Chapter 11

Uvularization in Queyu phonology

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This chapter examines uvularization in Queyu, a Qiangic language within the Tibeto-Burman language family. Queyu contains a series of uvularized vowels characterized by the constriction of the styloglossus and other muscles which draw the tongue dorsum towards the uvula (Evans et al. 2016: 1). Uvularity in Queyu can spread leftwards across morpheme boundaries and can trigger a uvular allophone of a preceding velar consonant. In addition to describing relevant phonological phenomena associated with uvularized vowels, this chapter provides an overview of current literature on uvularization and other similar vowel qualities in closely-related languages, and discusses possible origins of this unique phenomenon. As different labels are used for similar vowel qualities in the literature, this chapter draws attention to the need for detailed acoustic studies and terminological systemization.

1 Introduction

This chapter examines the phonological characteristics of Queyu (Qiangic < Tibeto-Burman (TB), ISO 639: qvy) in the context of nearby languages. The Queyu language contains an unusual combination of elaborate onset clusters and highly reduced codas. While uvular consonants and uvularized vowels are typologically rare among languages of the world, they are common in the region where Queyu is spoken. Uvular consonants and uvularized vowels are related to each other in Queyu. Uvular consonants only occur before uvularized vowels, suggesting that uvular and velar consonants are allophones. This chapter argues that in Queyu, the appearance of uvular consonants is triggered by uvularized vowels. Vowel qualities similar to what is described here as uvularized are mentioned in descriptions and analyses of related neighboring languages, where they are variously

termed as pharyngealization, velarization,[1] tenseness, and rhotacization (Gong 2020: 193, Chirkova 2024: 734). The similarities among these vowel qualities have been noted by several authors (Evans 2006a: 94, Evans 2006b: 737, Suzuki 2011: 492, Suzuki 2013: 30, Gong 2020: 194). In this work, I withhold judgement about whether these various vowel qualities represent differing descriptions of a common set of acoustic features which have yet to be systematically defined, or are indeed truly distinct. These studies show that the marked vowels in question differ from plain vowels in different ways across the languages they are identified in. While some marked vowels have lower F2, others may have higher F1 and/or F3, yet all marked vowels can be implicated in similar phonological processes, like vowel harmony (Lin et al. 2012, Evans et al. 2016, van Way 2018, Chiu & Sun 2020). In addition to describing rare phonological phenomena in Queyu and the spreading of this unusual vowel quality within a word as areal features, this chapter looks at Queyu phonology from both comparative and typological perspectives, and examines the possible origins of uvularized vowels.

Section 2 briefly introduces Queyu and its current available literature, then provides a description of relevant phonological phenomena. Section 3 presents a typological overview of uvularized vowels and related phonological processes within the Qiangic branch and discusses the possible origins of uvularization. Section 4 concludes the chapter.

2 Introduction to Queyu and Queyu phonology

2.1 The Queyu language and Qiangic branch

Queyu is a Tibeto-Burman (TB) language spoken in Ganzi Tibetan Autonomous Prefecture, Sichuan Province, China. Though the language's 6,000–7,000 speakers are ethnic Tibetans (Lu 1985: 67, Wang 1991: 46), Queyu belongs to the Qiangic branch rather than Tibetic. The subgrouping of Queyu and its related languages is still under debate. For example, Sun (2016: 4) puts thirteen languages under the Qiangic branch, while Jacques & Michaud (2011) propose a Na-Qiangic sub-branch containing 25 languages. In Sun's (2016) classification, Queyu, Muya (Minyag, Munya), Pumi (Prinmi), Tangut (Xixia), Qiang (Rma), and Zhaba (nDrapa) belong to the Central sub-branch, while Shixing (Shuhi), Namuyi, Ersu and Guiqiong belong to a Southern sub-branch, and Rgyalrong, Ergong (Stau, Daofu,

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[1]This is not to be confused with the "highly velarized allophone of /u/" mentioned in van Hugte et al. (2025 [this volume]), which is associated with fricative vowels, another rare phenomenon that is also present in Qiangic languages.

Horpa), and Lavrung (Khroskyabs) belong to a Northern sub-branch.[2] Though there is controversy regarding the Qiangic grouping (Chirkova 2012), morphological evidence supports Sun's proposed Northern sub-branch as a group. This group is often referred to as Rgyalrongic in the literature (Sun 2000a,b).

Language data from Qiang, Tangut, Khroskyabs, Rgyalrong, and Tibetan will be presented in the discussion on the origins of uvularization given in Section 3.5. In TB literature, it is a common practice to use the place name (such as village/ town/county name) where a specific language/variety is spoken in labeling different languages or varieties within a language (e.g. Puxi Stau, Xiaoyili Khroskyabs, Mawo Qiang). This chapter follows this convention when citing data from other sources.

The literature reports that Queyu speakers mainly reside in the counties of Xinlong, Litang, and Yajiang (Lu 1985: 67, Wang 1991: 46, Sun 2001: 159, Nishida 2008: 77). My primary interest in this study is the Queyu variety spoken in Yajiang County, Pubarong Town. This variety is hence referred to as "Pubarong Queyu".

Compared to other languages in the proposed Qiangic group, Queyu has received relatively little attention and is one of the least studied languages in the area. To date, there are only two published grammar sketches on Queyu varieties: Lu (1985) introduces basic information on the Queyu variety spoken in Yajiang County, Tuanjie Town (now renamed Gala Town), and Wang (1991) describes the Queyu variety in Xinlong County, Youlaxi Town. Partial descriptions of other Queyu varieties are also available. Nishida (2008) discusses the phonology of the Queyu spoken in Litang County, Rongba Town. Zheng (2023) is a more detailed description and analysis of the Rongba Queyu phonology. Nagano & Prins (2013) provide a wordlist with 407 words from Yajiang County, Gala Town. Recently a moribund variety of Queyu was identified near Yajiang County in Lhagang, Kangding County (Suzuki & Sonam Wangmo 2016, Suzuki & Sonam Wangmo 2018, Suzuki & Sonam Wangmo 2019).

The description and analysis of Pubarong Queyu presented in this chapter is based on data collected through fieldwork undertaken from 2018–2021. I worked mainly with Pubarong Queyu speakers from the village of Suoyi. The villages of Pubarong are divided into *làndʒá* and *vɔ̀ndʒá* based on their locations in relation to the Yalong River, with the *làndʒá* villages upstream and the *vɔ̀ndʒá* villages downstream. Suoyi belongs to the downstream *vɔ̀ndʒá* group. The location of Suoyi Village is labeled with a star in the map below. Other Pubarong Queyu speaking villages are labeled by a pin.

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[2]Alternative names and spellings of a language that are used in various literature are given in parentheses.
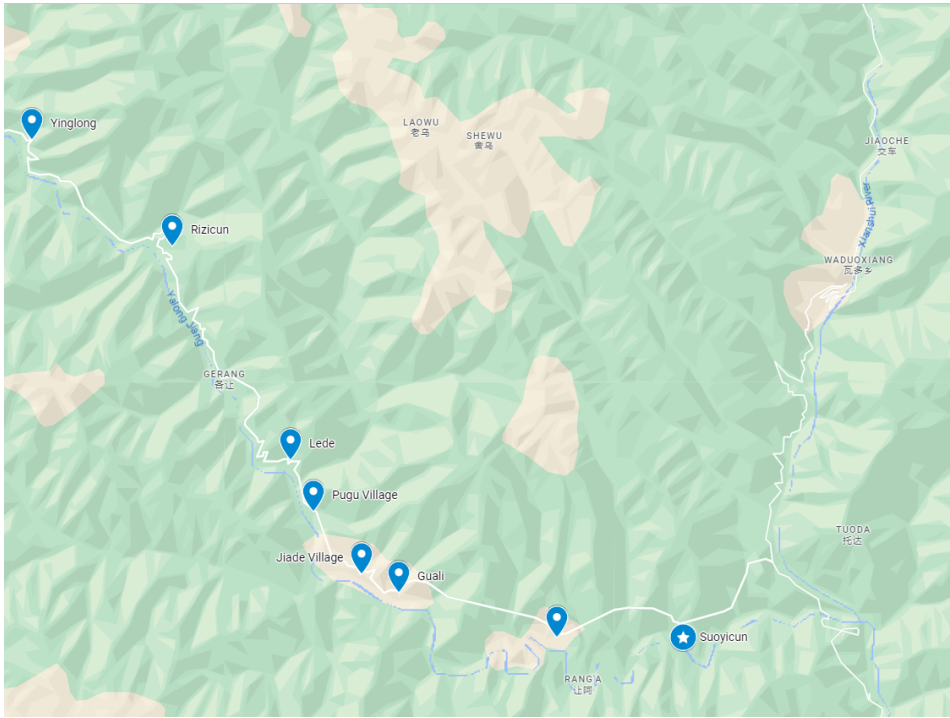
Figure 1: The location of Suoyi Village in relation to other Pubarong Queyu speaking villages along the Yalong River

2.2 Phonological sketch of Queyu

2.2.1 Phoneme inventory

There has not been much work on Queyu varieties from a phonological perspective. The current study is the first description of Pubarong Queyu variety. There are forty-three consonants in Pubarong Queyu, which are given in Table 1.

