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Kuki-Chin phonology: An overview

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ABSTRACT

The phonologies of several Kuki-Chin (South Central Trans-Himalayan) languages have been described well, and there are fragmentary sketches of numerous others. Extensive diachronic work has also been done for the languages of this group. However, there is no comprehensive survey of the synchronic phonologies of Kuki-Chin languages. This chapter attempts to fill that gap so that researchers working on one of these languages, or doing broader typological surveys, can easily grasp the broad sound patterns in, and phonological questions raised by, Kuki-Chin. The chapter covers syllable structure, onsets, rhymes, and morphophonology. Onsets and rhymes are illustrated with complete inventories for Proto-Kuki-Chin and six attested Kuki-Chin languages from various subgroups (Falam, Mara, Thado, Daai, Lemi, Sorbung, and Monsang) and a comparative perspective on each of these inventories. This is followed by a discussion of the broader issues in Kuki-Chin sound inventories and phonotactics. These issues include laryngeal contrasts in obstruents and sonorants, the special status of glottal stop, and vowel length distinctions. A range of morphophonological alternations are then addressed, including the widespread phenomenon of non-final shortening (illustrated with observations from Thado, Daai, Sorbung, Falam, and Zophei) and vowel harmony (attested in at least Lamkang and Hyow). Apophony (mutation) in stem form and transitivity alternations is also discussed, drawing largely on data from Hakha Lai.

KEYWORDS

Kuki-Chin, South Central, Tibeto-Burman, Trans-Himalayan, phonology, inventories, alternations, voiceless sonorants, glottal stop, apophony, vowel harmony, sesquisyllables

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1 Introduction

While valuable work has been done on the phonologies of various Kuki-Chin (KC) languages, and VanBik (2009) has produced a comprehensive phonological reconstruction of Proto-Kuki-Chin, there is as of yet no general overview of the phonological properties of these languages as a group. The goal of the present paper is to fill this lacuna. Specifically, the paper is addressed to linguists conducting research on Kuki-Chin languages who wish to know what to expect from these languages phonologically, whether or not their primary interest is phonology. It is hoped that it will also be of interest to researchers—in particular, phonological typologists—and others who are interested in the range of sound patterns within human languages. The primary focus of this paper will be on segmental phonology and syllabic structure, since tonal phonology will be treated separately (Lotven 2023).

Since this paper seeks to be both general (applying to the whole Kuki-Chin group rather than to a specific language) and empirically grounded, it has been necessary to draw examples from a variety of Kuki-Chin languages. However, I have chosen to focus on the sound systems of a few exemplar languages rather than "collating" facts from as many languages as possible. Lotven et al. (2020) follows the latter approach, and provides a useful approach to the diachronic phonology of the Kuki-Chin syllable. I follow the former approach because, as a fieldworker, I find it helpful to see examples of whole phonological systems of languages related to those on which I am working. In the discussion of inventories, this former approach has been followed systematically, with one exemplar language from each major branch of the Kuki-Chin family.[1] Elsewhere, this has been done in a more ad hoc fashion, with contextualized examples introduced following the author's judgment of what best captures the general "flavor" of the phenomenon being discussed within Kuki-Chin.

The primary focus of this chapter is on synchrony. Diachronic notes are included when they make the synchronic situation clearer. It should not be surprising that, in dealing with a group of relatively closely related languages, such diachronic notes are often enlightening. However, the goal of this paper is not—as a general rule—to make a historical argument or provide a foundation for diachronic work.

[1] It is the position of this paper that the so-called "Old Kuki" (now "Northwestern") languages of Manipur do not form a single phylogenetic group with KC. In light of this fact, two very different languages associated with the (unfortunate) label "Old Kuki" have been included in the set of exemplars.

2 Syllables

There is a very strong correspondence between morpheme and syllable in Kuki-Chin languages—but see Hyow, in which morpheme and syllable do not neatly align (Zakaria 2018; Zakaria 2020)—and understanding syllable structure proves to be key in understanding Kuki-Chin phonology (Lotven et al. 2020). Most phonotactic restrictions that exist in these languages can be best understood in terms of syllable structure constraints. Alternations, as well, make the most sense when they are understood in terms of syllabic constituents.

2.1 Basic syllable structure

In Kuki-Chin languages, syllables tend to have a simple, obligatory onset; a nucleus consisting of one or two morae; a simple, optional coda drawn from a constrained inventory; and a tone. Various languages in the group defy this general characterization in minor ways, as will be discussed below, but the characterization holds of the great majority of syllables in most Kuki-Chin languages. Thus, typical syllables in Kuki-Chin languages tend to have the structure CV, CVV, CVVC, or CVC. However, vowel length is often only contrastive in closed syllables and CV syllables very often consist only of reduced grammatical morphemes and lexical morphemes occurring in contexts where predictable shortening applies (see Section 5.1 below).

Some Kuki-Chin languages allow complex onsets, typically consisting of a plosive plus a sonorant (/r/ or /l/). These onset clusters are a conservative feature which was present in PKC but that has been lost in most KC languages (VanBik 2009). In some of the moderately conservative languages, particularly in the Central group, [some of] these clusters are reflected as lateral affricates (/t͡ɬ/ and /t͡ɬʰ/), which are analyzed here as single segments. A few languages allow complex onsets of other types; these have different histories. Examples include the /kx/ and /kɣ/ clusters of K'Cho (Mang 2006: 14).

Some KC languages also appear to allow complex codas consisting of a sonorant (/m/, /n/, /ŋ/, /r/, or /l/) followed (or preceded) by a glottal stop. Whether these are analyzed as true complex codas depends on whether the final glottal stop is analyzed as a segment, a secondary characteristic of final consonants, or a prosody characteristic of a syllable as a whole, a subject to which we will return in Section 4.2.

2.2 Sesquisyllables

Like many other Tibeto-Burman languages—indeed, many other languages of the Southeast Asian area—some Kuki-Chin languages favor the structure now called "sesquisyllabic" (Matisoff 1973). Full, unreduced syllables ("major syllables") are often preceded by weak syllables ("minor syllables"). These minor syllables often have an epenthetic nucleus with a schwa-like vocalism. They usually—arguably, always—lack codas and have onsets drawn from a constrained inventory. Consider how two KC languages with minor syllables (Daai from Southeastern KC and Mro[2] from Southwestern KC) vary in their realization of minor syllables, as shown by a set of examples from So-Hartmann (2009: 38):

[2] Now widely known as Mro-Khimi.

(1)

Daai	***Mro***	***gloss***
m̩.jɔn	*mə.ju*	'suck'
m̩.lɔʔ	*mə.lœ*	'vomit'
m̩.sʰɔp	*mə.sʰu*	'launder'

In Daai, the minor syllables often consist of a single consonant without a vocalic nucleus. In Mro, a possibly epenthetic vowel separates the minor syllable onset from the major syllable onset. Both structural patterns are widespread in the minor syllables of Kuki-Chin languages and there is variation in this characteristic both between and within languages belonging to the group.[3]

Sesquisyllabic structures are most common in the peripheral subgroups of Kuki-Chin. They are not prominent in the well-documented Central and Northern(=Northeastern) groups, but they are pervasive in the Southern groups and among some of the marginal Kuki-Chin languages that have often been called Old Kuki in the literature.[4]

2.3 Syllable types

Understanding patterns in Kuki-Chin phonology requires understanding various types of syllables and their distinct phonological behavior. In particular, it is necessary to distinguish full syllables from reduced syllables, open from closed syllables, and smooth from checked syllables. These syllable-type distinctions are based wholly on the properties of the rhyme. The following discussion borrows heavily from Hyman's (2004) discussion of syllable types in Thado.

2.3.1 Full versus reduced syllables

Following Hyman (2004), the terms *full* and *reduced*[5] are used here to label syllables with the shape CVV, CVC, or CVVC in contrast to those with the shape CV (and V, in languages allowing onsetless syllables). In many KC languages, reduced syllables have a limited distribution, occurring only as grammatical morphemes or lexical morphemes that are shortened by a predictable process (such as initial shortening in compounds). Full syllables, in contrast, have a more general distribution, occurring in all lexical morphemes not in a special position that is subject to reduction. Generally, this difference is not contrastive. However, it has relevance to the phonological—in particular, the tonal—behavior of syllables.

