
‘pick up’	***ʃup**	kə-**ʃup**	—	—	**sú**-kʰə-lî

*Table 59 Cognate sets for PT *-up*

	PT ***-ut**	Uk **-ut**	Hu **-uʔ**	Ka **-ut**	Tu **-ɯ/-e**
‘leech’	***hwut**	mə̀-**hùt**	—	—	me-**hé**
‘smoke’	***kʰut**	mej-**kʰùt**	ʔā-mú-**kʰùʔ**	mə̀-**kʰút**	mà-**kfɯ**
‘hand/arm’	***kʰut**	—	—	—	ʔə-**kfɯ**
‘rub/brush’	***ʃut**	kə̀-kə̀-**ʃùt**	kə̄-kə̄-**séjʔ**	ká-kə̀-**ʃút**	kʰá-kə-**sɯ́**

*Table 60. Cognate sets for PT *-ut*

	PT ***-uk**	Uk **-uk**	Hu **-uʔ**	Ka **-uk**	Tu **-u**
‘belly/stomach’	***buk**	à-**vùk**	ʔā-**wùʔ**	**wúk**	ʔɯ-**pú**
‘knee’	***kʰuk**	ʔà-**kʰùk**	ʔá-mú-**kʰùʔ**	pʰi-**kʰūk**	**kxú**-tsù
‘cattle’	***muk**	si-**muk**	sə̄-**muʔ**	sí-**múk**	—
‘shake’	***nuk**	kʰə-kə-**nuk**	—	—	kʰá-kʰə̀-**nù**
‘six’	***ruk**	tʰə̀-**rùk**	sə̄-**ruʔ**	ʃə́-**rúk**	t-**rú**-hè
‘deep’	***tʰuk**	kə̀-**tʰuk**	kə̄-**tùʔ**	kə̄-**tʰūk**	kə-**tʰu**
‘borrow’	***ʃuk**	kə̀-**ʃùk**	—	kə-**ʃuk**	—

*Table 61. Cognate sets for PT *-uk*

There is weaker evidence supporting stop final rhymes with mid vowels. As with the previous sets, the reconstructed PT rhymes are identical to the Ukhrul rhymes (except for PT **-ep*, where Ukhrul reflexes are lacking):

	PT	Uk	Hu	Ka	Tu
	*-ep	—	-ɐp	—	-a/-ɯ
‘slow’	*tep	—	ká-tɐ̀p	—	kə-tá
‘blink’	*ʃep	—	ká-sɐ̀p-k^{h}ê	—	k^{h}á-kə-sxʊ́ɯ

*Table 62. Cognate sets for PT *-ep*

	PT ***-et**	Uk **-et**	Hu **-ejʔ**	Ka **-ɐt/-ot**	Tu **-e**
‘squeeze/extinguish’	***met**	kə-ʃì-**met**	ká-sə-**mèjʔ**	ká-ʃi-**mɐ̄t**	—
‘soft (to touch)/damp’	***pet**	k^{h}ə-ŋə-**pet**	kə-ná-**véjʔ**	k^{h}á-ŋə-**pót**	tá-**p^{h}è**-p^{h}è

*Table 63. Cognate sets for PT *-et*

	PT ***-ek**	Uk **-ek**	Hu **-eʔ**	Ka **-ek**	Tu **-ɯə**
‘lick’	***lek**	k^{h}ə-mə-**lek**	kə-mə-**léʔ**	k^{h}á-mə-**lēk**	k^{h}á-mə-**lɯə́**
‘green’	***tek**	k^{h}ə-mə-**tek**	kə-mə-**kêʔ**	k^{h}á-mə-**ték**	k^{h}á-*n*-**tɯə**
‘break’	***tlek**	kə-**tek**	ʃì-k^{h}ə-**lêʔ**	—	tá-kə-**tɯə̂**

*Table 64. Cognate sets for PT *-ek*

Likewise, there is relatively weak support for **-op* and **-ot*, which are reconstructed as identical to the Ukhrul rhymes.