Consonants in brackets are predictable allophones. Bilabial stops /p/ and /b/ have fricative allophones ([ɸ] and [β]) that only occur in the preinitial position under certain conditions (see Section 2.2.2 for syllable structure). Velar consonants (except for /xʰ/) have uvular allophones conditioned by a following uvularized vowel. The /xʰ/ phoneme is marginal in this language, as it has only been documented in three words in my data so far, *xʰǽ* 'rainbow) appear', *xʰɔ̌* 'meat' and a homophonous word *xʰɔ̌* 'strength'. All three words are Tibetan loans,[3] suggesting that this is a loan phoneme corresponding to the Tibetan letter <ཤ> /ʃ/.

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[3]Here, a word is referred to as a "Tibetan loan" if it reflects either the phonology of a Written

Table 1: Consonant inventory of Pubarong Queyu

		Bilabial	Labio-dental	Alveolar	Retroflex	Palatal	Velar
Plosive	voiceless aspirated	pʰ		tʰ			kʰ [kʰ, qʰ]
	voiceless unaspirated	p [p, ɸ]		t			k [k, q]
	Voiced	b [b, β]		d			g [g, ɢ]
Affricate	voiceless aspirated			tsʰ	tʂʰ	tʃʰ	
	voiceless unaspirated			ts	tʂ	tʃ	
	Voiced			dz	dʐ	dʒ	
Fricative	voiceless unaspirated			s	ʂ	ʃ	x [x, χ, h]
	voiceless aspirated			sʰ	ʂʰ	ʃʰ	xʰ
	Voiced		v	z		ʒ	ɣ [ɣ, ʁ]
Nasal	Voiceless	m̥		n̥		ɲ̊	ŋ̊ [ŋ̊, ɴ̥]
	Voiced	m		n		ɲ	ŋ [ŋ, ɴ]
Liquid	Voiceless			l̥			
	Voiced			l	ɽ		
Glide	Voiced	w [w, ɥ]				j	

Voiceless sonorants are common among TB languages (Chirkova et al. 2019: 18). In Queyu, they start with a voiceless period, so are also inherently aspirated. There are thirteen plain monophthongs, which are illustrated in Table 2. In addition to these thirteen plain vowels, there is a set of nine uvularized vowels, illustrated in Table 3.

Table 2: Vowel inventory of Pubarong Queyu

	Front		Back
High	i, y	ɨ, ʉ	u
	ɪ, ʏ	ɘ	ʊ
Mid	e	ə	o
Low		æ	

Table 3: Uvularized vowels

	Front		Back
High	iʶ	ɨʶ, ʉʶ	
	ɪʶ	ɘʶ	ʊʶ
Mid	eʶ	əʶ	
Low		ɑʶ	

Phonetically speaking, uvularized vowels tend to be lower and backer than their plain counterparts. Figures 2–3 provide spectrograms for a minimal pair contrasting plain and uvularized vowels. Figures 2–3 compare *lɘ́* 'seed' and *lɘ́ʶ* 'highland wheat,' which contrast /ɘ/ and /ɘʶ/. A more systematic comparison between such sets of vowels in the same phonetic environments is needed before a more thorough acoustic analysis can be done.

Phonologically speaking, uvularized vowels trigger uvular allophones of preceding velar consonants. Uvular consonants occur before uvularized vowels only, and velar consonants only occur before plain vowels. This complementary distribution of dorsal consonants is best demonstrated in the allomorphic alternation of the verbal prefixes *kɘ-* and *qɘʶ-*, discussed in Section 2.3.3.

There is one diphthong, /eɪ/, that is attested only in Tibetan loanwords thus far (e.g. *hméɪ* 'medicine'). Other potential diphthongs, such as [ye, ui, uə, uɑʶ, ie, iæ, iɑʶ] have been analyzed and transcribed here as the consonant-vowel sequences /ʉe, wi, wə, wɑʶ, je, jæ, jɑʶ/, respectively. The glide /w/ has an allophone [ʉ], conditioned by the frontness of the following vowel and/or the place of articualtion of the preceding consonant. The phonemes /ʏ/ and /ɨʶ/ each occur only once in my data, in *nʏ̌* 'rest.3', and *xsʰɨ́ʶ* 'see clearly'. The latter word reflects the Written Tibetan *gzhigs*[4] 'to see'.

Tibetan form, or the phonology of the local Kham Tibetan farming dialect. It should be noted that various historical layers of Tibetan loans entering the language via Buddhism and contact with neighboring Tibetan dialects may be identified. However, with the present state of research it is not always possible to date loanwords or to distinguish loans from cognate forms.

[4]In this chapter I use Wylie's transcription for Written Tibetan (Wylie 1959).
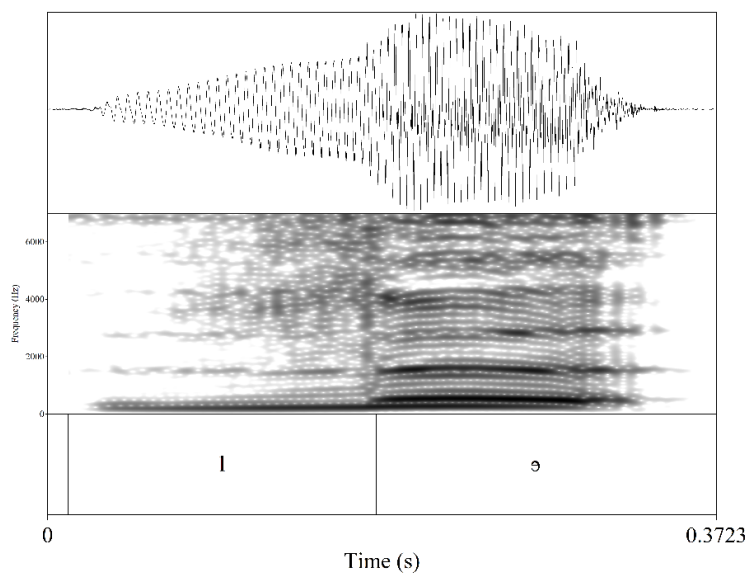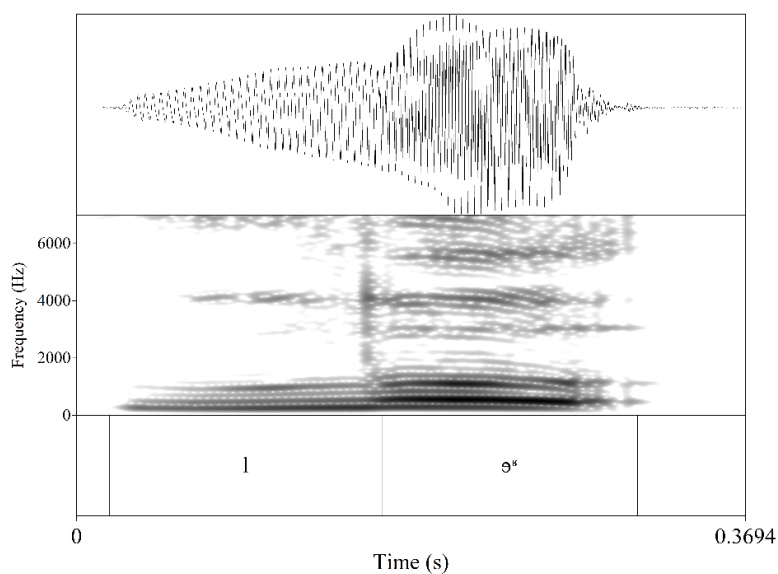
Figure 2: Spectrogram for lə́ 'seed'

Figure 3: Spectrogram for lə́ʁ 'highland wheat'

Queyu is a tonal language. Two tones are distinguished on monosyllabic words, a high level tone (e.g. ǽ) and a rising tone (e.g. ǎ). The high level tone on monosyllabic words can also be pronounced as a high falling tone without changing the meaning. When it comes to multisyllabic words, a low level tone may occur (e.g. æ̀). But a word can never bear only low level tone. For example, for disyllabic words, three tonal patterns are observed: high + high, high + low, low + high. The combination of low + low or a monosyllabic word bearing only low tone are never found in the data. In multisyllabic words and connected speech, the rising tone can sometimes be realized as a low level tone or high level tone. For example, the egophoric marker *tsǐ* 'EGO' and the generic marker *tʂǐ* 'GNR' bear a rising tone when pronounced in isolation. When the two words are pronounced together, the tone pattern becomes low level + high level: *tsì tʂí* 'something that happens on a regular basis / it is the case that…'. Two consecutive rising tones within a word are not found in the present data set, either. When combining two morphemes with a rising tone, one or both morphemes' tones will change. Below are examples demonstrating contrastive tones in monosyllabic words, tonal patterns in disyllabic words, and tonal change in morphosyntactic processes. For more details on the description and analysis of tones, plase refer to Guan (2024). xlǐ

(1) a. Monosyllabic words
  i. High level *xlí* 'tongue'
  ii. Rising *xlǐ* 'rabbit'
  b. Disyllabic words
  i. high + high *kʰímí* 'bovine'
  ii. high + rising *l̥ʊ́ᵏbɔ̀* 'wind'
  iii. rising+ high *tʂʊ̀mbɕ́* 'justice'
  c. Combination of morphemes
  i. Rising *tǎ-* 'PFV'
  ii. Rising *kʰʊ̌* 'give.1SG'
  iii. *ŋǎ tɔ̀-kʰʊ́*
     1SG   PFV-give.1SG
     'I gave.'

