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ORIGINS OF VOWEL PHARYNGEALIZATION IN HONGYAN QIANG*

Jonathan Evans
Institute of Linguistics, Academia Sinica

Hongyan, a variety of Northern Qiang (Tibeto-Burman, China) has four plain vowel monophthongs /i, u, ə, a/. Vowels may be lengthened, rhotacized, or pharyngealized, resulting in fourteen short and ten long vowel phonemes. No other varieties of Qiang have been described with pharyngealization, although the other suprasegmental effects are common throughout Northern Qiang. This paper explores how the distinctions which in Hongyan are made by differences in pharyngealization are phonologized in other varieties of Northern and Southern Qiang. Comparisons are drawn with processes in other Qiangic languages and with Proto-Tibeto-Burman reconstructions, in order to explore possible routes of development of pharyngealization; the most plausible source of pharyngealization seen thus far is retraction of vowels following PTB *-w-.

Keywords: Qiang, pharyngealization, brightening, Tibeto-Burman.

1. INTRODUCTION TO HONGYAN

Qiang (羌) is a Tibeto-Burman language spoken in the Aba Tibetan and Qiang Autonomous Prefecture (啊壩藏族羌藏族自治州) of Sichuan

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Province, China. It has been divided into two major dialects, Northern (NQ) and Southern (SQ) by H. Sun (1981). Within Sun's analysis, NQ and SQ are further divided into sub-dialects. One of the NQ subdialects is Mawo (麻窩), spoken in Heishui County (黑水縣) by ethnic Tibetans. Mawo Qiang has been the subject of numerous studies (e.g., Liu 1998a, H. Sun 1981, H. Sun, et al. 1991, J. Sun 2003), since initial research by the Chinese Academy of Sciences in the 1950's, and is said to include the Hongyan variety described herein. Hongyan Township (紅岩鄉) lies to the west of Mawo Village and Township, with Yakexia Mountain (亞克夏山) in between the two townships. The variety of Qiang spoken in Hongyan is very similar to the published descriptions of Mawo, although there are differences in both phonology and lexicon. The consultant for this study was Mr. Nan Kejin (南克金), a retired official from the Education Bureau, living in the city of Ma'erkang; I had the pleasure of working briefly with Mr. Nan in the summer of 2005. He hails from the village of Yunlinsi (雲林寺村) in Hongyan Township and speaks Hongyan Qiang in his home with his wife and family. Mr. Nan was very precise about accuracy of pronunciation, which made this research very enjoyable.

1.1 Overview of Hongyan segmental phonology

Hongyan (HY) segmental phonology resembles that of other NQ varieties. As elsewhere in NQ, consonant finals are secondary, coming from initials of subsequent syllables that have lost their nuclei, or occur on borrowings from Mandarin Chinese. The following consonant initial phonemes have been noted thus far in HY – the list may not be complete:

(1) Consonant initials of Hongyan (preliminary).

Bilabial	*Dental*	*Retroflex*	*Palatal*	*Velar*	*Uvular*	*Glottal*
p	t			k	q	
p^h	t^h			k^h	q^h	
b	d			g		
	ts	$ts̢$	tɕ			
	ts^h	$ts̢^h$	$tɕ^h$			
	dz	$dz̢$	dʑ			
	s	$s̢$	ɕ	x	χ	h
	z	$z̢$	ʑ		ʁ	ɦ
m	n		ȵ	ŋ		
	l, ɬ					

HY has four plain vowel monophthongs /i, u, ə, a/. Vowels may be lengthened, rhotacized, and/or pharyngealized, resulting in the following fourteen short and ten long vowel phonemes:[1]

(2) Hongyan monophthongs.

plain:		rhotacized:		pharyngealized:		rhotacized phar'd:	
i	u(ː)		$u^ɹ$	$i^ʕ$(ː)	$u^ʕ$(ː)	$i^{ʕɹ}$(ː)	$u^{ʕɹ}$(ː)
ə(ː)		ə(ː)^ɹ		$ə^ʕ$			
a(ː)		a(ː)^ɹ		$a^ʕ$(ː)		$a^{ʕɹ}$	

Rhotacization and length in NQ are discussed elsewhere (e.g., LaPolla 2003: 26, 28; Liu 1998a: 38-40, Evans in press). The following pairs show the phonemic nature of rhotacization in HY:

[1] All Hongyan data are from the author's fieldwork, conducted in September, 2005.