2.3.2 Open versus closed syllables

All reduced syllables are open (that is, they lack a consonant coda). Among full syllables, both open and closed syllables are represented. This difference is important because, in many KC

[3] In fact, the few remaining speakers of Rengmitca differ in whether they produce nasal minor syllables as syllabic nasals or with an epenthetic vowel (David Peterson, p.c.).

[4] Peterson (2017) calls this putative category "Northwestern", which has a good deal to recommend it, if the various languages in this category are found to form a coherent phylogenetic group.

[5] Minor syllables, in sesquisyllabic words, are reduced syllables that occur before another (usually full) syllable.

languages, vowel quantity is only contrastive in closed syllables. In full, open syllables, the vowel nucleus is long by default.

2.3.3 Smooth versus checked syllables

Finally, it is essential to draw a distinction between *smooth* and *checked* syllables. Checked syllables are syllables ending in a plosive (including glottal stop). Syllables without a stop coda (i.e., open syllables or syllables with sonorant codas) are characterized as smooth. As in other tonal languages of East and Southeast Asia, smooth and checked syllables in Kuki-Chin languages display different tonal behaviors. Smooth syllables typically display a full range of tonal contrasts, whereas a more limited set of tones occurs in checked syllables.

3 Onsets

As discussed above, onsets in KC are most commonly simple (that is, they consist of a single segment), but may also be complex in a few languages, particularly in Southeastern Kuki-Chin. The onset inventories in Kuki-Chin languages are usually rich in contrasts. Examples of these will be introduced first, followed by discussion of some outstanding characteristics of KC onsets.

3.1 Onset inventories

As is to be expected in a group of related languages with a considerable time-depth, the onset inventories of Kuki-Chin vary considerably from language to language. However, there are a few common patterns that are worth noting. The best way to get a sense of what Kuki-Chin onset inventories are like is to first look at the reconstructed inventory from VanBik (2009), and then look at sample inventories from each of the major subgroups of Kuki-Chin. The languages chosen for examination are Falam Lai (Central), Mara (Maraic), Thado (Northeastern), Daai (Southeastern), Lemi (Southwestern), Sorbung (Northwestern A), and Monsang (Northwestern B).

3.1.1 Proto-Kuki-Chin

According to VanBik (2009: 59), Proto-Kuki-Chin had an onset inventory like that in Table 1. Note that the transcriptions used in this paper have been converted to IPA, so not all the symbols are identical to those used by VanBik.

		labial	*interdental*	*dental*	*palatal*	*velar*	*glottal*
implosives	***vd.***	*ɓ		*ɗ			
plosives	***vl.***	*p		*t		*k	*ʔ
	vl. asp.	*pʰ		*tʰ		*kʰ	
affricates	***vl.***			*t͡s			
	vl. asp.			*t͡sʰ			
fricatives	***vl.***		*θ	*s			*h
	vl. asp.			*sʰ			
nasals	***vd.***	*m		*n		*ŋ	
	vl.	*m̥		*n̥		*ŋ̊	
laterals	***vd.***			*l			
	vl.			*l̥			
trills	***vd.***			*r			
	vl.			*r̥			
glides	***vd.***	*w			*j		
lateral clusters		*pl				*kl	
lateral clusters	***asp.***	*pʰl				*kʰl	
rhotic clusters		*pr				*kr	
rhotic cluster	***asp.***	*pʰr				*kʰr	

Table 1. Proto-Kuki-Chin onsets (adapted from VanBik 2009: 59)

One significant modification to VanBik's schema could be proposed, and that regards the reconstruction of the implosive stops (Button 2011; Hill 2014). In most Kuki-Chin languages, these are reflected as plain voiced stops. The exceptions are Southeastern Kuki-Chin languages like Daai where the reflexes are implosives. VanBik chose to reconstruct these as implosives to account for both the Southeastern Kuki-Chin reflexes and the absence of a velar member in this series. However, as VanBik himself points out (63-64), voiced stop series lacking /g/ are very common cross-linguistically (Maddieson 2003). Furthermore, VanBik's **ɓ* and **ɗ* seem to reflect Proto-Tibeto-Burman **b* and **d* in many cases (Matisoff 2003). This means that VanBik is proposing a "Duke of York" history for most Kuki-Chin languages where PTB **b*, **d* > PKC **ɓ*, **ɗ* > *b*, *d*. It would be simpler to propose that voiced stops are original and that implosives have developed as a result of VOT enhancement in Daai Chin and Mindat Cho. This would also bring VanBik's reconstruction into closer alignment with that of Lam Thang (2001).

A small, but still significant, question is whether the PKC onset inventory included a voiceless palatal glide. As David Peterson notes (p.c.) this contrast is preserved in Hyow and helps account for some reflexes not well-explained by VanBik's reconstruction.

3.1.2 Falam (Central)

According to Thuan (2008), Falam has the onsets listed in Table 2. The Falam consonant inventory, typical of Central Kuki-Chin varieties, is conservative and therefore relatively complex.

		labial	*dental*	*alveolar*	*palatal*	*velar*	*glottal*
plosives	*vd.*	b	d̪				
	vl.	p	t̪	t		k	ʔ
	vl. asp.	pʰ	t̪ʰ	tʰ		kʰ	
affricates	*vl.*			t͡s			
fricatives	*vl.*	f		s			h
nasals	*vd.*	m		n		ŋ	
	vl.	m̥		n̥		ŋ̊	
laterals	*vd.*			l			
	vl.			l̥			
lateral affricates	*vl.*			t͡ɬ			
	vl. asp.			t͡ɬʰ			
taps	*vd.*			ɾ			
	vl.			ɾ̥			
glides	*vd.*	w			j		

Table 2. Falam onsets according to Thuan (2008)

Notable characteristics include the preservation of voiceless sonorants (all voiced sonorant onsets except for the glides have a voiceless counterpart), the lateral affricates /t͡ɬ/ and /t͡ɬʰ/ (reflecting earlier stop-liquid clusters), and the existence of contrasting dental and alveolar voiceless plosives.

3.1.3 Mara (Maraic)

The onsets of Mara, according to VanBik (2009: 522–523), are given in Table 3. Although the rhyme system of Mara is highly innovative, the onset inventory is quite conservative and differs only in minor ways from that of Falam.

Mara is typical of Kuki-Chin languages in that it maintains a three-way voicing contrast among (anterior) plosives and a two-way voicing contrast among sonorants. It is perhaps atypical in that there are no glide onsets, **w*- and **j*- having been strengthened to /v/ and /z/. However, this change is seen elsewhere in KC (VanBik 2009; Lotven et al. 2020).

		labial	*alveolar*	*velar*	*glottal*
plosives	***vd.***	b	d		
	vl.	p	t	k	ʔ
	vl. asp.	pʰ	tʰ	kʰ	
affricates	***vl.***		t͡s		
	vl. asp.		t͡sʰ		
fricatives	***vd.***	v	z		
	vl.		s		h
nasals	***vd.***	m	n	ŋ	
	vl.	m̥	n̥		
laterals	***vd.***		l		
	vl.		l̥		
lateral affricates	***vl.***		t͡ɬ		
	vl. asp.		t͡ɬʰ		
trills	***vd.***		r		
	vl.		r̥		

Table 3. Mara onsets adapted from VanBik (2009: 522–523)

3.1.4 Thado (Northeastern)

According to Hyman (2004), Thado has the onsets listed in Table 4.

		labial	*alveolar*	*palatal*	*velar*	*glottal*
plosives	***vl.***	p	t		k	(ʔ)
	vl. asp.	pʰ	tʰ		kʰ	
	vd.	b	d		g	
affricates	***vl.***		t͡s			
fricatives	***vl.***		s			h
nasals	***vd.***	m	n		ŋ	
laterals	***vd.***		l			
lateral fricatives	***vl.***		ɬ			
glides	***vd.***	w		j		

Table 4. Thado onsets according to Hyman (2004)

The Thado onset inventory includes fewer contrasts than those of Falam and Mara. Thado has lost the distinction between voiced and voiceless nasals. The voiced lateral /l/, however, has a voiceless counterpart in the form of the lateral fricative /ɬ/. On the surface, this seems to fill the phonological slot occupied by the voiceless lateral approximant in many other KC languages. However, it is actually a reflex of older **kl* and **kʰl* (Button 2011).[6]

[6] Button reconstructs a proto-language he calls Proto-Northern-Chin. However, the current consensus is that Button's languages do not form a coherent subgroup. This specific claim seems sound, however.