2.2.2 Queyu syllable structure

The syllable structure of Queyu is: (P) (C) (G) V. A preinitial (P) is the first consonant of two non-glide consonants in the onset. Their intensity and duration

are much shorter than those of regular consonants. The consonants (including allophones) that can appear in the preinitial position are limited to twelve: [p, b, ɸ, β, x, ɣ, χ, h, n, m, ŋ, ɴ]. Their distribution is partly predictable. Properties such as voicing and manner of a preinitial can be conditioned by the following consonant. For example, [p] occurs before voiceless coronal consonants, while [b] occurs before voiced stops and fricatives. [ɸ] occurs only before lateral sounds, and [β] occurs before voiced fricatives and liquids. C stands for any consonant, and G represents a glide. Three consonants can fill the glide slot. These are [j, w, ɥ], with [ɥ] being an allophone of /w/ conditioned by the following front vowel or preceding velar consonant. More information on the phonotactics of Queyu can be found in Guan (2024). Below are illustrative examples of each onset combination.

(2) a. V *í* - 'ᴜᴘ'
      b. CV *vɔ́* 'flour, powder'
      c. GV *jǎ̆*- 'ᴜᴘ.ǫ'
      d. PCV *xpʰí* 'dust, ash'
      e. CGV *vjé* 'pig'
      f. PCGV *xpjé* 'rough, coarse'

2.3 The spreading of uvularization and other features in Pubarong Queyu prefixes

Uvularization in Pubarong Queyu can spread leftward across a morpheme boundary within a word. This is most clearly seen in the alternation of two sets of verbal prefixes, plain and uvularized.

One way to analyze the alternation of prefixes is through the lens of vowel harmony. Though not common in TB languages, vowel harmony is consistently reported in Qiangic and Naic languages within the TB family (Chirkova 2024: 1). However, some Queyu data presents patterns that do not fit the traditional definition of vowel harmony, as is examined in more detail in Section 2.3.3.

This section presents data on the spreading of uvularity and other features in Queyu prefixes. A brief typological overview on vowel harmony as well as an examination of argument indexation on verbs will be presented first in Sections 2.3.1 and Section 2.3.2. Information given in these sections will serve as a background for demonstrating and discussing how allomorphs of prefixes are conditioned in Section 2.3.3.

2.3.1 A brief overview of vowel harmony and uvulars in the Eurasian context

Traditionally speaking, vowel harmony refers to the agreement among all vowels in a word (or the harmonic domain) for some feature (van der Hulst 2016). Vowel harmony patterns can vary based on different parameters, including static vs. dynamic harmony, root-controlled vs. dominant-recessive harmony, and directionality (Makeeva & Kuznetsova 2022). In terms of static vs. dynamic harmony, Pubarong Queyu uvularized vowels in verbs can trigger the appearance of uvularized verbal prefixes, indicating that Queyu belongs to the dynamic harmony type. As for the second and the third parameters mentioned above, vowels in the verbal prefixes are subject to harmony, while suffix vowels are not, indicating that Queyu data demonstrate regressive root-controlled harmony. In addition to the vowels in the verb stem, a voiced velar preinitial in the verb can also trigger a uvularized prefix, which is not commonly seen in vowel harmony cases. Furthermore, this feature spreading can affect the onset consonant of the prefix, which is also not typical for vowel harmony. Lastly, three verbal prefixes are not subject to this harmony process, despite the fact that the hypothetical uvularized versions of them are phonetically and phonologically possible in Queyu, while two vowels, /u/ and /o/, behave like plain vowels in some verbs and uvularized vowels in other verbs.

Geographically speaking, vowel harmony is a major areal feature in Eurasian languages spoken in Northeast Asia (Barrere & Janhunen 2019: 47). There are two major types of vowel harmony systems in languages spoken in Eurasia: palatal-velar harmony (PVH) and tongue root harmony[5] (TRH) (Barrere & Janhunen 2019: 47). Palatal-velar harmony distinguishes palatal (front) and velar (back) vowels and is prevalent in languages spoken in the western part of Eurasia, while tongue root harmony distinguishes vowels with advanced vs. retracted tongue root (ATR/RTR) and is prevalent in languages spoken in the eastern part of Eurasia. The Mongolic family is in a transitional state with both types of harmony systems (Barrere & Janhunen 2019: 47–48). There is controversy regarding which type is more archaic, with some studies arguing for the greater antiquity of TRH (Ko 2012, Ko et al. 2014) and other studies arguing that TRH is merely an ancient areal feature introduced from the Northeast Pacific Rim (Barrere & Janhunen 2019). TRH presents a type of harmony comparable with that present in Queyu and other Qiangic languages.

The presence of uvular consonants in Southwest China is also considered to be an areal feature. Hill (2019: 124) describes the region as a "uvular-prone Sprachbund" and considers the presence of uvular sounds in local Tibetan and Mongo-

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[5]TRH is also prevalent in African languages, but these are not discussed here.

lian languages to reflect the influence of a Qiangic substrate. Similarly, post-velar consonants are commonly reported as phonemes or allophones of velar consonants in Mongolic and other Northeast Asian languages (Nugteren 2011: 30–33, Sylak-Glassman 2014: 32–36). The phonological phenomenon of vowel harmony related to post-velar consonants is also one of the major areal features of languages spoken in that region (Barrere & Janhunen 2019: 47, Robbeets 2020: 129). A study investigating the geographical patterning of ejectives and uvulars suggests that language contact plays an important role in the development of uvular sounds in TB languages (Urban & Moran 2021: 27).

2.3.2 Argument indexation on Queyu verbs

Pubarong Queyu presents complex argument indexation patterns. While argument indexes are suffixed to verb stems, they fuse with the vowel in the verb stem but do not effect change in the stem vowel quality. Vowel fusion processes are prevalent in Pubarong Queyu but will not be examined in detail in this chapter. All verbs contain a stem vowel, and when the stem is fused with a person suffix, the fused vowel is considered as part of the stem. Except for the situations illustrated in Sections 2.3.3 and 2.4, the fused vowel can condition the prefix allomorph. This subsection merely provides a basic description of the verb types and argument suffixes to lay the groundwork for discussing allomorphic alternation in verbal prefixes in Section 2.3.3.

There are three types of verbs based on the conjugation patterns. The first type does not conjugate for person or number. A large class of this type is stative verbs, or verbs expressing property concepts. Several examples of this type include 'big' *ndʒɨ́ᵛ*, 'say, speak' *pʃɔ́*, 'win, beat' *kʰǐ*, 'lock (a door)' *kwɔ́*, and 'dig' *pɔ́ᵛqwɔ́ᵛ*.

The second type of verb only distinguishes Speech Act Participants (SAP) and non SAP, with the non SAP form containing an inserted bilabial consonant—a relic of an inverse marker still prevalent in nearby Rgyalrongic languages. Examples of this type include 'throw' (*ɻɔ́* for SAP form and *βɻɔ́* for non-SAP form), 'pay, submit' (SAP form: *dʐǎ*, non-SAP form: *dʐwǎ*), 'cut, saw' (SAP form: *ʈʐǎ*, non-SAP form: *pʈʐǎ*), 'wipe' (SAP form: *dɔ́*, non-SAP form: *bdɔ́*), 'release' (SAP form: *l̥ɔ́ᵛ*, non-SAP form: *ɸl̥ɔ́ᵛ*), and 'hand, give' (SAP form: *xtɔ́ᵛ*, non-SAP form: *xtwɔ́*).

The third type of verb contrasts both person and number. This is the type that shows the most diversity. Within this type, first person singular and plural forms end with *-ʊ* and *-æ* for plain vowel stems (such as 'say, speak' and 'feed, give' in Table 4), and with *-ʊᵛ* and *-aᵛ* for uvularized vowel stems, respectively. Only a few verbs with a plain vowel stem contrast number in second person (such

as 'say, speak'), while verbs with uvularized vowels do not distinguish number in second person. Third person forms exhibit the greatest variation. Some third person forms contain an inserted bilabial consonant like the second type of verb described above (e.g. 'sit', 'dip', 'hold, take'), while others do not (e.g. 'say, speak', 'feed, give', 'poke, stab'). Several examples of this type are demonstrated below.