(3) Rhotacization in Hongyan.

/gu/	‘back basket’	/bə/	‘bee’	/ɕi 'ta/	‘count’
/guˤ 'guˤ/	‘dove, pigeon’	/bəˤ/	‘testicles’	/taˤ/	‘saliva’

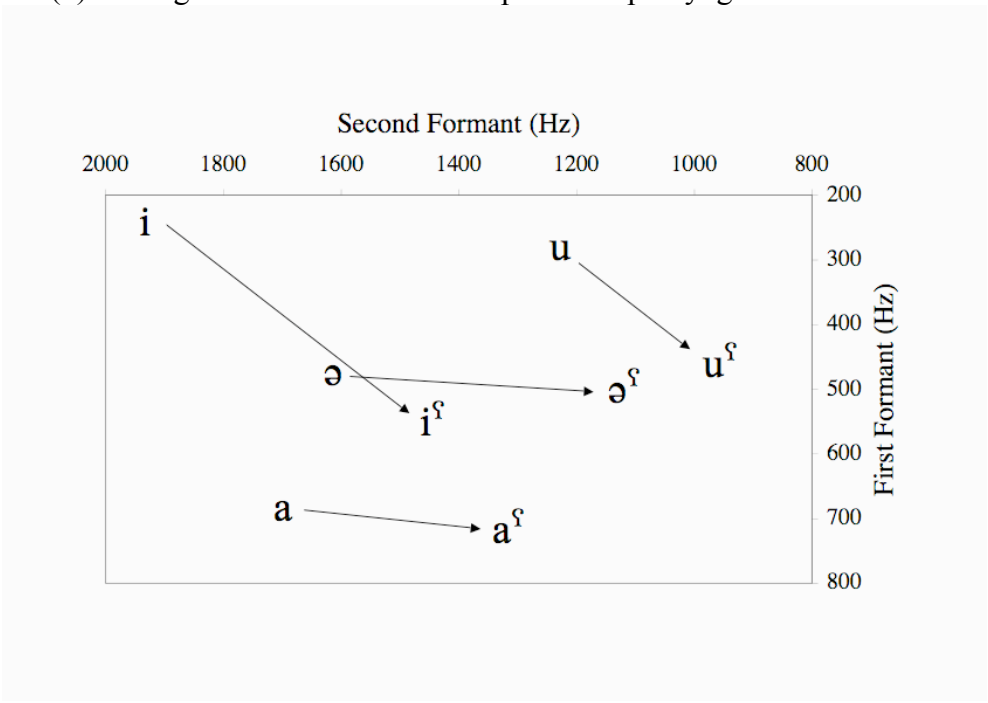
Vowel quantity distinctions may be observed in the following pairs:

(4) Length distinctions in Hongyan.

/bu/	‘board’	/χə/	‘needle’	/pa/	‘bloom’
/buː/	‘sugar’	/χəː/	‘rib’	/paː/	‘give birth (animal)’

Pharyngealized vowels in Hongyan have an impressionistically “dark” sound quality, compared to that of plain vowels, similar to the distinction [l, lʷ] in American English. Jackson Sun (p.c.) has noted the phonetic similarity of these sounds to the distinction plain/velarized found in rGyalrongic languages (J. Sun 2000, 2004). In fact, it was Jackson who, during my fieldwork, pointed out to me that within the HY vowels there appeared to be a pairing of plain and velarized or pharyngealized vowels (cf. J. Sun 2003). I originally termed this quality in Hongyan “velarization,” until John Ohala observed that the F1, F2 shifts suggest a pharyngeal or uvular approximation. I have chosen “pharyngealization,” because of the dramatic acoustic lowering present in pharyngealized (high) vowels. Pharyngealized vowels in Hongyan are retracted (lower F2) and lowered (higher F1) in comparison to their plain counterparts; high vowels are dramatically lowered when pharyngealized, as seen in the following chart:

(5) Averaged F1 and F2 values for plain and pharyngealized vowels.