The only affricate is the unaspirated /t͡s/ and the only fricatives are /s/ and /h/. Glottal stop has marginal status as an onset. Unlike many Kuki-Chin languages, Thado has a /g/ onset. This arises from PKC **r-*.

3.1.5 Daai (Southeastern)

The onset inventory of Daai is given in Table 5, below.

		labial	*alveolar*	*palatal*	*velar*	*glottal*
implosives	***vd.***	ɓ	ɗ			
plosives	***vl.***	p	t		k	ʔ
	vl. asp.	pʰ	tʰ		kʰ	
fricatives	***vl.***		s		x	h
	vl. asp.		sʰ			
	vd.				ɣ	
nasals	***vd.***	m	n		ŋ	
	vl.	m̥	n̥		ŋ̊	
laterals	***vd.***		l			
	vl.		ɬ			
glides	***vd.***	w		j		

Table 5. Daai onsets according to Hartmann (1989: 52) and So-Hartmann (2009: 44)

Daai is unique among the example languages considered so far in that it has preserved PKC **sʰ-*, an aspirated coronal fricative. This segment contrasts with a voiceless unaspirated fricative /s/. In most other KC languages, reflexes of PKC **sʰ-* and **s-* have merged as /s/.

The voiceless counterpart of /l/ is produced with friction and is represented as /ɬ/ (as in Thado, above). This restructuring is not unparalleled. The enhancement of /l̥/ to /ɬ/ is actually very common, and fieldworkers should expect to find /l/-/ɬ/ contrasts at least as often as /l/-/l̥/ contrasts in KC languages.

Hartmann additionally notes the following palatalized onsets: /pʲ, pʰʲ, kʲ, kʰʲ, hʲ, mʲ, nʲ, ŋʲ, wʲ/ and states that all onsets can be either prenasalized or preglottalized. According to VanBik (2009), who cites a personal communication from So-Hartmann, the voiced labial and coronal stops are imploded in Daai. For this reason, they are given as implosives in Table 5.

3.1.6 Lemi (Southwestern)

The Lemi onset inventory is interesting for both what it preserves and what it innovates. It is shown in Table 6.

		labial	*alveolar*	*palatal*	*velar*	*uvular*	*glottal*
plosive	***vd.***	b	d				
	vl.	p	t		k	q	ʔ
	vl. asp.	p^h	t^h		k^h	q^h	
nasal		m	n		ŋ		
fricative	***vd.***	v					
	vl.		s				h
	vl. asp.		s^h				
trills			r				
approximants				j			
lateral approximants			l				

Table 6. Lemi onset inventory after Herr (2011)

Like Daai, Lemi preserves the aspirated alveolar fricative /s^h/ that is reconstructed for Proto-Kuki-Chin (VanBik 2009). Take, for example, the near-minimal pair /sɔ¹/ 'paddy rice' versus /s^hɔ¹.hã¹.te³/ 'spicy'. This suggests that the common ancestor of Southeastern and Southwestern KC likely preserved the aspirated-unaspirated distinction for alveolar fricatives, in contradistinction to the rest of the family. Of course, this is consistent as well with the hypothesis that Southeastern and Southwestern share no common ancestor more recent than PKC.

What is more remarkable about Lemi is that it has innovated a uvular series of plosives. Consider, for example, /kɛ³.ba⁵/ 'leftovers' versus /qɛ̃³.ta⁵/ 'once'. A contrastive uvular series in not widely attested in KC, though uvular sounds occur as allophonic realizations of the velar series in (Bangladesh) Khumi (before non-high back vowels (David Peterson, p.c.) and velar-uvular contrasts are found in other languages of the India-Burma-Bangladesh borderlands. In general, the Lemi onset inventory has innovated via simplification. It has lost the laryngeal distinction in sonorants, for example. It also lacks affricates entirely. It has no phonemic consonant clusters, though (phonetically) the aspirated uvular stop is realized as a [qχ] sequence.[7]

3.1.7 Sorbung (Northwestern A)

Sorbung is a marginal member of the Kuki-Chin branch. It is spoken in a small area of northeastern Manipur by ethnic Tangkhuls. However, it shares various lexical and phonological properties with Kuki-Chin languages and is included here as an example of what Kuki-Chin languages on the northwestern periphery may be like, based on work by early investigators like Brown (1837) as well as more recent research (Takhellambam 2014).

[7] As Samson Lotven has pointed out to me (p.c.), this sequence could be treated as a uvular stop with a fricative release, making it a single consonant.

		labial	*alveolar*	*palatal*	*velar*	*glottal*
plosives	***vd.***	b	d		g	
	vl.	p	t	c	k	ʔ
	vl. asp.	p^h	t^h		k^h	
affricates	***vl.***		t͡s			
fricatives	***vl.***		s	ʃ		h
nasals	***vd.***	m	n		ŋ	
laterals	***vd.***		l			
trills	***vd.***		r			
glides	***vd.***	w		j		

Table 7. Sorbung onset inventory according to Mortensen and Keogh (2011)

Sorbung is like Thado in that it has a relatively simple onset inventory displaying considerable simplification when compared to PKC. Like Thado, too, it has /g/, though Sorbung /g/ does not appear to reflect PKC **r-* and occurs in a very limited distribution (word-medially). It preserves a three-way laryngeal distinction in plosives but does not display a laryngeal contrast between sonorant series. It has both a palatal stop and a palato-alveolar fricative, which is attested among Kuki-Chin languages[8] but is not common in the exemplars chosen here. In the area of Manipur where Sorbung is spoken, however, these are very frequent.

3.1.8 Monsang (Northwestern B)

Another language that falls into the catch-all "Northern" category in VanBik's (2009) reconstruction of PKC, is Monsang (Monsang and Veikho 2018; Konnerth 2018). It is now considered to be a member of the Northwestern group. It is possible that it belongs to the same subgroup as Sorbung, within KC, but this is not yet established since the innovations shared between the two languages are all of the very common sort, cross-linguistically. For example, both languages have lost all onset clusters. Monsang is a phonologically innovative language with a tendency towards structural simplification (Konnerth 2018). The onset inventory is greatly reduced compared with that reconstructed for PKC by VanBik. In Monsang and Veikho's (2018) careful analysis of the synchronic phonology of Monsang, they report the onset inventory given in Table 8:

[8] Examples include Khumi (David Peterson, p.c.), where /c/ is phonemic, but [ʃ] occurs as a free variant of /s/, and Moyon (Kongkham 2010), where /c/ occurs as a contrastive phoneme.

		labial	*alveolar*	*retroflex*	*velar*	*glottal*
plosives	***vd.***	b	d			
	vl.	p	t	ʈ	k	
	vl. asp.	pʰ	tʰ	ʈʰ	kʰ	
nasals	***vd.***	m	n		ŋ	
	vl.	m̥	n̥			
fricatives	***vd.***		z~d͡ʒ			
affricates	***vl.***		t͡ʃ~t͡ɕ			
approximants	***vd.***	ʊ~ʋ	r~ɹ			
	vl.		r̥~ɹ̥			
laterals	***vd.***		l			
	vl.		l̥			

Table 8. Monsang onsets, excluding clusters, based on Monsang and Veikho (2018)

Additionally, Monsang and Veiko's corpus includes a few words with onset clusters ([bl], [kl], and [br]). These occur in free variation with [bel], [kel], and [ber].

Monsang has a retroflex series, which is relatively uncommon among KC languages (but see Falam, above, and other KC languages). It is like Sorbung in having a relatively small onset inventory, but is more conservative in that it preserves voiceless sonorants. The fricative-affricate variation seen in Monsang seems to be an areal phenomenon. Note, for example, that the Tangkhul surname Zingkhai may be pronounced either [ziŋkʰaj] or [d͡ʒiŋkʰaj] and that the Assamese name *Zaid* may be pronounced either with initial [z] or [d͡z] (author's field notes).[9] The free variation in the production of rhotics (between approximants and trills) is shared with other languages of Manipur like the Tangkhulic language East Tusom (author's field notes).