Table 4: Verbs that contrast both person and number

Verb	1sg	1pl	2sg	2pl	3
'say, speak'	ɲŏ	ɲæ̌	nɔ̌	ɲĭ	ɲĭ
'feed, give'	ʃŏ	ʃæ̌	ʃɨ̌	ʃĭ	ʃy̌
'sit'	tsŏ́	tsæ̌	tsí	tsí	ptsŏ́
'dip'	ʃə́ʁʃŏ́ʁ	ʃə́ʁʃɑ́ʁ	ʃə́ʁʃé́ʁ	ʃə́ʁʃé́ʁ	ʃə́ʁpʃŏ́ʁ
'hold, take'	zŏ̆ʁ	zɑ̆ʁ	zĕʁ	zĕʁ	βzŏ̆ʁ
'poke, stab'	xtʃʰŏ̆ʁ	xtʃʰɑ̆ʁ	xtʃʰĕʁ	xtʃʰĕʁ	xtʃʰŭʁ

2.3.3 Allomorphic alternations of verbal prefixes

Uvularization in Pubarong Queyu can spread leftward across morpheme boundaries. This is most clearly seen in the verbal prefixes that are given in Table 7 in comparison to the prefixed verb examples in Table 6. For most prefixes, there are two sets which can be conditioned by the vowel quality in the verb stem. Only the prefixes for 'downstream' and the three allomorphs for 'upward' do not have uvularized forms. Table 5 illustrates the plain and uvularized versions of the prefixes, which include six directional prefixes (prefixes that indicate the direction of motion), a question marker, a prohibitive marker, and three negation prefixes that are used in different TAME contexts. Among them, only two directional prefixes and a negation prefix do not have uvularized forms, and they are the 'downstream' and the three allomorphs for 'upward' prefixes, as well as the méɪ- negation marker.

Table 6 presents examples of prefixed verbs with plain vowel argument suffixes. Notice that the directional prefixes can also function as perfective and imperative markers in addition to indicating the direction of motion. When this is the case, the change in meaning is explained in the translation according to the context.

Table 5: Prefixes in Queyu

Queyu prefix	Uvularized version	Gloss
í-, rɨ́, ɘ́-	-	UP
nɘ̌-	nɘ̌ʶ-	DOWN
lɘ́	lɘ́ʶ-	UPSTREAM
ǐ-	-	DOWNSTREAM
kɘ́-	qɘ́ʶ-	IN
tɘ̌-	tɘ̌ʶ-	PFV
æ̀-	ɑʶ-	Q
tǽ-	tɑʶ-	PROH
mǽ-	mɑʶ-	NEG
mə-	məʶ-	NEG
méɪ-	-	NEG

Table 6: Prefixes with verbs containing plain vowel suffixes

Queyu	Gloss	Translation
í-tʃì	UP-go.3	'go upwards'
nɘ̀-tʃí	DOWN-go.3	'go downwards'
lɘ́-tʃì	UPSTREAM-go.3	'go upstream'
ì-tʃí	DOWNSTREAM-go.3	'go downstream'
kɘ́-pɘ̀	IN-wet	'got wet'
tɘ̀-kʰwí	PFV-give.3	'He/she/it gave.'
ǽ-ʒí	Q-delicious	'Is it tasty?'
tǽ-pʰɘ̀tʰì	PROH-scatter.2	'Don't scatter!'
mǽ-sʰí	NEG-die	'won't die'
kɘ́-mɘ́-ɲʊ̀	IN-NEG-listen.1SG	'I didn't listen.'
méɪ-ndʊ̀	NEG-see.1SG	'I didn't see it.'

Uvularized prefixes can be triggered by the vowel quality of the vowel in the argument suffix. In Table 7, examples of prefixes with verbs containing a uvularized vowel are presented. From the examples below, we see that the vowels in the prefixes are uvularized (except for the three situations mentioned above).

Table 7: Prefixes with verbs containing uvularized vowels

Queyu	Gloss	Translation
í-zʊ̀ˤ	UP-take away.1SG	'I took'
nə̀ˤ-χqʊ́ˤ	DOWN-boil.1SG	'I boiled'
lə́ˤ-xpʰə̀ˤ	UPSTREAM-vomit	'(someone) threw up'
ì-xtʊ́ˤ	DOWNSTREAM-closed (door).1SG	'I closed the door.'
qə́ˤ-pə̀ˤ	IN-rot	'(It is) rotten.'
tə̀ˤ-hmʊ́ˤ	PFV-close (eyes).1SG	'I closed (eyes).'
á ˤ-xsʰí̵ˤ	Q-see clearly	'Can you see clearly?'
já ˤ-zèˤ	PROH.DOWNSTREAM-take.2	'Don't take it!'
má ˤ-xsʰí̵ˤ	NEG-see clearly	'can't see it clearly'
nə̀ˤ-mə́ˤ-χqò	DOWN-NEG-trouble	'You are welcome.'
méɪ-mə̀ˤ	NEG-hear	'I didn't hear it.'

Beyond the vowel, it is worth noting that for the 'inward' prefix *kə́-*, the plain form has a velar initial consonant. When the verb stem contains a uvularized vowel, uvularity not only spreads to the vowel in the prefix, but also to the initial stop, change it to a uvular, hence the form *qə́ˤ-*. Examples 'got wet' *kə́-pə̀* from Table 6 and 'rotten' *qə́ˤ-pə̀ˤ* from Table 7 illustrate this alternation. This alternation is the reason I term this phenomenon in Queyu "uvularization" instead of "velarization" or "pharyngealization". In addition, this allomorphic alternation is one piece of evidence that Queyu data do not present a typical case of vowel harmony, as consonants also undergo uvularization.

Uvularization does not spread rightwards, as suffixes containing plain vowels remain plain when following a stem that contains uvularized vowels. Examples with a plain vs. uvularized root are given in (3) and (4). The patient nominalizer *-ʃə* contains a plain vowel, regardless of the vowel quality in the preceding root.

(3)   tʃʰɨ-ʃə̀
      eat-NMLZ
      'food'

(4) ptə̀ᵏ-ʃə́
     chop-NMLZ
     'things to be chopped'

Uvularized prefixes can also be triggered when the stem contains a voiced velar preinitial, which is demonstrated in examples (5–7). The vowels in verb stems are plain in (5–7), but these verbs still pair with uvularized prefixes. The only thing these verbs share in common is that they contain a voiced velar preinitial. The fact that uvularized prefixes can be conditioned by consonants, in the absence of a uvularized vowel, is further evidence indicating that uvularity spreading in Pubarong Queyu may not be vowel harmony in the classical sense.

(5) nə̀ᵏ-ɣɲʊ́
     PFV-knead.1SG
     'I kneaded (the dough).'

(6) tə̀ᵏ-ɣʒʊ́
     PFV-toss.1SG
     'I tossed (something).'

(7) ʃʰʊ̀pʃʰí qə́ᵏ-ɣʒɥè
     child   PFV-feed
     'I raised (provide food and materials for) kids.'

There is another type of vowel alternation in verbal prefixes unrelated to uvularization. See (8) and (9), where the directional prefixes *lə́-* turns into *lʑ́-* when followed by *mʑ-* and *tæ-*, and *nə̀-* into *nʊ̌-* when followed by *tæ-*. This type of alternation differs from those just described. The verb stem vowel does not seem to play a role in conditioning the prefixes, as can be seen in the comparison between (8a) and (8b). The verb stem vowel remains the same, but the vowel in the directional prefix changes. However, as uvularity spreading is root controlled, meaning the feature in the verb stem determins the prefix vowel quality, the changed prefixes can still have a uvularized counterpart. This is demonstrated in (10) and (11), where the uvularized *lʑ́ᵏ-*, *mʑᵏ-*, and *taᵏ-* occur. For this type of vowel change, with only limited examples so far, no concrete conclusion can be drawn. More data are needed for further exploration of this type of prefix alternation.

(8) The *lə́-* prefix changes to *lʑ-* when preceding *mʑ-* and *tæ-*:
     a. lə́-ʃʰʊ̀
         UPSTREAM-go.1SG
         'I went upstream.'

    b. lɔ́-mɔ́-ʃʰʊ̌
       UPSTREAM-go-NEG.1SG
       'I didn't go upstream.'

    c. lɔ́-tæ̀-ʃʰɨ
       UPSTREAM-PROH-go.2SG
       'Don't go upstream.'

(9)   The *nɔ̌-* prefix changes to *nɘ-* when preceding *tæ-*:

    a. nɘ̀-ʃʰʊ̌
       DOWN-go.1SG
       'I went down (to Chengdu's direction).'

    b. nɔ́-tæ̀-ʃʰɨ
       DOWN-PROH-go.2SG
       'Don't go (to Chengdu's direction).'

(10) The *lɔ́ʁ-* and *mɘʁ-* prefixes can also be uvulairzed:

    a. lɘ̀ʁ-xpʰɘ̀ʁ
       UPSTREAM-vomit
       '(Someone) vomited.'

    b. nɔ́-tæ̀-ʃʰɨ
       UPSTREAM-NEG-vomit
       '(Someone) hasn't vomited yet.'

(11) The prohibitive marker *taʁ-* can also be uvularized:

    a. ɔ́-zɛ̀ʁ
       UP-take.2
       '(You) take it.'

    b. í-tà̀ʁ-zɛ̀ʁ
       UP-PROH-take.2
       'Don't take it.'