	PT ***-op**	Uk **-op**	Hu **-ɐp**	Ka **-ip**	Tu **-u**
‘lung’	***cop**	—	—	—	ʔɯ-**cû**
‘sew’	***k^{h}op**	kə-**k^{h}op**	kə-**k^{h}ɐ́p**	kə-**k^{h}īp**	—

*Table 65. Cognate sets for PT *-op*

	PT ***-ot**	Uk **-ot**	Hu **-oʔ**	Ka **-ɐt**	Tu **-e**
‘ashes’	***hwot**	**hòt**-là	—	**fɐt**-lu	—
‘scratch/scrape’	***k^{h}ot**	kə-**k^{h}ot**	—	k^{h}ə-mə-**k^{h}ɐ**	—
‘banana’	***mot**	**mót**-t^{h}ej	ʔā-**moʔ**-t^{h}u	—	ʔə-**me**-tχa
‘copulate’	***wot**	—	kə̄-kə̄-**woʔ**	—	kə-k-**we**

*Table 66. Cognate sets for PT *-ot*

There is significantly better support for the rhyme **-ok*:

	PT ***-ok**	Uk **-ok**	Hu **-uʔ**	Ka **-ɐk**	Tu **-u**
‘pig’	***hwok**	**hòk**	ʔa-**huʔ**	ʔa-**fák**	**hû**
‘deaf’	***kʰok**	kʰə-ŋə-**kʰok**	kʰə̀-nì nì-kə̀-**kʰé**	—	nì-kə̀-**kxû**
‘throat/larynx/voice’	***rok**	kʰə-**rok**	—	ʔā-**rɐk**-ʃe	ʔɯ-kʰ-**rû**
‘rat/rodent’	***rwok**	ʃi-**ok**	ʔā-pʰə̄-**jùʔ**	ʃim-**rék**	—
‘brain’	***tlok**	ʔà-ŋə̀-**tok**	ʔā-ków-nə-**lùʔ**	—	ʔu-kuə́-**dú**
‘burst’	***wok**	kʰə-ŋə-**wok**	né-**wúʔ**-kʰèj-kʰê	—	ʔum-**bú**-kə-kiê
‘emerge/exist’	***ʃok**	kə̀-**ʃok**	ʔú-kə̄-**súʔ**	—	kə-**sú**

*Table 67. Cognate sets for PT *-ok*

We reconstruct **-ɐp* for one set, where Ukhrul has *-ɐp* and Huishu has *-eʔ*:

	PT ***-ɐp**	Uk **-ɐp**	Hu **-eʔ**	Ka **—**	Tu **—**
‘tie’	***lɐp**	kə̀-kʰə̀-**lɐp**	kə̄-kʰə̄-**réʔ**	—	—

*Table 68. Cognate sets for PT *-ɐp*

PT **-ɐt* and **-ɐk* are reconstructed for a few other sets:

	PT **-ɐt**	Uk **-at**	Hu **-ejʔ**	Ka **-at**	Tu **-e**
‘walk’	***tsɐt**	kə-**tsat**	kə́-**tsèjʔ**	—	kə-**zé**
‘burst’	***wɐt**	kʰə̀-**vàt**	kʰə̀-**vejʔ**	kʰə̄-**wāt**	—
‘eight’	***ʃɐt**	cì-**ʃàt**	tə̄-**tsèjʔ**	cī-**ʃīt**	sí-**hè**

*Table 69. Cognate sets for PT *-ɐt*

	PT ***-ɐk**	Uk **-ɐk**	Hu **-oʔ**	Ka **-ɐk**	Tu **-a**
‘grind/pound/crush’	***tɐk**	kə-**tɐk**	—	kə̄-**tɐ̀k**	kə-**tá**
‘difficult/hard’	***ʃɐk**	kə-**sɐk**	kə́-**sòʔ**	—	—

*Table 70. Cognate sets for PT *-ɐk*

We reconstruct a contrast between long **-aa-* and short **-a-* before stop codas. In general, the long vowel is reconstructed where Ukhrul has *-a-* and Tusom has **-ɯə* and a short vowel is reconstructed where Ukhrul has *-ɐ-*. Only two etyma with PT **-aap* were identified, but several etyma were reconstructed with **-ap*:

	PT	Uk	Hu	Ka	Tu
	***-ap**	**-ɐp**	**-aʔ**	**-ap**	**-o**
‘cry/weep’	***cap**	kə-**cɐ̀p**	ká-**tsàʔ**	kə-**cáp**	kə-**tsó**
‘hit/strike’	***jap**	k^hə-**jɐp**	—	k^hə̄-**jáp**	—
‘snot’	***nap**	**nɐp**-tiŋ	ʔá-**nàʔ**	**náp**-t^ho	—
‘stick (v.)’	***nap**	k^hə-**nɐp**	k^hə̄-**nàʔ**	kə̄-**nāp**	k^há-n-**ná**
‘have the ability’	***ʃap**	kə-**ʃɐp**	ʃē-kə̄-**sāʔ**	kə̄-**ʃāp**	sɯ-lí-kə-**só**

*Table 71. Cognate sets for PT *-ap*

	PT	Uk	Hu	Ka	Tu
	***-aap**	**-ap**	**-aʔ**	**-op**	**-ɯə/-ɯ**
‘shoot’	***kaap**	kə-**kap**	kə-**kaʔ**	kə̄-**kōp**	kə-**kûɯ**
‘rib’	***raap**	ʔa-**rap**	ʔa-**ra**ʔ-t^hɐŋ	ʔā-**róp**	ʔɯ-**rɯə**

*Table 72. Cognate sets for PT *-aap*

A weak contrast between **-at* and **-aat* can be reconstructed, based on data from Ukhrul and Tusom:

	PT	Uk	Hu	Ka	Tu
	***-at**	**-ɐt**	**-ejʔ**	**-ɐt**	**-e**
‘self’	***lat**	k^hə-**lɐt**-tə	—	k^hə-**lɐt**-ko	-k^hə-**lé**-le
‘cut (vegetables)’	***tat**	k^hə̀-kə̀-**tɐ̀t**	kə̄-kə̄-**kéjʔ**	ká-kə̀-**tɐ̄t**	-k^há-kə-**dé**
‘kill’	***t^hat**	sá-kə̀-**t^hɐ̀t**	jà-ká-**t^hèjʔ**	sù-kə̀-**t^hɐ́t**	tá-kə-**t^hɐ̄**
‘thorn’	***ʃat**	ku-**ʃat**	ʔā-kə̄-**ʃè**	kə̀-**se**	kɔ̃́-**sé**

*Table 73. Cognate sets for PT *-at*

	PT	Uk	Hu	Ka	Tu
	***-aat**	**-at**	**—**	**-ot**	**ɯə**
‘rice (cooked)’	***tsaat**	**tsat**	—	ʔa-**ðōt**	**zɯə̀**

*Table 74. Cognate sets for PT *-aat*

Strong evidence exists supporting a contrast between **-ak* and **-aak*. Ukhrul and Tusom reflect this contrast according to the general pattern (*-ɐ-* versus *-a-* in Ukhrul, *-a-* versus -ɯə in Tusom). In Kachai and Huishu, the contrast is reflected as a vowel quality difference.

	PT ***-ak**	Uk **-ɐk**	Hu **-oʔ**	Ka **-ak**	Tu **-a**
‘side’	***bak**	ja-**vak**	—	ʔā-tɕá-**wá**	ʔə́-sám-**pa**
‘weave’	***dak**	kʰə̀-**rɐ̀k**	kʰə́-**rōʔ**	kʰə̄-**ðák**	psɯ-kə-**tó**
‘big’	***hak**	kə̀-**hɐ́k**-ɐ	kə̀-**hòʔ**	—	—
‘ashamed’	***jak**	kə̀-kʰə̀-**jɐk**	kə̄-kʰə̄-**jōʔ**	kə́-kʰə̀-**jak**	kʰá-kə̀-**sχá**
‘cut (wood)’	***kak**	kə-**kɐk**	—	—	kə-**ká**
‘breath’	***kʰak**	ʔa-**kʰɐ́k**	ʔá-**kʰòʔ**	ʔa-**kʰák**	ʔə-**kʰá**
‘fine, be’	***nak**	kʰə̀-mə̀-**nɐ̀k**	—	kʰə́-ŋə̀-**nák**	—
‘connect/build’	***sak**	kʰə-ŋə-**sak**	—	—	—
‘kick’	***tʰak**	kə-kə-**tʰɐk**	—	kə́-kə̀-**tʰāk**	kʰá-kə-**tʰá**
‘difficult’	***ʃak**	kə-**sɐk**	kə́-**sòʔ**	—	—