3.2 Clusters

One of the conservative features that is found in Proto-Kuki-Chin and in some members of VanBik's (2009) Southern and Central groups is the presence of clusters consisting of a labial or velar stop and a lateral or rhotic approximant or a palatal glide. For example, in Asho the words for 'moon' and 'sap' are /kʰlό/ and /a.kʰliŋ/, respectively. Likewise, 'full' and 'boil' are /plé/ and /plúk/. In Maraic and Central Kuki-Chin, some of these clusters (those containing a lateral approximant in PKC) have become the lateral affricates /t͡ɬ/ and /t͡ɬʰ/ or sibilant affricates (VanBik 2009; Lotven et al. 2020).

3.3 Laryngeal contrasts in obstruents

Almost all Kuki-Chin languages appear to display a three-way laryngeal contrast among plosives (or, in the case of Daai and Mindat Cho, have a series of voiced implosives contrasting

[9] David Peterson notes (p.c.) that this same variation is found in Bangla (at least in Bangladesh), as well as in the TB languages of that area, so it is quite widespread. Fieldworkers on KC languages should keep this in mind when they are collecting data.

with voiceless aspirated and unaspirated plosives). A typical KC language has the following stop onsets:

(2)

b	d		
p	t	k	(ʔ)
p^h	t^h	k^h	

This inventory includes an additional aspirated series that must be reconstructed for PKC but which has not been reconstructed for PTB (Matisoff 2003). It is likely a secondary development. In some instances, this is demonstrably the case. First of all, the PTB onset **s* regularly becomes PKC **t^h* (VanBik 2009), accounting in part for the contrast between PKC **t* and **t^h*. Furthermore, in Hakha Lai there are numerous causative-simplex pairs where the causative form has an aspirated onset and the simplex form has an unaspirated onset (VanBik 2002: 99, 119):

(3)

	Simplex			*Causative*		
	Form I[10]	***Form II***	***gloss***	***Form I***	***Form II***	***gloss***
a.	*káaŋ*	*kaŋʔ*	'burn (int.)'	*k^háaŋ*	*k^haŋʔ*	'burn (tr.)'
b.	*t͡sat*	*t͡saʔ*	'be severed'	*t͡s^{h}at*	*t͡s^{h}aʔ*	'sever'
c.	*pit*	*piʔ*	'clog up'	*p^hit*	*p^hiʔ*	'block'

The aspirated onsets seem to reflect an earlier causative prefix. There is reason to believe that in Kuki-Chin, as in the allied Tangkhulic group, other aspirates also reflect earlier prefixes (Mortensen 2013). For a detailed analysis relating KC aspiration to prefixal elements, see So-Hartmann and Peterson (2023).

3.4 Laryngeal contrasts in sonorants

A related contrast is found in Kuki-Chin sonorants. In many Kuki-Chin languages, there are two sonorant series: one voiced and one voiceless. These parallel, morphologically, the unaspirated and aspirated stop series. In causative-simplex pairs, simplex forms with voiced sonorants are paired with causative forms having voiced sonorants. Examples from Hakha Lai include the following (VanBik 2002: 99):

(4)

	Simplex			*Causative*		
	Form I	***Form II***	***gloss***	***Form I***	***Form II***	***gloss***
a.	*mit*	*miʔ*	'go out (light)'	*m̥it*	*m̥iʔ*	'extinguish'
b.	*láw*	*lawʔ*	'disappear'	*l̥áw*	*l̥awʔ*	'erase'
c.	*ríl*	*rilʔ*	'roll (int.)'	*r̥íl*	*r̥ilʔ*	'roll (tr.)'
d.	*rook*	*roʔ*	'break down'	*r̥ook*	*r̥oʔ*	'destroy'

[10] Form I and Form II refer to stem allomorphs of verbs that occur in different morphosyntactic contexts. The actual distribution of these forms is complex and differs from language to language. For a comprehensive discussion, see Bedell et al. (2023).

This laryngeal contrast in sonorants is preserved much less frequently—across languages in the Kuki-Chin branch—than the laryngeal contrasts in plosives, though it is present in Monsang, a relative outlier within KC.

The presence of voiceless sonorants in KC is significant because these sounds are relatively rare, cross-linguistically, as shown in Table 9.

Segment	*Number of languages with segment*	*Percentage of languages with segment*
m̥	75	2%
n̥	61	2%
ŋ̊	30	1%
l̥	73	2%
r̥	36	1%

Table 9. Frequency of KC voiceless sonorants in PHOIBLE (Moran and McCloy 2019)

PHOIBLE is a cross-linguistic database of segment inventories, including 3020 inventories containing 3183 segment types from 2186 distinct languages. Only about 2% of the languages in PHOIBLE have even the more common voiceless sonorants. However, voiceless nasals and approximants are found in many language families of Southeast Asia and many other branches of Tibeto-Burman. As such, an interesting conundrum arises. Voiceless sonorants could be seen as a shared innovation for the KC branch. After all, the development is rare (cross-linguistically) and could make a good diagnostic for the group. On the other hand, the development of these sounds is relatively common in Southeast Asia (see Blevins 2018) and could be seen as an areal feature, meaning that it is precisely not the kind of innovation that makes a good criterion for a subgroup.

3.5 Contrasting coronal series

Certain Central Kuki-Chin languages have two contrasting coronal series. For example, Hakha Lai has contrasting apical and laminal stops (Maddieson and VanBik 2005). Similarly, Falam is reported to have a contrast between dental and alveolar stops (Thuan 2008). The nature of the last contrast is somewhat suspect. It is not clear that the apicals are actually alveolar. VanBik (2009) treats the same contrast in Falam as a dental-retroflex contrast.[11] Such contrast are not common, cross linguistically, but are found in Dravidian, Australian, and other languages (Moran and McCloy 2019).

4 Rhymes

Many of the interesting phonological patterns in Kuki-Chin languages involve syllable rhymes. These include distributional restrictions and alternations in quantity. As we did with the

[11] In Falam and the other languages I surveyed, I found no evidence for sub-apical retroflexes (as are found in many Dravidian languages) but there is scattered evidence for apical retroflexes.

onsets, we will first survey the rhyme inventories—or what is known about them—for each of the example languages. We will then look at a few interesting recurring properties.

4.1 Rhyme inventories

4.1.1 Proto-Kuki-Chin

PKC had a very large inventory of rhymes. The reconstructions of these rhymes, as given by VanBik (2009) but normalized to IPA, are given in Table 10. Although the daughter languages of PKC often have reduced syllables, these can generally be derived by rule or be shown to occur only in grammatical morphemes. VanBik reconstructs only the full syllable forms of lexical roots. As a result, there is a systematic gap: short vowels do not appear in open syllables in the reconstruction, but long vowels do.

	***m**	***n**	***ŋ**	***l**	***r**	***w**	***j**	***p**	***t**	***k**	***ʔ**
—	*ɪm	*ɪn	*ɪŋ	*ɪl	*ɪr	—	—	*ɪp	*ɪt	*ɪk	*ɪʔ
—	*em	*en	*eŋ	*el	*er	—	*ej	*ep	*et	*ek	*eʔ
—	*um	*un	*uŋ	*ul	*ur	—	*uj	*up	*ut	*uk	*uʔ
—	*om	*on	*oŋ	*ol	*or	—	*oj	*op	*ot	*ok	*oʔ
—	*am	*an	*aŋ	*al	*ar	*aw	*aj	*ap	*at	*ak	*aʔ
*ii	*iim	*iin	*iiŋ	—	*iir	—	—	*iip	*iit	*iik	—
*ee	*eem	*een	*eeŋ	*eel	*eer	—	—	*eep	*eet	*eek	—
*uu	*uum	*uun	*uuŋ	*uul	*uur	—	*uuj	*uup	*uut	*uuk	—
*oo	*oom	*oon	*ooŋ	*ool	*oor	—	*ooj	*oop	*oot	*ook	—
*aa	*aam	*aan	*aaŋ	*aal	*aar	*aaw	*aaj	*aap	*aat	*aak	—
*ɪa	*ɪam	*ɪan	*ɪaŋ	*ɪal	*ɪar	*ɪaw	*ɪaj	*ɪap	*ɪat	*ɪak	*ɪaʔ
*ua	*uam	*uan	*uaŋ	*ual	*uar	—	*uaj	*uap	*uat	*uak	*uaʔ

Table 10. Proto-Kuki-Chin full-syllable rhymes following VanBik (2009)

Another interesting gap results from the prohibition against long vowels before glottal stop /ʔ/. This means that the first and last vertical series in Table 10 would be complementary were it not for the fact that the diphthongs /ia/ and /ua/ can occur in both open syllable rhymes and with a following glottal stop. Without this evidence from diphthongs, it would be tempting to reanalyze the glottal stop as a predictable correlate of shortness, rather than a phonemic coda, similar to the position taken for Thai by Bennett (2005).