For more on the acoustic properties of pharyngealization (and rhotacization) in HY, cf. Evans (in press).

The pairings of plain and pharyngealized vowels can be verified by participation in vowel harmony. The following pair shows that /u, uˤ/ are related morphophonologically:

(6) Pharyngealization harmony in Hongyan.

/nu/	+	/la/	>	/nu-'la/
DIR		'bring'		'bring (in upstream direction)'
/nu/	+	/staˤ/	>	/nuˤ -'staˤ/
DIR		'pull out'	>	'pull out (in upstream direction)'

Pharyngealization is not attested in other Qiang varieties, as in the following NQ vowel inventories:

(7) Mawo monophthongs (Liu 1998a: 38)[2].

Plain:			*Rhotacized:*		
i(ː), y		u(ː)	iˠ		u(ː)ˠ
e	ə	ɤ(ː)	e(ː)ˠ	ə(ː)ˠ	
a(ː)		ɑ(ː)	a(ː)ˠ		ɑ(ː)ˠ

(8) Ronghong Yadu monophthongs (LaPolla 2003: 25, 27-28)[3].

Plain:			*Rhotacized:*		
i(ː), y(ː)		u(ː)	iˠ		
e(ː)	ə	o(ː)	e(ː)ˠ	ə(ː)ˠ	
a(ː)		ɑ(ː)	aˠ		

(9) Ekou Yadu Monophthongs (Huang 1992: 636).

Plain:			*Rhotacized:*		
i, y		u(ː)	iˠ		u(ː)ˠ
ɪ	ə	o		əˠ	
ɛ(ː)			ɛˠ		
æ(ː)		ɑ(ː)	æ(ː)ˠ		ɑ(ː)ˠ

LaPolla specifies that only monomorphemic sounds are given in the inventory of Ronghong Yadu, which accounts for a description that shows

[2] H. Sun (1981:30) adds /yˠ, ɤˠ/, but lacks /eːˠ/. J. Sun (2003) questions the phonemic status of /e/ in native words. All Mawo data in this paper are from H. Sun, et al. 1991.

[3] Yadu data in this paper are from the Ronghong dialect, and were provided by native speaker and linguist Chenglong Huang; they are phonologized a la LaPolla (2003). In cases where there is interesting variation, data from Ekou Yadu (Huang 1992) are provided in parentheses.

fewer rhotacized vowels than are given for other NQ varieties. A personal examination of the speech of C. Huang has confirmed that pharyngealization is not present in Ronghong Yadu. I have not had the opportunity to check the pronunciation of any Mawo speakers; however, J. Sun's (2003) rendition of Mawo 'plate' as [bwi] (contra H. Sun /be/) foreshadows such an analysis. The Southern Qiang varieties that I have personally investigated heretofore (Mianchi, Longxi, Shuitang) lack pharyngealization. The phonemic status of pharyngealization in Hongyan can be observed in the following pairs:

(10) Hongyan pharyngealization pairs.

/bi/	'urine'	/ɹu/	'chest'	/bə/	'bee'	/ba/	'short, low'
/biˤ/	'plate'	/ɹuˤ/	'horse'	/bəˤ/	'be poor'	/baˤ/	'place to rest outdoors'