*Table 75. Cognate sets for PT *-ak*

	PT ***-aak**	Uk **-ak**	Hu **-aʔ**	Ka **-ok**	Tu **-ɯə**
‘brother-in-law’	***maak**	ʔi-**mak**	ʔú-**maʔ**	ʔā-**mok**-ū	kʰə-**mɯə**
‘bat’	***paak**	—	—	—	**bɯə̀**
‘fast/quick’	***tʰaak**	kə̀-**tʰə̀k**	—	kə-**tʰok**	kə-**tʰɯə**

*Table 76. Cognate sets for PT *-aak*

Once again, the distinction between PT **-ak* and **-aak* aligns with the distinction between PKC **-ak* and **-aak*:

PKC	PT	Ukhrul	Tusom	
tak	dak	kʰə̀-**rɐ̀k**	psɯ-kə-**tó**	‘weave’
yak	jak	kə̀-kʰə̀-**jɐk**	kʰa-kə-**sχá**	‘ashamed’
ɓaak	paak	—	**bɯə̀**	‘bat’
maak	maak	ʔi-**mak**	kʰə-**mɯə**	‘brother-in-law’

Table 77. Long -aak and short -ak in PKC and Tangkhulic

PT, then, provides an additional witness to the length contrast reconstructed for PTB largely on the basis of the synchronic length contrast in Kuki-Chin languages.

5. SIGNIFICANT SOUND CHANGES

The following section summarizes the major sound changes between reconstructed Proto-Tangkhulic and each of the daughter languages.

5.1. Change shared by Ukhrul and Huishu

In both Ukhrul and Huishu, **-u* and **-ɨ* merged as *-u*. In Huishu, *-u* subsequently became *-uk* but in Ukhrul it remained *-u*. This suggests that Ukhrul and Huishu may form a subgroup within Tangkhulic. This parallels other innovations shared by Huishu and Ukhrul, including PT **d* > *r*:

	PT	Uk	Hu	Ka	Tu
‘egg’	***dɨ**	hɐ̀r-**ru**	ʔā-hó-p^{h}ə̄-**rùk**	hàr-**ðí**	uə́-**tsy**
‘water’	***dɨ**	tɐ́-**ru**	ʔā-**rūk**	tūŋ-**ðî**	n-**tsý**
‘weave’	***dak**	k^{h}ə̀-**rɐ̀k**	k^{h}ə̄-**ròʔ**	k^{h}ə-**ðák**	psɯ-kə-**tó**
‘sharpen (knife)’	***da**	kə̀-k^{h}ə̀-**ra**	kə-kə-**rê**	kə́-k^{h}ə̀-**ðù**	k^{h}ə́-kə-**tí**
‘grandchild’	***du**	ʔi-**rù**	ʔā-**rúk**-rè	i-**ðɐ̄**	ko-**tsy**-nùɪ

*Table 78. Cognate sets for PT *d-*

5.2. Changes in Ukhrul

Ukhrul is remarkably conservative. The most dramatic change is the merger of PT **-ow* and **-oj* as Ukhrul *-uj*. Ukhrul has also lost **-l*, either by outright deletion or by lenition to a palatal offglide. Additionally, there are a series of more subtle sound changes that have applied to Ukhrul. Most significantly, a quality distinction (*-a* versus *-ɐ*) has replaced the length distinction between **-aa-* and **-a-*.

5.3. Changes in Huishu

Huishu, by contrast, is highly innovative and it is not feasible to list the sound changes between it and PT exhaustively in this context. The most interesting change is the emergence of a final *-k* after the high vowels *-i* and *-u*. Subsequent to this change, the mid vowels *-e* and *-o* were raised to *-i* and *-u*. Then, **-a* was raised to become *-e*. The diphthong **-ej* was also backed and raised to *-u* and *-ew* and -aw were backed and merged with -ow.

In Huishu, unlike the other example languages, PT **-l* is preserved as a consonant (in certain contexts). Depending on the preceding vowel, **-l* is deleted, becomes *-ŋ*, or becomes *-n*. Final **-r*, on the other hand, is deleted in almost all contexts. Final **-m* is preserved everywhere but **-ŋ* and **-n* are deleted after mid and low vowels.