It is important to note that syllable final glides are analyzed by VanBik (2009) as codas rather than as part of the syllable nucleus.[12] This allows for a simple account of the fact that falling sonority diphthongs do not occur with following codas. Since syllables can only have one coda consonant, and a final glide fills the coda slot, a nasal stop, approximant, or plosive cannot occur after it. However, these glide codas have restricted distributions, with /w/ only occurring after low

[12] It should be noted that different linguists, describing different modern KC languages, have given different analyses of the status of these glides.

nuclei and with /j/ failing to occur after /i/, /ii/, and /ee/. The gap for **eej* may be accidental, since /j/ occurs after /e/ and after other long vowels.

Aside from these gaps, the inventory is balanced and typologically unmarked. The nuclei consist of the five canonical vowels /i u e o a/ as well as their long counterparts /ii uu ee oo aa/ and the two rising sonority diphthongs /ia/ and /ua/. The codas are a restricted subset of the consonants occurring in onset position. From a Southeast Asian point of view, the preservation of coda /l/ and /r/ is somewhat unusual. However, some other language groups of the India-Burma-Bangladesh borderlands region are similarly conservative (Mortensen and Miller 2013).

4.1.2 Falam

No complete table giving the rhyme inventory of Falam is available; however, Thuan (2008) provides information on both the inventory of syllable nuclei and the inventory of syllable codas. The complete rhyme inventory is a subset of the combinatorial possibilities for these two sets. Because it is not possible to know if and where there are gaps, I have not provided a complete table of rhymes. These imply that, apart from some superficial phonetic details, the rhyme inventory of Falam is very similar to that of PKC. The Falam syllable nuclei are given in Table 11.

	front	***central***	***back***
high	i ii		u uu
mid	ɛ ɛɛ		ɔ ɔɔ
low		a aa	
diphthongs	ia		ua

Table 11. Falam syllable nuclei based on Thuan (2008: 40)

This system of vowels is basically the same as that of PKC, with Falam /ɛ/ and /ɔ/ corresponding to PKC **e* and **o*. The Falam system of codas, too, is fundamentally conservative (Table 12).

	labial	***alveolar***	***palatal***	***velar***	***glottal***
plosives	p	t		k	ʔ
nasals	m	n		ŋ	
taps		ɾ			
laterals		l			
glides	w		j		

Table 12. Falam codas according to Thuan (2008: 40)

PKC **r* is reflected in Falam as /ɾ/. Final plosives are described as unreleased. Otherwise, there are no significant innovations in the codas. This conservatism in rhymes is typical of VanBik's Central subgroup within Kuki-Chin.

4.1.3 Mara

Mara, by way of contrast, has an exceptionally innovative system of rhymes (a characteristic of the Maraic subgroup). All codas have been lost, as have all length distinctions. The complete rhyme inventory is given in Table 13.

		front	*back*	
			unrounded	*rounded*
monophthongs	***high***	i	ɯ	u
	mid	e		ɔ
	low		a	
diphthongs	***high***	ia		ua
	mid	ei		
	low		ai, au	

Table 13. Mara rhymes according to VanBik (2009: 536)

Falam and Mara provide useful endpoints on the continuum of conservatism, as well as the continuum of complexity, in Kuki-Chin rhyme systems. Kuki-Chin languages can fall anywhere between these two languages in terms of their rhyme inventories.

4.1.4 Thado

Thado and other Northern KC languages are similar to Falam and the Central KC languages in that they have extensive, conservative rhyme inventories. Fortunately, Hyman (2004) gives a thorough and systematic treatment of the rhyme system of Thado, making it possible to explore not only the inventory of nuclei and codas, but the gaps in the combinatorial possibilities of these elements. The set of rhymes for Thado full syllables is given in Table 14.

	m	**n**	**ŋ**	**l**	**w**	**j**	**p**	**t**	**ʔ**[13]
—	im	in	iŋ	il	iw	—	ip	it	iʔ
—	em	en	eŋ	el	ew	ej	ep	et	eʔ
—	um	un	uŋ	ul	—	uj	up	ut	uʔ
—	om	on	oŋ	ol	ow	oj	—	ot	oʔ
—	am	an	aŋ	al	—	aj	ap	at	aʔ
ii	iim	iin	iiŋ	—	—	—	—	—	—
ee	eem	een	eeŋ	eel	eew	—	eep	eet	—
uu	uum	uum	—	uul	—	uuj	uup	uut	—
oo	oom	oon	ooŋ	ool	oow	ooj	oop	oot	—
aa	aam	aan	aaŋ	aal	aaw	aaj	aap	aat	—
ie	iem	ien	ieŋ	iel	—	—	—	iet	ieʔ
uo	uom	uom	uoŋ	uol	—	uoj	uop	uot	uoʔ

Table 14. Rhyme inventory of Thado full syllables according to Hyman (2004)

[13] Glottal stop here reflects both PSC *-*k* and *-*r*.

As in Proto-Kuki-Chin, short vowels do not occur in open rhymes in full (non-reduced) syllables. Several interesting gaps appear. Most significantly, glottal stop does not occur after long vowels but does appear after the diphthongs /ie/ and /uo/. Also interesting is the fact that /ii/ does not appear to occur except in open syllables and before nasal codas. This pattern has not been reconstructed for PKC.

4.1.5 Daai (Southeastern)

Only minimal information is available on the rhyme inventory of Daai. Hartmann-So (1989) provides both the vowel inventory (Table 15) and the inventory of final consonants (Table 16), but does not give much information about combinations between these two sets of units.

	front	***central***	***back***	
			unrounded	***rounded***
high	i ii		ɯ ɯɯ	u uu
mid	ɛ ɛɛ			ɔ ɔɔ
low		a aa		

Table 15. Daai vowels according to Hartmann-So (1989: 53) and So-Hartmann (2009)

	labial	***alveolar***	***palatal***	***velar***
plosives	p	t		k
nasals	m	n		ŋ
glides	w		j	
	wʔ		jʔ	

Table 16. Daai codas according to Hartmann-So (1989: 52)

One interesting feature noted by Hartmann-So is the occurrence of glottal stop after glides but not after other sonorants.

4.1.6 Lemi (Southwestern)

While Daai has preserved a conservative rhyme inventory (with many possible codas), Lemi has substituted paradigmatic for syntagmatic complexity. It has a larger inventory of vowel qualities (and has nasalized and oral vowels for most qualities) but has no codas. An inventory of rhymes is given in Table 17.

		front		*central*			*back*	
monophthongs	***high***	i	ĩ	ɨ	ɨ̃		u	ũ
	high-mid	e		ɘ	ɘ̃	ɵ	o	
	low-mid	ɛ	ɛ̃				ɔ	ɔ̃
	low			a	ã			
diphthongs	***high-mid***	ei					ui	
	low-mid						ɔi	
	low			ai				

Table 17. Lemi rhymes (Herr 2011)

Vowel length distinctions have been eliminated in Lemi. All PKC codas have been lost (though nasality from nasal codas persists in the form of nasal vowels). Leaving aside the nasal-oral contrast, the language has 10 contrasting vowel qualities (a large number for a KC language) and four diphthongs.

4.1.7 Sorbung (Northwestern A)

The rhyme inventory of Sorbung is not as conservative as Falam but is not nearly as innovative as Mara or Lemi. It is given, as adapted from Mortensen and Keogh (2011), in Table 18.

	m	**n**	**ŋ**	**r**	**w**	**j**	**p**	**t**	**k**
—	im	in	iŋ	ir			ip	it	ik
—	em	en	eŋ	—			—	et	ek
—	um	[ʉn]	uŋ	ur			up	[ʉt]	uk
—	om	on	oŋ	or			op	—	ok
—	am	an	aŋ	ar	aw	aj	ap	at	ak
ii	—	iin	iiŋ	—	—	—	iip	iit	—
ee	—	een	—	—	—	—	—	—	eek
uu	uum	—	uuŋ	uur	—	—	uup	—	uuk
~~uu~~	—	—	—	—	—	—	—	—	—
oo	oom	oon	ooŋ	—	—	—	oop	—	ook
aa	aam	aan	aaŋ	aar	—	—	aap	aat	aak
ia	iam	—	iaŋ	iar	—	—	—	—	iak
ua	uam	uan	uaŋ	uar	—	—	uap	uat	uak
iu	ium	—	—	—	—	—	—	—	iuk

Table 18. Sorbung full-syllable rhymes following Mortensen and Keogh (2011: 89)

One major change was made in the Sorbung rhyme inventory as presented here compared to that presented in Mortensen and Keogh (2011): the off-glides transcribed in the earlier work as /u/ and /i/ are reanalyzed as the coda consonants /w/ and /j/, following the general pattern in Kuki-Chin. This has the benefit of accounting for why other codas do not appear after the diphthongs

/aw/ and /aj/. However, the diphthong /iu/ must be interpreted as the nucleus of rhymes because it co-occurs with the codas /m/ and /k/.