2.4 Exceptions to vowel harmony

While plain and uvularized vowels in a verb stem can trigger different sets of prefixes, there are two vowels that do not follow this pattern: /o/ and /u/. Some verbs containing these two vowel suffixes pair with plain prefixes, while others trigger a uvularized allomorph. As shown in Table 8, verbs containing /o/ and

Table 8: Vowels /o/ and /u/ exhibiting uvularized vowel behavior

Lexicon	Gloss	Translation
q�вин́ʁ-dò	IN-tie	'tied up, chained up'
áʁ-tʂó	Q-cold	'Is it cold?'
tǎʁ-xtù	PFV.Q-hit.3	'Did he hit?'

/u/ can pair with uvularized prefixes. Morphologically speaking, the /o/ and /u/ phonemes in these cases trigger uvularized prefixes, which is strong evidence suggesting that /o/ and /u/ belong to the uvularized set of vowels.

However, in some verbs /o/ and /u/ behave like plain vowels. From Table 9, we see that 'happy' *gó*, 'dance' *dʒó,* and 'hug' *xtú* pair with a plain prefix. If /o/ and /u/ were behaving like uvularized vowels in these words, they would trigger the uvular allomorphs of the prefixes. Additionally, if uvular consonants in Pubarong Queyu are allophones of velar sounds triggered by uvularized vowels, then the fact that 'happy' *gó* starts with a velar consonant rather than a uvular consonant suggests that /o/ behaves like plain vowel here.

Table 9: Vowels /o/ and /u/ exhibiting plain vowel behavior

Lexicon	Gloss	Translation
mǽ-gó	NEG-be.happy	'unhappy'
mǽ-dʒó	NEG-dance	'won't dance'
jǎ-xtù	PFV.Q-hug.3	'Did he hug?'

Another piece of morphological evidence suggesting that /u/ behaves both as a plain and a uvularized vowel comes from verbal paradigms. There are both plain and uvularized verbs whose third person forms end with a -*u* suffix. Examples are given below.

Table 10: 3rd person verb forms ending with /u/

Gloss	1SG	1PL	2SG	2PL	3
'buy'	xkǒ́	xkǽ	xkí	xkí	xkú
'hit, pound'	xtǒʁ	xtǎʁ	xtǐʁ	xtǐʁ	xtǔ

Since /o/ and /u/ may behave like either plain vowels *or* uvularized vowels, this is further evidence that analyzing this data from a traditional vowel harmony perspective can be problematic. That /o/ and /u/ behave like both plain and uvularized vowels suggests that historically for each there may have been be two sets of vowels, plain and uvularized, that have merged into /o/ and /u/ respectively.[6] Phonetically there is no distinction now, and there is only morphophonological evidence as a trace of this possible merger.[7]

3 Uvularized vowels and other similar vowels in regional typological studies

The data presented above show that Queyu contrasts plain and uvularized vowels. Uvularity in Queyu can spread leftward across morpheme boundaries, which is best evidenced by the presence of uvularized prefixes triggered by uvularized vowels in verbs. In addition to vowels, velar consonants can also be the target of uvularization, as they become uvular consonants when preceding a uvularized vowel. Uvularized prefixes can also be triggered by a voiced velar preinitial consonant in the verb stem. Two vowels, /o/ and /u/, do not follow this pattern, and behave as plain *and* uvularized both morphosyntactically and morphophonologically. The vowel /o/ can occur after both non-uvular and uvular consonants, and *-u* can be a verbal suffix for third person forms in both paradigms, pairing with both plain and uvularized prefixes.

These facts lead to the following four questions:

1. What are the phonetic differences between plain and uvularized vowels in terms of acoustics and articulation?

2. How can we account for the spreading of uvularity in Pubarong Queyu?

3. What is the origin of the uvularized vowels in Pubarong Queyu?

4. For /u/ and /o/, one possible hypothesis is that there used to be both /u/ and /uˠ/, and /o/ and /oˠ/ which then merged into /u/ and /o/ respectively. Or could /uˠ/ and /oˠ/ still exist in this language?

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[6]Personal communication with Dr. Lin You-jing and Dr. Lai Yunfan.

[7]However, we cannot rule out the hypothesis that /oˠ/ and /uˠ/ still exist. Further acoustic measurements are required to investigate this issue. I would like to thank Dr. Spike Gildea for pointing this out.

This section presents data from closely-related languages attesting similar phenomena, and aims to address the first three questions. Literature on other Qiangic languages are introduced first, and it is important to note that different terms have been used to label marked vowel qualities, similar to Queyu's uvularized vowels, in Qiangic/Rgyalrongic languages. There is no consensus among Tibeto-Burmanists about how to describe and analyze the phenomena associated with uvularization and other similar vowel qualities. Detailed comparison among each author's suggestions will be beyond the scope of this chapter; therefore readers are suggested to consult the original works mentioned here for further reference. Section 3 merely presents a summary of the current available literature on this topic within Qiangic/Rgyalrongic. Tables and data from other languages in this section are reproduced from other works with no changes made to transcription or glossing style.

This overview of the literature has two aims. The first is to introduce the current state of the analysis of uvularization and relevant phenomena within Qiangic/Rgyalrongic. The second is to show discrepancies in current findings on this topic that have not been well explained and draw attention to the need for more acoustic studies and systematic explanations.

In this section, a brief summary of uvularized vowels and similar vowel qualities in the TB family is given in Section 3.1, followed by an examination of the articulation of uvularized, velarized, and pharyngealized vowels in Section 3.2. Section 3.3 reviews acoustic and ultrasound studies done in Qiangic/Rgyalrongic languages, summarizing the acoustic characteristics of the marked vowels in comparison with their plain counterparts. Section 3.4 presents information on vowel harmony within Qiangic, a phenomenon associated with uvularization. Section 3.5 discusses possible origins of phenomena relevant to uvularization.

3.1 Similarities among uvularized, velarized, and pharyngealized vowels noted in the literature

While velarization and pharyngealization are usually secondary articulations associated with consonants, these qualities are vowel features in Qiangic languages such as Puxi Stau (Ladefoged & Maddieson 1996: 360, 365, Lin et al. 2012: 87). The similarity between velarization and pharyngealization is noted in Ladefoged & Johnson (2011: 236), who point out that there is no language that distinguishes these two possibilities. This similarity is also brought up several times in the descriptions of Qiangic languages summarized below.

The rare vowel distinction discussed here is first mentioned for a TB language in Sun's (2000b) description of verbal inflection in the Puxi variety of Stau, un-

der the term "velarization". Evans (2006a,b) describes the vowel quality in the Hongyan variety of Northern Qiang as "pharyngealization" and discusses the feature's origins. Evans (2006b) is the first study that addresses pharyngealization in TB languages. Evans (2006a: 94; 2006b: 737) mentions that Jackson Sun, through personal communication, has pointed out the phonetic similarity between velarized vowels in Rgyalrongic languages and pharyngealized vowels in Hongyan Qiang. In a later study, Sun & Evans (2013) revisit the vowel quality issue in Yunlinsi (Hongyan) Qiang, and amend the analytical umbrella label to "uvularization" rather than "pharyngealization".

In a study on uvularization in Tangut, an extinct Qiangic language, Gong (2020: 193–194) reconstructs uvularized vowels, describing uvularization in Qiangic languages as a case of guttural secondary vocalic articulations (GSVA), and notes that this distinction is similar to one found in Eastern Minyag,[8] which is described as a lax/tense distinction by Huang (1985) and as an ATR/RTR (Advanced tongue root/Retracted tongue root) distinction by Gao (2015). In Eastern Minyag, velar consonants only occur preceding lax/ATR vowels, and uvular consonants only occur preceding tense/RTR vowels. The Eastern Minyag tense/RTR vowels, to Gong's ear, sound as though they contain pharyngealization (Gong 2020: 194).

Pharyngealized vowels are also found in non-Qiangic languages of the region. Suzuki (2011) presents data on pharyngealized vowels in Gagatang Tibetan and examines their origins by comparing data from Written Tibetan, adjacent Tibetan varieties, and Naxi, a local Naic language. He discusses the connection between pharyngealization and rhotacization in vowels and points out in a later study (Suzuki 2013: 29–31) that rhotacized vowels in Naxi are velarized or pharyngealized in some varieties. He also notes that the tense vowels in Naxi brought up by Yang (1984, 1991) correspond to rhotacized vowels in other scholars' descriptions. It is worth noting that the pharyngealized vowels found in Gagatang Tibetan are unique among Tibetic varieties (Suzuki 2011: 489). Furthermore, Gagatang Tibetan is spoken in Yunnan Province, near the border of Sichuan Province, just to the south of where the Qiangic languages are spoken. The languages within the family attested to have these vowel distinctions are therefore spoken roughly within the same geographical region. Suzuki (2011: 492–493) suggests that the development of pharyngealization in Gagatang Tibetan vowels may come from the influence of neighboring languages, possibly from Naxi. The spreading of uvular

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[8] However, the literature that Gong (2020) cited, i.e. Huang 1985 and Gao (2015), are based on Minyag spoken in Kangding, which is classified as the Western variety of Minyag rather than the Eastern variety. This chapter keeps the original wording of the source literature when citing them, but the mismatch in use of terminology should be noted.

consonants is also suggested to be due to contact by Urban & Moran (2021: 27) in Sino-Tibetan.