Most final stops are debuccalized. Both **-t* and **-k* are debuccalized in all contexts and **-p* is debuccalized after low vowels. The historical codas color the vowel quality of the vowel nucleus. For example, **-it*, **-et*, **-ɐt*, and **-at* are all reflected as *-ejʔ* and **-ik* and **-ɐk* are both reflected as *-oʔ*.

5.4. Changes in Kachai

Kachai is generally less conservative than Ukhrul but more conservative than the other languages under comparison. The developments among open monophthongal and diphthongal rhymes are most dramatic. The rhymes **u-*, **i-*, and **o-* were centralized to *-ɐ*. **-a* is raised and backed to **-u* and **-e* was raised to **-i*. The diphthong **-ow* was monophthongized to *-e* and the diphthongs **-ej*, **-ew*, and **-ow* merged as **-i*. Both **-aw* and **-aaw* became *-o*.

In closed syllables, **-i-* is centralized to *-ɐ-* when followed by coronal or dorsal codas. **-e-* is also centralized to *-ɐ-* before coronal consonants. Long **-aa-*

becomes *-o-* in all contexts. Finally, the velar nasal **-ŋ* is deleted before low vowels.

5.5. Changes in Tusom

Tusom shows, by far, the most dramatic innovations in its system of rhymes. All of the stop codas have been deleted and all of the final nasals have been replaced by nasalization on the vowel nucleus. Prior to these developments, the distinctions among the high vowels in open syllables have been erased entirely as **-i*, **-ɨ*, and **-u* have largely merged to *-ɯ*[4] (as have **-ip*, **-it*, and **-ik*). The non-high monophthongs have been raised to the top of the vowel space. PT **-a* and **-e* have become *-i* and PT **-o* has become *-u*. PT **-ej* then monophthongized to *-a* and **-oj* has been monophthongized to *-y*. Perhaps via metathesis, PT **-aj* has become -ie. Similarly, PT **-ow* and **-aaw* have both become *-uə*.

Vowel quality has been preserved to a greater degree in the reflexes of PT closed syllables. However, even here there are considerable innovations. For example, PT **-aap*, **-aat*, and **-aak* are reflected as *-ɯə* and PT **-aam*, **-aan*, and **-aaŋ* are reflected as **-ɯə̃*. Coronal codas have a fronting effect so that **-ot* and **-at* are both reflected as *-e* and **-an* is reflected as *-ẽ. Numerous other minor changes can also be observed in Tusom, as a perusal of the correspondence tables will reveal.

6. CONCLUSIONS

This paper has sought to advance the comparative study of Tangkhulic languages, and of Tibeto-Burman languages generally, by reconstructing the rhyme system of Proto-Tangkhulic and then identifying the sound changes that relate these PT reconstructions to contemporary forms in the several languages.

In its current form, this work has many limitations. Tangkhulic is a diverse linguistic group and it is likely that considering data from more languages within the group would motivate changes in the reconstruction and shed light on outstanding problems. What would be even more enlightening, though, is additional data from the same languages. This paper reports a large number of singleton correspondence sets. It is difficult to determine whether these sets point back to contrasts in the proto-language or whether they are the result of conditioned changes or irregular developments. It is to be hoped that more data will eventually become available, allowing us to resolve these issues.

Until then, we can rest secure in a few conclusions. First, even though Ukhrul is the most conservative of the languages considered here, PT differed in notable respects from Ukhrul. Second, while none of the primary languages compared here preserves final **-l*, it must be reconstructed in PT on the basis of both internal and external evidence. The fact that Naga languages tend to lack final **-l*, then, must be an example of drift or contact-induced change, *not* a shared

[4] PT **-ɨ* is also reflected as *-y* in Tusom, as shown in Table 6.

innovation. Third, PT preserves a contrasts between long **-aa-* and short **-a-* that is not directly preserved in any of the daughter languages compared.

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Authors' addresses

David A. Mortensen
Department of Linguistics
Kenneth P. Dietrich School of Arts and Sciences
University of Pittsburgh
2816 Cathedral of Learning
Pittsburgh, PA 15260 USA

Email: davidmortensen@gmail.com

James A. Miller
7439 Penfield Ct.
Pittsburgh, PA 15208 USA

Email: jam859@gmail.com