As in Thado, short monophthongal vowels do appear in open rhymes, but only in reduced syllables. For the sake of consistency, gaps are shown in this context in
Table 18. There are numerous other gaps in the rhyme inventory attested for Sorbung, some of which are doubtless accidental owing to the sparseness of documentation for this language. One series of gaps that are apparently systematic are combinations of /~~uu~~/ with the coda consonants. Sorbung /~~uu~~/ appears to derive historically from **uj* and still patterns phonologically as if it has a final consonant. That is, it may not be followed by a coda.

Sorbung has lost final /l/ but has retained final /r/. Final glottal stop /ʔ/ has also been lost and vowel lengthening has applied in open syllables so that the root for 'bone' is *ruu* rather than **ruʔ* and the root for 'fruit' is *raa* rather than **raʔ*.

4.1.8 Monsang (Northwestern B)

Unfortunately, neither Monsang and Veikho (2018) nor Konnerth (2018) include a table of attested Monsang rhymes, but both provide detailed information about the vowel and coda inventories. Monsang and Veikho give the monophthong inventory as in Table 19.

	front	***central***	***back***
pre-closure			ʷu
high	i ii		u uu
mid	e		o
low-mid		ə	
low		a aa	

Table 19. Monsang monophthongs, adapted from Monsang and Veikho (2018)

The "pre-closure" vowel /ʷu/ is characterized by a brief period of labial frication between the constriction of the onset and the vowel nucleus. It seems to reflect PKC **uu* and **ua* (Konnerth 2018). There is only one, very rare, diphthong in Monsang, /au/. It occurs in four words in Monsang and Veikho's corpus, never with a coda. There are also syllabic nasals, /m̩/, /n̩/, and /ŋ̩/.[14]

The licit codas in Monsang are /m/, /n/, /ŋ/, /r/, and [ʔ]. Glottal stop is not treated as phonemic by Monsang and Veikho. Instead, they say it occurs in open syllables when the tone is high. It is not clear from their description whether this glottal stop can be identified with the "short-syllable glottal stop" found in other KC languages. Konnerth (2018) asserts that glottal stop codas reflect PKC plosive codas, but her codas seem to differ in distribution from those of Monsang and Veikho (that is, they are not an automatic variable realization of high tone).

[14] These are also apparently attested in Daai (Hartmann 2001), Khumi, and Rengmitca (David Peterson, p.c.).

4.2 The special status of glottal stop

Final glottal stop deserves special discussion because it displays behavior that sometimes diverges from the other final plosives: Glottal stop may co-occur with final sonorants, unlike other plosives, forming apparent complex codas like *-w?*, *-j?*, *-r?*, and *-l?* in Mizo and other Central Kuki-Chin languages (Henderson 1948) and *-w?* and *-j?* in Daai Chin and probably other Southeastern languages. Glottal stop, furthermore, does not co-occur with long vowel nuclei, unlike the other plosives.

On the other hand, syllables ending in glottal stop usually show the same tonal restrictions as syllables ending in other plosives. Henderson (1948: 718) suggests that in Lushai (Mizo), "the glottal stop appears to play a double rôle, as a realization of syllabic shortness and also as a final plosive, since its presence at the end of a final, whether following a vowel, semi-vowel, or liquid, is associated with a limitation of tone identical with that imposed on syllables containing a final plosive." Other investigators treat combinations like *-m?*, *-r?*, and *-w?* as glottalized sonorants rather than as sequences of a sonorant and a glottal stop (Hyman and VanBik 2002; Hyman and VanBik 2004; Yip 2004). This has the advantage of allowing all Kuki-Chin codas to consist of a single segment.

I argue that the best way to view glottal stop in KC is as a "glottal prosody" which is spread out across the syllable and realized in multiple ways—as shortness, as a final glottal stop (in open syllables), and as glottalization (in syllables with sonorant codas). Such an analysis is reminiscent of Firth's Prosodic Phonology (see, e.g., Firth 1957). This leaves two questions open: (1) What about short vowels in syllables with final oral plosives? Should these vowels be analyzed as bearing the same underlying prosody? The simplest answer is "yes" since the need to specify an additional length parameter is then obviated. The case for "yes" would be strengthened, though, if one could find phonetic evidence for glottalization during the rhyme of short syllables ending in coda /p/, /t/, and /k/. (2) What should we make of the behavior of glottal stops in Hyow, where they behave like segments with regard to resyllabification (Zakaria 2020)? Is Hyow simply different?

Fieldworkers on KC languages should be especially mindful of glottal stop and glottal phonology generally since—as I have suggested—its effects are pervasive, but its patterning differs significantly across the branch. More study of "glottal stop" in KC is needed to establish a robust account of its history, synchrony, and typology. Roengpitya's (1997) analysis of glottal stop (and glottalization) in Hakha Lai demonstrates how difficult it can be to characterize these phenomena even in a single language. While her experimental results show that glottalization is robust in Lai, she also shows that the realization—even the locus of realization—of glottalization is not easy to model.

4.3 The status of final glides

There are two types of diphthongs in most KC languages—rising sonority diphthongs like /ua/ and /ia/, that can occur with a following coda consonant (other than glottal stop), and falling sonority diphthongs like /aj/ and /aw/, after which coda consonants (other than glottal stop) are banned. Because the final glides in falling sonority diphthongs seem to occupy the same "slot" as the other coda consonants, and therefore do not co-occur with them, they are best treated as codas rather than parts of the syllable nucleus. A possible exception to this rule is found in languages like

Mara, where—if final glides were considered to be codas rather than part of the nucleus—the only codas would be glides.

4.4 Vowel length distinctions

Phonologically conservative Kuki-Chin languages often display a vowel quantity distinction for each vowel quality. This type of contrast is found in all our example languages except Mara and Lemi. The phonetic cues for this phonological contrast can include both duration and vowel quality. For example, in Hakha Lai the contrast between /a/ and /aa/ could be described phonetically as between [ɐ] and [aː]—the short vowel is both shorter in duration and more centralized in quality than its long counterpart (Mortensen and VanBik 2002).

5 Morphophonemics and morphologically conditioned alternations

The discussion so far has centered around static generalizations regarding Kuki-Chin phonologies—inventories and phonotactics. This section discusses the more dynamic generalizations that are associated with word formation and morphological operations. Some of these phenomena (stem formation, transitivity alternations) are, strictly speaking, morphological rather than phonological in nature, but they are included here because of the light that they shed on the phonological systems of Kuki-Chin languages.

5.1 Vowel shortening

Many Kuki-Chin languages display a pattern of pre-final shortening; CVV syllables become CV syllables in shortening contexts. A variety of these contexts in Thado are shown in the following examples adapted from Hyman (2004):

(5)	a.	*vâa*	'bird'	*mŭu*	'hawk'	*kʰàa*	'body lice'
	b.	*vá lien*	'big bird'	*mú gâŋ*	'fast hawk'	*kʰà tâm*	'many lice'
	c.	*vá nìi*	'two birds'	*mú tʰúm*	'three hawks'	*kʰà gùup*	'six lice'
	d.	*vá hòo*	'birds'	*mú hôo*	'hawks'	*kʰà hòo*	'lice'
	e.	*vá łàa*	'bird's wing'	*mú lúu*	'hawk's head'	*kʰà pèe*	'lice's biting'
	f.	*vá ˡbûu*	'bird nest'	*mú túj*	'hawk egg'	*kʰà gûu*	'lice poison'

These examples show that shortening occurs within noun phrases before adjectives, numerals, the plural marker *hòo*, possessed nouns, and in noun compounds. Hyman further notes that shortening can apply to multiple unmodified roots in the same compound, as in /mŭu lúu kʰâa/ → *mú lú kʰâa* 'hawk's head-lice'. However, whether modified roots undergo shortening depends on the grammatical status of the modifier. Shortening does not apply before demonstratives (*váa ˡhí* 'this bird' and *múu ˡtsú* 'that hawk'), or vowel-initial enclitics. Shortening does not apply at all to roots that derive from an earlier *CVʔ. Thus, there are a considerable number of Thado nouns (and a much larger proportion of verbs) that are immune to pre-final shortening.