3.2 The articulation of uvularized vowels and similar vowel qualities

Ladefoged & Johnson (2011: 235–236) summarize that the back of the tongue is raised during velarization, and that pharyngealization involves the narrowing of the pharynx during articulation. Uvularized vowels are characterized by constriction of the styloglossus and other muscles, which draws the tongue dorsum towards the uvula (Evans et al. 2016: 1). Other vowel qualities such as velarization and pharyngealization mentioned in related languages have similar articulatory gestures. Sun (2000b: 215) points out that the articulatory gestures of velarized vowels in Puxi Rgyalrong are characterized by the dorsum of the tongue arching towards velum. Evans et al. (2016) use ultrasound imaging to explore the articulatory gestures of uvularized vowels in Mawo and Luhua, two Northwestern Qiang varieties spoken in Heishui Town. In terms of articulation, ultrasound imaging shows that the tongue is retracted towards the uvular region when producing a uvularized vowel, in juxtaposition with a plain vowel counterpart (Evans et al. 2016: 22). An ultrasound imaging study on pharyngealized vowels in two Northern Horpa (*aka* Stau, Ergong, Daofu) varieties shows that the tongue body retracts and forms double bunching when producing pharyngealized vowels (Chiu & Sun 2020: 2938).

In sum, these articulations involve a stricture at the velum, uvula, or pharynx region, and the tongue body is usually retracted. The acoustic characteristics of these vowels are also similar, as will be addressed in Section 3.3. The correlation between articulatory features and acoustic measurements will be discussed in the next subsection.

3.3 Acoustic properties of uvularized, velarized, and pharyngealized vowels in Qiangic languages

There are occasional mentions of the similarities among uvularized, velarized, and pharyngealized vowel qualities in the literature on TB languages spoken in Southwest China. There are also mentions of the fact that these vowels can trigger vowel harmony. Lin et al. (2012: 88) acoustically examine velarized vowels in Puxi Stau, finding that velarized vowels have a significantly lower F2 and a raised F3 when compared to their plain vowel counterparts. Though change in F1 is not significant, lower F2 indicates retraction of the tongue root, which matches the articulatory gesture identified for velarized vowels (Lin et al. 2012: 88–89).

Sun & Evans (2013) re-examine the vowel system in Mawo Qiang, a Northern Qiang variety with a series of uvularized vowels, finding the most prominent acoustic feature of uvularized vowels to be a lowered F2 (Sun & Evans 2013: 141). Both F1 and F3 are raised in uvularized vowels as compared to their plain-vowel counterparts.

Evans et al. (2016) also acoustically examine vowel uvularization in Mawo and Luhua Qiang. Compared to their plain counterparts, uvularized vowels have higher F1 (significant for non-schwa vowels), lower F2, and increased difference between F3 and F2.

The study by van Way (2018) is a description and analysis of the phonetics and phonology of another Qiangic language, Nyagrong Minyag. He examines uvularization in vowels, and provides acoustic measurements which show a raised F1 value for uvularized high vowels compared to their plain counterparts ([i], [y], and [u]). He also finds a lower F2 for uvularized non-high vowels ([ə], [ɔ], and [a]). F3 is slightly increased in all uvularized vowels except for [iˠ] and [aˠ] (van Way 2018: 103). All in all, drop in F2 is found to be the most salient acoustic cue for uvularized vowels (van Way 2018: 123).

Chiu & Sun (2020) examine pharyngealized vowels in two Northern Horpa (Stau) varieties—Rtsangkhog and Yunasche. In addition to the articulatory study mentioned in Section 3.2, which found tongue retraction, backing, and double bunching during the production of pharyngealized vowels (Chiu & Sun 2020: 2938), the authors conducted an acoustic study. The results showed that F1 is higher in pharyngealized vowels than in plain vowels and that this higher value corresponds to the lowering of the tongue (Chiu & Sun 2020: 2939). The change observed for F2 is not as consistent as that of F1, in that F2 is lowered substantially for most pharyngealized vowels, but not for [uˤ] in Rtsangkhog or [oˤ] and [uˤ] in Yunasche (Chiu & Sun 2020: 2941). For F3, the formant frequency increases for certain vowels ([əˤ], [ɐˤ], [oˤ] and [uˤ] in Rtsangkhog, [ɐˤ], [oˤ] and [uˤ] in Yunasche), and decreases for front vowels (Chiu & Sun 2020: 2941–2942).

Table 11 summarizes the results from previous studies on the comparison of formants between two sets of vowels (plain and uvularized/velarized/pharyngealized) in different Qiangic languages. Blank cells indicate that the study did not address a property specifically.

3.4 Vowel harmony in Qiangic

Despite the fact that different terms are used to describe vowel qualities in the Rgyalrongic/Qiangic languages reviewed in Section 3.1 and Section 3.2, these vowel contrasts behave similarly in that they participate in a similar phonological

Table 11: Acoustic differences in Qiangic languages between uvularized/velarized/pharyngealized vowels and their plain counterparts. *Note:* Although the acoustic measurements are inconsistent between plain and uvularized/velarized/pharyngealized vowels in the Rgyalrongic/Qiangic languages, this does not necessarily mean that vowel qualities/cues are different in different languages. Differences may emerge from insufficient statistical power, which is very likely in phonetics, especially with understudied languages, or between-speaker variability in cue use within the language. Another reason might be due to differences between methods of measurement or the design of experiments. Refinement of existing descriptions will need to test interactions between cues and the language. I would like to thank Dr. Volya Kapatsinski and Dr. Natalia Kuznetsova for bringing these points to attention.

Sources	Language	Vowel quality	F1	F2	F3	F3-F2
Lin et al. (2012)	Puxi Stau	Velarization	No significant change	Decrease	Increase	
Sun & Evans (2013)	Mawo Qiang	Uvularization	Increase	Decrease	Increase	
Evans et al. (2016)	Mawo Qiang	Uvularization	Increase[a]	Decrease		Increase
	Luhua (Yunlinsi-Hongyan)	Uvularization	Increase[a]	Decrease		Increase
van Way (2018)	Nyagrong Minyag	Uvularization	Increase	Decrease[c]	Increase[b]	Increase
Chiu & Sun (2020)	Rtsangkhog Horpa	Pharyngealization	Increase	Decrease	Increase[d]	
	Yunasche Horpa	Pharyngealization	Increase	Decrease[e]	Increase[f], little difference[g]	

[a] significant for non-schwa vowels
[b] except for [ɨˤ] and [aˤ]
[c] except for [uˤ]
[d] significant for [əˤ], [eˤ], [oˤ] and [uˤ]
[e] except for [uˤ] and [oˤ]
[f] significant for [ɐˤ], [oˤ] and [uˤ]
[g] for [eˤ] and [əˤ]

process, vowel harmony. Vowel harmony is not common among TB languages, with most cases reported in Qiangic, and only a few in the Naic and Tibetic languages of the Himalayish subgroup (Chirkova 2024: 729). Sun (2016: 10) considers vowel harmony to be a feature of the Qiangic branch. While vowel harmony is commonly reported in languages spoken in the Middle East, Africa, Northeast Asia, and the Pacific Northwest coast of North America, information on vowel harmony in Qiangic and Naic is limited. Chirkova (2024: 730) asserts that these latter languages are "virtually unknown in literature on vowel harmony". Examining the relationship between vowel harmony and uvularized vowels in Queyu in the contexts of both TB linguistics and other languages can contribute to typological as well as phonological understandings of vowel harmony.

There is great diversity among the vowel harmony systems of Qiangic languages (Chirkova 2024: 731). For example, Yadu Qiang, reported in Evans & Huang (2007), has five vowel harmony processes: front, low, ATR, round, and rhotic. On the other hand, Ersu, another Qiangic language spoken in South Sichuan, only has low vowel harmony (Chirkova et al. 2015). In the rest of this section, I will examine vowel harmony processes in Qiangic and other languages and similar processes in Queyu, specifically harmony processes triggered by post-velar consonants and/or by vowel quality.

In a typological phonological study of post-velar consonants, Sylak-Glassman (2014: 75) states that "[p]ost-velar harmony processes are neither consonant nor vowel harmony, but consonant-vowel (CV) harmony systems", and that the phonetic form of post-velarization can be either uvularization (as in the case of Arabic) or pharyngealization (as in the case of Nakh-Daghestanian languages). This statement also fits the situation of many Qiangic languages.

Gong (2020: 193) divided Rgyalrongic/Qiangic languages into three types based on their realization of what he terms "guttural secondary vocalic articulation" (GSVA). These are:

(1) uvularity-coupled secondary articulation, where velar and uvular onsets are conditioned by the presence of GSVA and are in complementary distribution; that is, uvular initials occur with uvularized vowels and velar initials occur with plain vowels (Gong 2020: 193);

(2) uvularity-decoupled secondary articulation, where GSVA is not phonologically bound with a consonantal velar-uvular distinction;

(3) absence of GSVA.