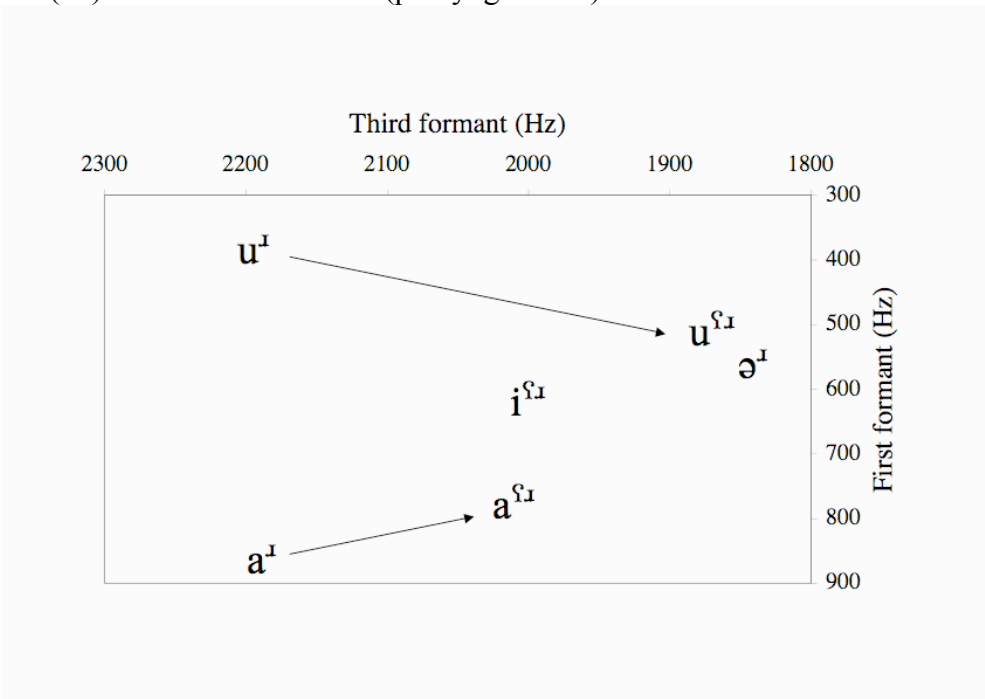
Plain and pharyngealized vowels in Hongyan correspond to what is described in Mawo as /i, u, ə, a/ vs. /e, u, ɤ, ɑ/; there is not an opposition in Mawo that corresponds to /u, uˤ/ in Hongyan. Below are the Mawo cognates that correspond to the above HY forms:

(11) Mawo vowel pairs.

/bi/	'urine'	/ɹu qhuɑ /	'chest'	/bə/	'bee'	/ba/	'short, low'
/be/	'plate'	/ɹu/	'horse'	/bɤ/	'be poor'	/bɑ/	'plain (n.)'

Rhotacized vowels become acoustically more rhotacized (lower F3) when pharyngealized:

(12) F1 and F3 values for (pharyngealized) rhotacized vowels.



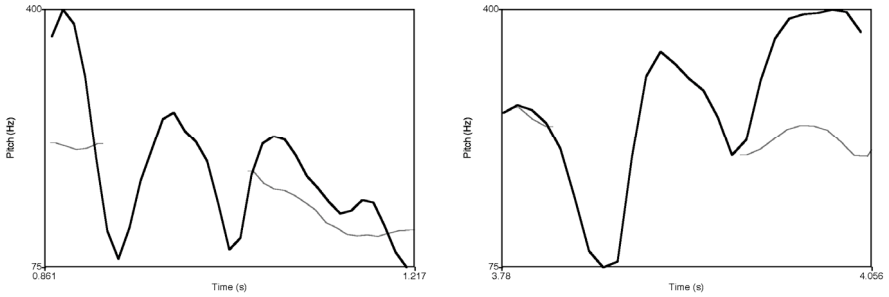
The above plot shows a very close distribution for [əˠɹ], [uˠɹ]. However, second formant values for these vowels keep them clearly distinct: average F2 values for [əˠɹ], [uˠɹ] are 1378 Hz, 985 Hz respectively. For more acoustic details on Hongyan vowel quality, see Evans (in press).

1.2 Overview of Hongyan word-level prosody

The received wisdom in Qiangic studies has been that NQ varieties have stress and not tone, and SQ varieties have tone and not stress (H. Sun 1981, Liu 1998b). However, the situation in HY is not that straightforward. Stress most often falls on the second syllable; trochaically stressed disyllables tend to reduce the second nucleus, so that 'CV.CV > CVC, as in /'ɕiũ.huˤ.pa/ ~ ['ɕiũh.pa] ‘placenta’. Although stress is not predictable, I have yet to discover an exact minimal pair distinguished by stress. The following charts show a near minimal pair, distinguished by stress and

nasalization. ['iˤ kʰĩ] 'Swear oath' is stressed on the first syllable, while the second syllable of [iˤ 'kʰi] 'one hundred' shows greater intensity (dark line) than the first. The unstressed syllables of each word fall in pitch (light line) throughout the vowel portion:

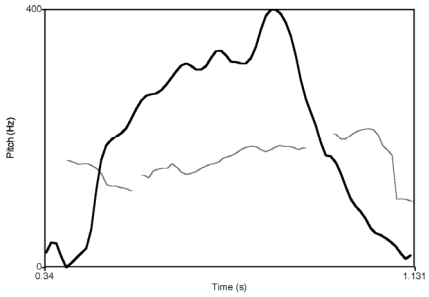
(13) Pitch (light) and intensity (dark) contours for 'swear oath', '100'.



['iˤ kʰ ĩ] [iˤ 'kʰ i]

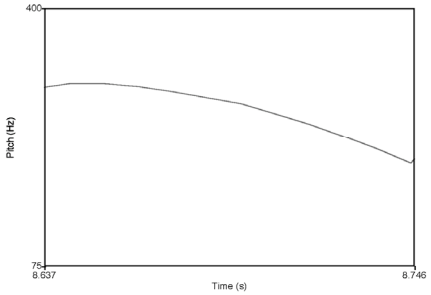
In both figures, the first drop in intensity indicates the closure for the velar stop; the dark peak between pitch contours correlates with the aspirated release. In some cases, the stress pattern is not as evident as in these examples. For example, in [ʁluˤ pi] 'stone', peaks of pitch and intensity do not align as neatly as they do in the above examples:

(14) Pitch and intensity for [ʁluˤ pi] 'stone'.

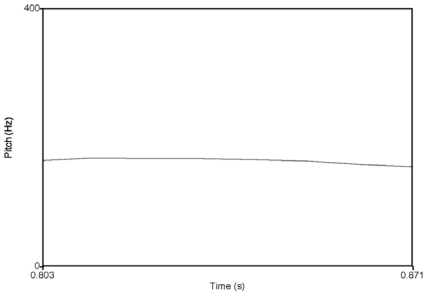


In addition to polysyllabic patterns, there are also monosyllables that are distinguished prosodically, such as [ʁlù^{ʕ}] ‘stone tower’, [ʁlū^{ʕ}] ‘swim’ (only the vowel pitch is shown):

(15) Monosyllabic pitch contours.



vowel in [ʁlù^{ʕ}] ‘stone tower’



vowel in [ʁlū^{ʕ}] ‘swim’

Pairs like the above are rare – only three other (near) minimal monosyllabic tonal pairs have been observed thus far: [ʁwə̀] ‘bowl’, [ʁwə̄] ‘five’; [rbù] ‘drum’, [bū] ‘high’, [χì^{ʕ}] ‘needle’, [χī^{ʕ}ː] ‘rib’. The fate of tone in polysyllables, and the interactions between tone and stress are not yet clear.

The following section of the paper examines what phonemic differences in other Qiang varieties correspond to differences in Hongyan pharyngealization. In the third section, probable origins of this feature are considered.

It is necessary first of all to note some differences in the ways that Hongyan and other varieties have been transcribed. In previous publications, diphthongs are transcribed as a sequence of vowels (Longxi /qhuà/ ‘ditch’). However, for Hongyan, I transcribe such sequences as glide-vowel (/χwa^{ʕ}/ ‘ditch’). The principal reasoning behind this change is acoustic; the nucleus does not sound like a sequence of two equally timed vowels, but a transitional glide followed by a monophthong. In the discussion below, I have not re-transcribed authors’ data, except as noted. Nevertheless, I consider sequences like those found in Longxi ‘ditch’ to be

glide-vowel sequences. Evidence from vowel harmony in Ronghong corroborates this analysis, by showing that these sounds are transparent to vowel harmony, suggesting that they are not vowels in the system (Evans and Huang ms.).