Hyman demonstrates that shortening can apply within the verb complex as well as within the noun phrase. For example, alternating verb roots are shortened preceding the dual marker *hlòn*:

(6)		***Form I***	***Form II***		***Example***	
	a.	*nêe*	*nêʔ*	'eat'	*à né hlòn êe*	'they (dual) ate it'
	b.	*pǔu*	*pùt*	'carry'	*à pù hlón ˈêe*	'they (dual) carried it'
	c.	*sùu*	*sùʔ*	'pound'	*à sù hlón ˈêe*	'they (dual) pounded it'

A remarkably similar pattern is described for the Southeastern Kuki-Chin language Daai by So-Hartmann (1989: 54). She says that the alternation is attested primarily in compounds, but that similar patterns are manifest in other contexts like the numeral phrase, the postpositional phrase, and the verb phrase. She provides examples like those in (7):

(7)						
	a.	*kʰɔ:*	*mik*	→	*kʰɔmik*	'sun'
		earth	eye			
	b.	*sʰɛ:*	*mu:*	→	*sʰɛmu:*	'cow's fur'
		cow	fur			
	c.	*lu:*	*sʰám*	→	*lusʰám*	'hair of head'
		head	hair			
	d.	*kʰɔ:*	*nu:*	→	*kʰɔnu:*	'big toe'
		foot	big			
	e.	*kʰɔ:*	*ʔa:j*	→	*kʰɔʔa:j*	'wild chicken'
		spirit	chicken			
	f.	*lu:*	*pɛj*	→	*lupɛj*	'beside the head'
		head	beside			

Thuan (2008: 63–66) notes a parallel phenomenon of pre-final shortening in Falam, though his examples are primarily in noun compounds:

(8)						
	a.	*paa²¹*	*tsaŋ⁴⁴*	→	*pa²¹tsaŋ⁴⁴*	'man'
		male	old			
	b.	*tii⁴⁴*	*waa²³*	→	*ti⁴⁴waa²³*	'stream'
		water	stream			
	c.	*fuu²³*	*tsaaŋ²³*	→	*fu²³tsaaŋ²³*	'segment of sugar cane'
		sugar cane	step			
	d.	*saa⁵²*	*wɔm²³*	→	*sa⁵²wɔm²³*	'bear'
		animal	bear			

Likewise, a pre-final shortening process is attested in Sorbung. Here, the shortening is not limited to open syllables (as appears to be the case in Thado, Daai, and Falam), and is not attested outside of compounds in Mortensen and Keogh's (2011) data:

(9)					
	a.	*kʰoo*	'bee'	*kʰ**o**cúu*	'honey' (lit. 'bee water')
	b.	*haa*	'tooth'	*h**a**buu*	'molar'
	c.	*tʰii*	'blood'	*tʰ**i**fuuk*	'bleed'
	d.	*kèe*	'leg; foot'	*k**e**míit*	'ankle' (lit. 'foot eye')
	e.	*miit*	'eye'	*m**i**tkor*	'eyelid'
	f.	*cuup*	'breast'	*c**u**pcuu*	'milk' (lit. 'breast water')
	g.	*jaaŋ*	'penis'	*j**a**ŋhun*	'foreskin'

In Zophei, the analogous pattern of vowel shortening is accompanied by neutralization of contrast and reduction to schwa (Samson Lotven, p.c.). This probably occurs elsewhere in KC and a fieldworker should not be surprised by it.

Based on these data, it is possible to establish that pre-final shortening occurs in a Northern(=Northeastern) Kuki-Chin language, a Southern Plains(=Southeastern) Kuki-Chin language, a Central Kuki-Chin language, and a Northwestern Kuki-Chin language. The extent of the differences between these languages regarding the contexts in which shortening occurs has not been adequately worked out. This will require additional data on each of the languages, especially Falam and Sorbung. What is almost certain is that pre-final shortening represents a robust phenomenon within Kuki-Chin and that many other Kuki-Chin languages are likely to display alternations of this type.

5.2 Vowel harmony

In some KC languages, the vowels in minor syllable prefixes harmonize with those in stems. Two representative cases are the Northwestern KC language Lamkang (Thounaojam and Chelliah 2007) and the Southeastern KC language Hyow (Zakaria 2020; Zakaria 2018).

In Lamkang, four prefixes are subject to harmony: the nominalizer *kV-*, the first-person possessive *kV-*, the quantifier prefix *tV-* and the causative prefix *pV-*. Consider the following examples with the first-person possessive (Thounaojam and Chelliah 2007):

(10)			
	*k**ə**-pá*	1-father	'my father'
	*k**a**-poi*	1-belly	'my belly'
	*k**i**-mik*	1-eye	'my eye'
	*k**u**-nu*	1-female	'my mother'

The patterns of harmony differ somewhat between prefixes and are full of complications. In particular, it is interesting that the harmonic vowel for stem /a/ is /ə/ but that for stem /o/ is /a/. Such phonological patterns are potentially of great theoretical interest and more work on them is needed.

The pattern in Hyow is similar. In fact, it affects a cognate to the Lamkang first-person prefix seen in (1). Consider the following examples (Zakaria 2018; Zakaria 2020):

(9)			
	ká-lá	1-land	'my land'
	kú-tsúhnú	1-daughter	'my daughter'
	kɔ́-hɔẃ-ɛ́ʔy-phíʔ	1A-tell.II-IRR-PNMLZ	'that I can tell'
	kí-ní-tɔ́k-pék	1A-PL-keep.II-BEN	'I kept X for you'

Zakaria notes that not all prefixes undergo harmony. He hints at an analysis in terms of contrastive underspecification, where specified prefixes surface with their underlying vowels but underspecified prefixes are dependent upon the stem vowel for their phonological form. Unlike Lamkang vowel harmony, in Hyow the assimilation is always complete (Muhammad Zakaria, p.c.).

Kuki-Chin is not unique in South and Southeast Asia in featuring this kind of vowel harmony pattern (where a minor syllable vowel assimilates to the major syllable vowel). It is also found in several Hmongic languages of southern China (Chen 1993; Niederer 1998), for example.

5.3 Stem form alternations

In many Kuki-Chin languages, there are two different stem forms for each verb. These are referred to here as Form I and Form II. These two different stem forms occur in different morphological and syntactic environments.[15] As such, these alternations are, strictly speaking, morphological rather than phonological. However, because the alternation between Form I and Form II includes apophony as well as affixation in its inventory of changes, it deserves some examination from a phonological perspective. For a more comprehensive treatment, see Bedell et al. (2023). While stem alternation is present in most branches of the Kuki-Chin group, to the extent that it is considered to be one of the basic innovations that characterize Kuki-Chin by VanBik (2009), it has been most extensively studied in Hakha Lai (Patent 1997; Melnik 1997; Hyman and VanBik 2002). For that reason, Lai will serve as the basis for the discussion here. However, there is a wider body of literature that should be consulted by the interested investigator (Henderson 1965; Osborne 1975; Chhangte 1993; Yip 2004; Mang 2006; Hartmann 2002; King 2009; Peterson 2020; Davis 2017).