Pubarong Queyu is of the first type. Other Qiangic languages of this type include Mawo Qiang and Yunlinsi Qiang (Evans et al. 2016), and Eastern Minyag, as described by Huang (1985) and Gao (2015). Examples of Yunlinsi Qiang phonotactics are given in Table 12. From the example pairs given in Table 12, it is clear that uvularized vowels pair with uvular consonants, while plain vowels pair with velar consonants.

Table 12: Yunlinsi plain-uvularized vowel harmony (Evans et al. 2016: 18)

	i	iʁ	u	uʁ	ə	əʁ	a	aʁ
k-	/ki/ 'house'		/ku/ 'turnip'		/kə/ 'go'		/kaχuʁ/ 'koklass pheasant'	
q-		/qiʁ/ 'win'		/quʁ/ 'afraid'		/qəʁ-/ 'head'		/qaʁ/ '1SG'

Languages of the second GSVA type include Zbu Rgyalrong (Sun 2004), where the distinction between the two sets of vowels is analyzed as velarization. This type of GSVA differs from the first one in that in the root, the plain vowel /ɐ/ can appear after both velar and uvular consonants (Gong 2020: 194–196). Velarized vowels in roots also trigger regressive vowel harmony in prefixes. Examples demonstrating this type are given in Table 13 from the *rɟaltsúˠʔ* variety of Zbu Rgyalrong, where /a/ is the velarized allophone of /ɐ/. In 'my cat', and 'my horse', the feature of velarization is spreading regressively to the prefix vowel. As evident from Table 13, however, both velar and uvular consonants can occur with /ɐ/ in roots (Gong 2020: 194).

Table 13: Zbu Rgyalrong plain-velarized vowel harmony (Gong 2020: 194)

Vowel pair	Plain vowel	Translation	Velarized vowel	Translation
/ɐ a/	/ɐ-wɐmê/	'my cat'	/a-ⁿbrâ/	'my horse'
	/ɐ-qéʔ/	'my wheat'	/ɐ-rkê/	'my mule'

The third type, absence of GSVA, is the most widespread in Qiangic languages (Gong 2020: 194). However, it should be noted that uvular consonants are not

always simply the result of harmonic processes and are present in all Qiangic languages (Sun 2016: 10).

3.5 Origins of uvularized, pharyngealized, and velarized vowels

The origins of the velarization, uvularization, and pharyngealization attested in different TB languages have been discussed in previous studies. The most common proposed source for these uncommon vowel distinctions is the loss of a velar or uvular initial and/or coda (that is, a preceding or following consonant). Much of the Queyu data are examples of this type. Evidence can be found in Tibetan loanwords such as 'leopard' *gzig* and 'farming area' *rong*, which are ɣzɪ́ˠ and rŏˠ in Queyu, respectively. A similar phenomenon can also be observed in related languages like Tangut, in which reconstructed uvularized syllables correspond to Japhug Rgyalrong words with uvular codas or initials (Gong 2020). In fact, syllable reduction is an areal feature where Queyu is spoken. In her typological study on syllable structures, based on synchronic, historical, or comparative evidence, 24 out of 100 languages were observed to have gone through a change from more simple to more complex structures (Easterday 2019: 290). Queyu shows the opposite diachronic pathway, supported by evidence from comparison with Written Tibetan and contemporary TB languages such as Khroskyabs (see Section 3.5.1). The dominant local language, Kham Tibetan, has less complex syllable structure compared to Written Tibetan and Amdo Tibetan.

The connection between velar/uvular sounds and rhotic sounds is addressed in Section 3.5.2, as is the possibility that the various vowel qualities discussed here may have come from the same historical source.

3.5.1 Sources of uvularization, velarization, and pharyngealization in Qiangic languages

Sun (2000b) suggests that one important source of vowel velarization in Puxi Stau is rounding in the rimes of proto-words,[9] with evidence in comparative Rgyalrongic data given in Table 14. In Table 14, velarized vowels in Puxi Stau correspond to rounded rimes in other Rgyalrongic languages.

Evans (2006a: 114–118) on the basis of data from several Qiangic languages in comparison to Proto-Southern Qiang (PSQ) and Proto-Tibeto-Burman (PTB) argues that pharyngealized vowels may have come from PTB *-w- that led to the

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[9]Though the rounding in the rime for the example for 'to melt' is unclear from Sun's presentation, the presence of /w/ in the Caodeng example may suggest a rounded element in the proto-form.

Table 14: Comparative Rgyalrongic data (Sun 2000b: 215). An under-lined vowel in the Puxi Stau data indicates a vowel with a low tone (Sun 2000a: 166)

Puxi (Stau)	Geshizha (Stau)	Mu'erzong (Khroskyabs)	Caodeng (Rgyalrong)	Zhuokeji (Rgyalrong)	Translation
lməˠ	lmu	lmoʔ	tə-rmu	tə-rmo	'hail'
tsʰəˠ	tsʰuə	tsʰoʔ	tsʰo	tsʰo	'be fat'
dʒvəˠ	dʑə	dʑə	ⁿdʒwiʔ	–	'melt'
znəˠ	snə	mnə	ʽnos	nos	'dare'

retraction of the tongue root. Table 15 is adapted from Evans (2006a: 114) showing only Hongyan Qiang (HY), PSQ, and PTB data.

Table 15: Hongyan pharyngealized vowels corresponding to PTB *-w- (Evans 2006a: 114)

Translation	Hongyan Qiang	Proto-Southern Qiang	Proto-Tibeto-Burman
'pig'	pjiˤ	*pia	*pwak
'yellow'	χaˤ	*χa-χa	*hwaːr
'water'	tsəˤ	*tsuə	*twəy
'light, bright'	ɕiˤ	*ɕya	
'sole of foot'	paˤ		*pʷa-n

Evans (2006a: 119) also suggests that the development of pharyngealized vow-els in Hongyan Qiang may be due to the influence of velarized vowels in nearby Rgyalrongic languages. Lin et al. (2012) point out that the source of some ve-larized vowels in Puxi may be the dropping of a velar consonant in consonant clusters. Evidence can be found in related languages like Khroskyabs and Stau. For example, 'to buy' is *rəˠ* in Puxi, *ɣdə* in Xiaoyili Khroskyabs, and *ɣruʔ* in Ye-long Khroskyabs, while 'horse' is *riˠ* in Puxi, but *rɣi* in Stau (Lin et al. 2012: 90). These authors also argue that velarization may be a feature inherited from Proto-Rgyalrong, as the three modern Rgyalrongic languages that preserve velarized vowels show correspondence in cognates. This is strong evidence suggesting that Proto-Rgyalrong contrasted plain and velarized vowels (Lin et al. 2012: 90). Ex-amples are given in Table 16.

Gong (2020) also argues that uvularized syllables should be reconstructed for Tangut. The uvularized syllables he reconstructs correspond to Japhug Rgyalrong

Table 16: Velarization correspondence in three modern Rgyalrongic languages (Lin et al. 2012: 90)

Translation	Puxi Stau	Xiaoyili Khroskyabs	Showu Rgyalrong
'ice'	lvô^ɣ	rpʰə^ɣm	ta-lvā^ɣm
'(man's) sister'	snô^ɣ	–	tə-snā^ɣm
'wide'	lo̯^ɣ	lə^ɣm	kə-lā^ɣm
'neck tumor'	zvâ^ɣɣ	zvʌ^ɣv	tə-zbâ^ɣv
'spicy'	ltsʰʌ^ɣv	ltsʰa^ɣv	kə-vartsā^ɣv
'deep'	nʌ^ɣv	nʌ̂^ɣv	kə-nô^ɣɣ

words with a uvular initial or coda. Comparative data supporting his argument are given in Table 17.

Table 17: Reconstructed uvularized syllables in Tangut corresponding to Rgyalrongic uvular initials and codas (Gong 2020: 199)

Translation	Tangut examples	Japhug Rgyalrong	Other Rgyalrong
'weave'	{lɑ^ʁ}	/-taʁ/	Zbu /-têʁ/, Khroskyabs /dâɣvi/
'be thirsty'	{pɑ^ʁ}	/ɕpaʁ/	Zbu /-sphjéʁ/, Stau /spar/
'brain'	{no^ʁ}	/tɯ-rnoʁ/	Zbu /tə-rnôʁ/
'winter'	{tsu^ʁr}	/qartsɯ/	Zbu /qɐrtsó?/, Khroskyabs /rtsô/
'frog'	{pʕi^ʁ}	/qaɕpa/	Zbu /qɐchí?/, Stau /spəɲcher/
'buy'	{lwə^ʁ}	/-χtɯ/	Zbu /-χtâ/, Khroskyabs /jdâ/, Stau /rə/
'sun'	{bi^ʁ}	/ʁmbɣi/	Stau /ɣbə/

From Table 17, we see that Tangut uvularized syllables correspond to Japhug Rgyalrong words with either uvular codas (for 'weave', 'be thirsty', and 'brain')

or uvular initials (for 'winter', 'frog', 'buy', and 'sun'). Miyake (2012) uses the term "compression effect" to describe this spreading of a feature from the syllable periphery over the entire syllable. In fact, this phenomenon applies to rhotacized syllables (syllables with an -r ending) in Tangut, too, as rhotacized syllables developed from both preinitial *r- and coda *-r (Jacques 2014: 23–29). For example, 'put inside' in Tangut is *kur*, corresponding to *-rku* in Japhug, and 'sour' in Tangut is *tśhwǝr*, corresponding to *-tɕur* in Japhug (Gong 2020: 199).