2. CORRESPONDENCES IN OTHER VARIETIES OF QIANG.

In addition to Northern Qiang, phonological and lexical data have been published on the Southern (SQ) varieties of Taoping (H. Sun 1981), Jiuzi (Wen 1950), Puxi (Huang 2004), Mianchi and Longxi (Evans 2001). One of the difficulties in comparing lexical data across dialects is that current and historical vowel harmony can obscure cognacy, or at least sound laws (cf. LaPolla 2003: 35, Evans and Huang ms.). In general, vowels harmonize with a following stressed vowel. The degree to which they harmonize varies by dialect, and by the degree to which the features of a vowel are specified (Evans and Huang ms.).

The Hongyan high front vowel phonemes /i, iˤ/ correspond to separate vowels in the other Qiang varieties. Plain /i/ corresponds to /i/ in NQ, and to /i/ or palatal glide (also transcribed /-i-/) in SQ. In Longxi ‘bear’, the earlier glide is reflected in a palatalized initial:

(16) Cognate sets for Hongyan /i/.

Gloss	*HY*	*Mawo*	*Yadu*	*Taoping*	*Mian-chi*	*Long-xi*	*Jiuzi*	*PSQ*[4]	*PTB*
urine	bi	bi	bi	bie^{241}	biě	bí	bi	*bie (1042)	*nbi (PQic)
heart	sti mi	sti: mi	ɕtɕi: 'mi	χtie^{55} mə^{55}	tié mù	ɕì mì	χtie	*snie mi/u (456)	*s-niŋ (367)
bear	ti	ti	tɕi	ti^{33}	tí	tɕá	ti	*tiam (51)	*d/t-wam (461)

All three forms above have *i- diphthongs in PSQ; ‘urine’ and ‘heart’ share the rhyme *-ie.

Cognates of Hongyan /i^{ʕ}/ may be divided into two correspondence sets. The most regular correspondences are those in which Hongyan /i^{ʕ}/ corresponds to /e, ɛ/ in other Qiang varieties:

(17) Hongyan /i^{ʕ}/ corresponding to /e, ɛ/.

Gloss	*Hong-yan*	*Mawo*	*Yadu*	*Tao-ping*	*Mian-chi*	*Long-xi*	*Jiuzi*	*PSQ*	*PTB*
needle	χi^{ʕ}	χe	χa (χɛ)	χe^{55}	χè	χé ~ χèi	xe	*χe (640)	*kap (52), *k-rap (HP: 336)[5]
plate	bi^{ʕ}	be	pe	be^{33}					
steam (n.)	li^{ʕ}	lɤ	lue				le		

[4] PSQ (and Proto-Qiangic) forms are from Evans 2001, with tonal reconstructions omitted. Numbers refer to sets in Appendix A, unless ‘p(age)’ is prefixed. PTB forms are sets from Benedict 1972, unless marked otherwise.

[5] HP = Matisoff 2003; numbers are page numbers.

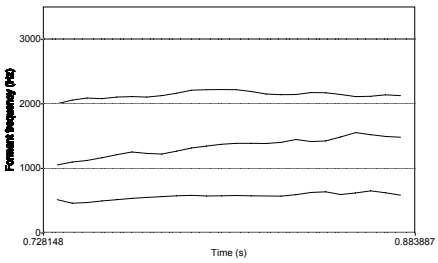
The other type of correspondences includes those instances of /iˤ/ that correspond to glide-/e/ in Yadu (Ekou glide-/ɛ/), and to glide-/a/ in Southern Qiang:

(18) Hongyan /iˤ/ corresponding to G-V.

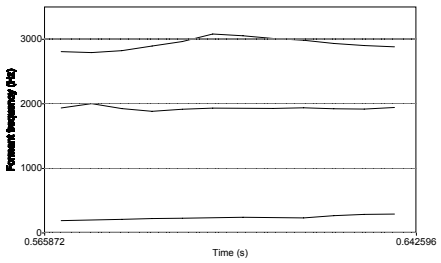
Gloss	*HY*	*Mawo*	*Yadu*	*Taoping*	*Mianchi*	*Longxi*	*Jiuzi*	*PSQ*	*PTB*
light, bright	ɕiˤ	siu	ʂue	ɕya^{33}	ɕyá	ɕuá	sua	*ɕya (121)	
pig	pjiˤ	pi	pie	pa^{33}	pià	pià	pi(e)	*pia (708)	pwak (43)
braid	ɬa 'pjiˤ	xlia pi	xlie 'pi						
female suffix	-miˤ		-miɛ		-mià	-mià		*-mia	