In Lai, at least, stem form alternations are quite complex. There are several different patterns, and it is occasionally not possible, given one form of the verb, to predict the other. However, there are a variety of subregularities. Melnik (1997) summarizes these in a helpful fashion. Unfortunately, Melnik does not deal with the tonal aspects of stem alternation. A more comprehensive summary is given by Hyman and VanBik (2002). They show that most Form II verb stems have the rising tone. The exceptions form a small predictable class. Both the tone and segmental properties of Form II stems are largely predictable from their Form I counterparts. The majority of Form II stems are distinct from their Form I counterparts, with tone often serving as the sole distinguishing factor. The exceptions are verbs that end in glottal stop or glottalized sonorants in Form I, which are "invariant". Form II formation for stems with a CVN or CVVN shape in Form I are shown in (12):

(10)

	Form I	***Form II***	
a.	*dâm*	*dăm*	'be healthy'
	tlùm	*tlŭm*	'erode'
	sên	*sĕn*	'be red'
	mìn	*mĭn*	'slide (land)'
	l̨êŋ	*l̨ĕn*	'deceive'
	pìŋ	*pĭn*	'be tight'

[15] See Bedell et al. (2023) for details.

b.	*lŭm*	*lŭm?*	'stumble'
	l̥ŏn	*l̥ŏn?*	'throw'
	pʰŏŋ	*pʰŏŋ?*	'loosen'
	toŏŋ	*tŏŋ?*	'touch'

When Form I has a tone other than the rising tone, there are no segmental changes but Form II is realized with a rising tone. An exception concerns stems with final /ŋ/ in Form I; in these cases, Form II may be realized with a final /n/ (see 'deceive' and 'be tight' in (12a)). When Form I already bears a rising tone, Form II acquires a glottalized coda (12b). Since glottalized codas are incompatible with long vowels, there is sometimes shortening in Form II.

Parallel tonal conditioning of Form II formation can be seen in CVR and CVVR roots (where R=liquid). Some examples of this type are given in (13).

(13)

	Form I	***Form II***	
a.	*hâl*	*hăl*	'ask'
	tsʰòl	*tsʰŏl*	'bounce'
	hâr	*hăr*	'be difficult'
	haâl	*haăl*	'be thirsty'
b.	*tăl*	*tăl?*	'kill'
	mĕr	*mĕr?*	'turn, twist'
	veĕl	*vĕl?*	'beat up'
	suŭr	*sŭr?*	'squint (eyes)'

Likewise, a similar pattern can be observed in syllables with final glides, as illustrated in (14):

(14)

	Form I	***Form II***	
a.	*bàj*	*băj*	'limp'
	sâw	*săw*	'boil (water)'
	pèw	*pĕw*	'jump, hop'
	kaâj	*kaăj*	'climb'
b.	*tʰăj*	*tʰăj?*	'hear'
	lăw	*lăw?*	'disappear'
	tlaăj	*tlăj?*	'catch'
	tsʰeĕw	*tsʰĕw?*	'split up, share'

Overall, then, there is one general pattern for all verb stems ending in sonorants. The situation is more complicated regarding stems with CVV in Form I, as in (15). Stems with all three tones (rising, falling, and low) may take final *-t* in Form II. However, at least rising and low tone Form I stems may instead take *-k* in Form II. The tone of Form II in these cases is always low, in accordance with the generalization that underlying CVVT (where T=oral stop) words always bear a low tone.

(15)

	Form I	***Form II***	
a.	*teê*	*teèt*	'be small'
	n̥iì	*n̥iìt*	'blow (nose)'
	pʰoŏ	*pʰoòt*	'distribute'
b.	*tlaă*	*tlaàk*	'fall'
	peè	*peèk*	'give'

It is also the case that there are a few CVV verbs that take final *-t* or *-k* but have a short vowel in Form II. There are, furthermore, a few verbs that take final glottal stop instead of *-t* or *-k*. These always display shortening and always have the rising tone in Form II.

Finally, it is essential to consider the disposition of stems that have CVT or CVVT for their Form I. As shown in (16), if Form I has the shape CVT, Form II may either end in a glottal stop (which replaces the oral stop) or may be identical to Form I, as shown in (16b).

(16)

	Form I	***Form II***	
a.	*rŏp*	*rŏʔ*	'be small'
	tʰăt	*tʰăʔ*	'kill'
	fĕk	*fĕʔ*	'be sturdy'
b.	*tsʰăp*	*tsʰăp*	'add'
	lwăt	*lwăt*	'be free'
	ʔŭk	*ʔŭk*	'dominate, rule'

For cases where Form I has the shape CVVT, there are also two options. In some instances, the T is replaced by a glottal stop and the vowel is shortened, as shown in (17a). In other cases, shown in (17b), there is no segmental change between Form I and Form II. In all of these cases, the tone in Form II is rising. This is not surprising in the CVʔ forms but is surprising in the CVVT forms, since CVVT words typically bear low tones.

(17)

	Form I	***Form II***	
a.	*kaàp*	*kăʔ*	'shoot'
	r̥uùt	*r̥ŭʔ*	'be crazy'
	beèk	*bĕʔ*	'lean against'
b.	*doòp*	*doŏp*	'suck'
	r̥aàt	*r̥ăt*	'be rough'
	pʰuùk	*pʰuŭk*	'uproot'

The stem type alternation (Form I/Form II alternation) seen in Lai is useful as an illustration of what such a system may involve in a Kuki-Chin language, but it should be emphasized that stem alternation differs markedly across the group. Some Kuki-Chin languages now lack these alternations altogether (e.g., Sorbung). In others, like Daai, they are vestigial and apply only to a minority of verbs (Hartmann 2002).

5.4 Transitivity alternations

Apart from stem-form alternations (Form I/Form II), many Kuki-Chin languages display morphophonemic transitivity alternations. These have already been illustrated above in the discussion of the aspirated obstruent and voiceless sonorant series. The relevant data from Lai are repeated in (18):

(18)

	Simplex			*Causative*		
	Form I	***Form II***	***gloss***	***Form I***	***Form II***	***gloss***
a.	*kaăŋ*	*kàŋʔ*	'burn (int.)'	*kʰaăŋ*	*kʰàŋʔ*	'burn (tr.)'
b.	*tsàt*	*tsàʔ*	'be severed'	*tsʰàt*	*tsʰàʔ*	'sever'
c.	*pìt*	*pìʔ*	'clog up'	*pʰìt*	*pʰìʔ*	'block'
d.	*mìt*	*mìʔ*	'go out (light)'	*m̥ìt*	*m̥ìʔ*	'extinguish'
e.	*lăw*	*làwʔ*	'disappear'	*l̥ăw*	*l̥àwʔ*	'erase'
f.	*rĭl*	*rìlʔ*	'roll (int.)'	*r̥ĭl*	*r̥ìlʔ*	'roll (tr.)'
g.	*roòk*	*ròʔ*	'break down'	*r̥oòk*	*r̥òʔ*	'destroy'

This alternation is believed to have originated from the phonetic effects of the Proto-Tibeto-Burman **s-* causative prefix (VanBik 2002) or a **p-* causative (So-Hartmann and Peterson 2023). Morphophonologically, one might treat this morpheme as a synchronic *h-* prefix (debuccalized from **s-*, or spirantized and debuccalized from **p-*). Sequences of /h/ + stop would be realized as aspirated stops (they may have originally been preaspirated) whereas sequences of /h/ + sonorant would be realized as voiceless sonorants.

6 Conclusion

It is difficult to give a satisfying description of the phonology of Kuki-Chin languages as a whole. A few languages have been described very well, but the best described languages have been concentrated in the Northeastern and Central groups. While new work is progressing with great alacrity regarding Southeastern, Southwestern, and Northwestern, much about KC phonology remains a mystery. With the available information, it is challenging to make hard and fast statements about all Kuki-Chin languages, and I have been therefore limited in this paper to discussing characteristics that are found in many of the better-documented languages in the group. I hope that this will be helpful to others embarking on the study of Kuki-Chin phonology.

Despite the preliminary nature of these findings, a few interesting avenues for future research are apparent. First, it seems very likely that Kuki-Chin phonology will be of continued interest for work on comparative reconstruction, owing to the conservative properties of the languages relative to the rest of Tibeto-Burman. Additionally, the synchronic phonologies of these languages hold many interesting treasures from both a descriptive/typological and theoretical standpoint. They are relatively rich in alternations, by Southeast Asian standards, at least. The phonotactic restrictions across the subfamily are of considerable theoretical interest (Lotven et al. 2020), as are its little-documented vowel harmony patterns. Finally, the two prominent patterns of apophony (mutation) in Kuki-Chin languages make them interesting to students of the phonology-morphology interface.

Abbreviations

1	first person	IRR	irrealis
1A	1st person agent	PL	plural
I	Form I	PNMLZ	patient nominalizer
II	Form II	SG	singular
BEN	benefactive	tr.	transitive
int.	intransitive		

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