Pubarong Queyu has a similar story with respect to the origins of uvularization. Comparison between cognates and loanwords between Queyu and neighbouring related languages shows that uvularized vowels in Queyu are related to the loss of a velar or a uvular consonant in either initial or coda position. Table 18 compares loanwords from Tibetan in Queyu alongside their forms in Written Tibetan. For 'tiger', 'see (clearly)' and 'leopard', the Tibetan words contain a velar coda, which corresponds to the uvularized vowel in the Queyu loanword forms. The case of 'leopard' and 'Tibetan agate' is tricky, in that these words are homophonous in Queyu (both uvularized), whereas Tibetan 'leopard' contains a velar coda, but 'Tibetan agate' does not.

Table 18: Comparing Tibetan loan words in Queyu and Written Tibetan

Translation	Written Tibetan	Queyu
'tiger'	stag	xtɑ́ᵛ
'see clearly'	gzhigs ('see')	xsʰɨ́ᵛ
'leopard'	gzig	ɣzɨ́ᵛ
'Tibetan agate'	gzi	ɣzɨ́ᵛ

Table 19 presents data from Khroskyabs (Lai Yunfan, p. c., July 6, 2021) and Queyu. The word 'to rot' in Khroskyabs has a velar coda that is lost in Queyu, which results in vowel uvularization. In 'to close eyes', 'asleep', and 'scar', uvularized vowels in Queyu correspond to a velar/uvular initial in Khroskyabs words.

3.5.2 Rhotacization and other phenomena relevant to uvularization

The correspondence between uvularized syllables in Tangut and other Rgyalrongic languages addressed in Gong (2020), together with the comparative data shown for Queyu and related languages, raises questions about the relation between uvularization and rhotacization.

Notions of vocalic rhotacization, velarization, pharyngealization, and tenseness are confounded in synchronic studies (Evans 2006a,b, Gong 2020, Chirkova

Table 19: Comparing Khroskyabs and Queyu data

Translation	Khroskyabs	Queyu
'rot'	pə́ɣ	pə́ˤ
'close eyes (vт)'	χsmə́	hmŏˤ
'asleep'	ʁmə́ ('close (eyes), vɪ')	mĕˤ
'scar'	ɣmí	méˤ

2024), and seem to be connected to historical changes. In his study examining pharyngealized vowels in Gagatang Tibetan, Suzuki (2011) points out that one important source of pharyngealized vowels is the initial or medial *r* from Written Tibetan. For example, 'mountain' ´ *ɦʒˤː* in Gagatang corresponds to *ri* in Written Tibetan. In a later study, he describes sound changes related to the medial *r* in Tibetan with a focus on how they affected vowel quality (Suzuki 2013). He concludes that the dropping of initial or medial *r* can result in vowel pharyngealization or rhotacization among the Tibetan varieties spoken in Gagatang. Suzuki (2013: 30–31) also discusses several similar and overlapping phenomena in nearby languages and bring up the issue of using different terminologies for these phenomena. He argues that this is due to the fact that "rhotacization" and "tenseness" are umbrella terms that cover multiple characteristics and articulatory gestures. Ladefoged & Johnson (2011: 229–230) point out that *r*-colouring in American English can also have multiple gestures, all of them involving a narrowing of the pharyngeal cavity and characterized by a marked lowering of F3. Zhu (2010: 106) also notes that the terms "tense/lax" have been used to describe as many as sixteen different phenomena in the TB literature. Suzuki (2013:31) then suggests that the term "tense vowels" covers velarized or pharyngealized vowels, and "rhotacized vowels" may refer to rhotacized vowels, but also to velarized and pharyngealized vowels. Vowel velarization and pharyngealization, therefore, overlap in the terminology with rhotacization and tenseness.

4 Conclusion

This chapter examined phonological, typological, and diachronic features of uvularized vowels, which contrast with plain vowels, in Queyu, an understudied TB language within the Qiangic branch. Uvularized vowels trigger uvular allophones of preceding velar consonants, as well as regressive uvularization in the vowels of certain prefixes. One way to analyze the effect of Queyu uvularized

vowels on surrounding phonemes is from the perspective of vowel harmony. However, Queyu feature spreading is not a typical case of vowel harmony because it also involves allophonic variation in consonants and can even be triggered by consonants. Many Qiangic languages contain two similar classes of vowels that differ in terms of vowel quality and vowel harmony processes. In different languages, specific vowel quality may differ slightly in terms of articulation and acoustics. Terms like "velarization", "uvularization", and "pharyngealization" are used to describe these similar phonological phenomena in different languages. It is unclear to what extent these different terms reflect distinct synchronic phenomena (both in terms of actual pronunciation and phonological patterns) as opposed to being different ways of talking about the same or similar phenomena.

The articulation of these non-plain vowels involves a constriction of the root of the tongue towards the velum, uvula, or pharynx wall. Vowels that are supposed to be pronounced with a retracted tongue root can be phonologically grouped in a harmonic set with several phonetic manifestations. Among the latter, higher F1 (which is at the same time also a correlate of tongue height) and pharyngealization are the two most important (Sylak-Glassman 2014: 75, Barrere & Janhunen 2019: 54).

Variation in the acoustic measurements for marked vowels exists not only in TB languages, but in languages with similar vowel qualities or phonological processes. Within TB languages, Lin et al. (2012), Sun & Evans (2013), and van Way (2018) find the change in F2 to be the most prominent acoustic cue for a marked vowel, while Chiu & Sun (2020) find a change in F1 to be more consistent than F2. Lin et al. (2012) do not find a significant change in F1, but Evans et al. (2016) find higher F1, lower F2 and increased difference between F3-F2 to be defining acoustic properties of marked vowels. There is more variation found in F3 values across languages, with Puxi Stau and Nyagrong Minyag having a raised F3, and no consistent pattern for Mawo and Luhua Qiang, or Rtsangkhog and Yunasche Stau (Lin et al. 2012, Evans et al. 2016, van Way 2018, Chiu & Sun 2020). For non-TB languages, studies show variation in the acoustic measurements for pharyngealized vowels as well. For example, F3 rises in pharyngealized vowels in Arabic (Yeou 2001) and Upper Saxon (Khan & Weise 2013) but decreases for Amis (Maddieson & Wright 1995) and !Xóõ (Ladefoged & Maddieson 1996). In a study on ATR harmony in Akebu, a Niger-Congo language spoken in Africa, F1 is found to be the most robust acoustic correlate for [+ATR] vowels among other phonetic properties measured. However, F1 alone is not enough to differentiate [ATR] from vowel height or tenseness (Makeeva & Kuznetsova 2022).

Inconsistency in the acoustic properties of the members within a harmonic set might explain the inconsistency in their transcriptions and nominations across studies. In fact, the vowel pair /æ, ɑʶ/ sound like [æ, a] and were previously transcribed that way in Queyu. This is also the case in Qiang, as Evans et al. (2016: 5) note that both in Yunlinsi and in Mawo Qiang, /a, aʶ/ sound like [æ, a], and /u, uʶ/ pair sound like [ʉ, o]. These instances suggest that the vowel quality discussed here as "uvularization" may be more of a phonological than a phonetic feature, and one which has spread with different phonetic manifestations across languages.

While vowel uvularization may have arisen due to the loss of a velar or uvular initial and/or coda in Queyu and other Qiangic languages, the origins of uvular consonants in TB languages are still controversial. In Gagatang Tibetan, the development of vowel pharyngealization corresponds to an initial and medial *r* in Written Tibetan.

More descriptions of Queyu, as well as other Qiangic languages, are needed to investigate the uvularization phenomenon and others like it. A particularly important direction for future research on Queyu is the systematic acoustic and articulatory analysis of vowel qualities in order to see how the articulation and acoustics of uvularized vowels pattern in comparison to those found in other related and unrelated languages of the region. Such studies would help to determine the extent to which acoustic properties of vowel quality may themselves be areal features.

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Abbreviations

1	first person	C	consonant
2	second person	DOWN	downward
3	third person	DOWNSTREAM	downstream/
ATR	advanced tongue root		outward/right

EGO	egophoric		PVH	palatal-velar harmony
G	glide			
GNR	generic		Q	question
GSVA	guttural secondary vocalic articulation		RTR	retracted tongue root
HY	Hongyan		SAP	speech act participant
IN	inward			
IPFV	imperfective		SG	singular
NEG	negation		TB	Tibeto-Burman
NMLZ	nominalizer		TRH	tongue root harmony
P	pre-initial consonant			
PFV	perfective		UP	upward
PL	plural		UPSTREAM	upstream/left
PROH	prohibitive		V	vowel
PSQ	Proto-Southern Qiang		VT	transitive verb
PTB	Proto-Tibeto-Burman		VI	intransitive verb

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