Of particular interest are the high back glide components in Yadu and in Jiuzi 'light'.[6] These correspond to a dynamic quality of Hongyan /iˤ/, which has a back-to-front tongue motion that can be seen in the rise in the second formant during the vowel of [iˤ]. This motion is not found in [i], which has relatively static first and second formants:

(19) Formant tracings (F1 – F3) for [iˤ, i].



vowel in [biˤ] 'plate'



vowel in [bi] 'urine'

[6] Longxi /u/ → [y]/[palatal] __ .

The tracings show a higher F1 in /iˤ/ than in /i/, which correlates with an acoustically lower vowel. This lower vowel may explain the correspondence of Hongyan /iˤ/ to PSQ *a in the set, as well as the depalatalized initial in Jiuzi ‘light’.

The two correspondence patterns for HY /iˤ/ suggest two lines of development. The second pattern suggests that *glide-a became Hongyan /iˤ/. The first pattern suggests that after the inception of pharyngealization, HY /e/ merged with /iˤ/, reducing the vowel inventory.

As with /i, iˤ/, the correspondences of Hongyan /a, aˤ/ are relatively consistent in other varieties. As might be expected, plain /a/ has cognates that are more fronted than cognates of /aˤ/. Mawo and Jiuzi cognates of Hongyan /a/ have nucleus /a/, Mianchi has a mid-front vowel, while Yadu, Taoping, and Longxi have both /a, e/:

(20) Correspondences with Hongyan /a/.

Gloss	*HY*	*Mawo*	*Yadu*	*Taoping*	*Mianchi*	*Longxi*	*Jiuzi*	*PSQ*
easy	za	za	ze	zie[31]	zɛ̀		(ʁ)za	*zie (282)
short, low	ba	ba	wa.'tsi[7]		bɛ̀	bè, bà	ba	*ba ~ be (841)
bloom[8]	pa	pa	pɑ	pɑ[31] tʂuə[55]	pɛ̀	(tə̀) pá		*pɑ (368)
rob	bə 'ba	bə βa	bə 'be			bú bá		*bu-ba (788)

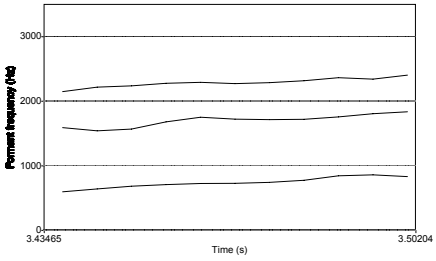
‘Bloom’ reflexes suggest some variation in the PQ *vowel for this form. This variation would allow us to reconstruct PSQ *pɑ ~ *pa, which makes the PSQ correspondence with Hongyan regular.

In varieties with two low vowels (Northern Qiang, Taoping), /ɑ/ corresponds to Hongyan /aˤ/. In the remaining Southern varieties (Mianchi,

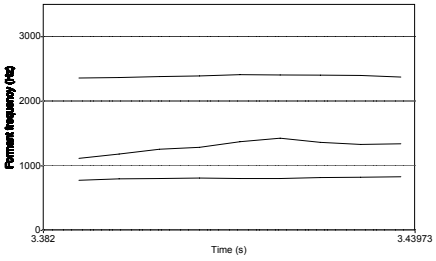
[7] Randy LaPolla, p.c.
[8] Taoping ‘flower’.

Longxi, Jiuzi), /a/, the only low vowel, corresponds to /a^{ʕ}/. As shown in (5) and in the formant tracings below, the front/back distinction accords with acoustic differences between HY /a, a^{ʕ}/. The lower F2 in the vowel of /pa^{ʕ}/ 'husband' indicates a vowel that is acoustically more to the back than in /pa/ 'bloom':

(21) Post-labial [a, a^{ʕ}].



vowel in /pa/ 'bloom'



vowel in /pa^{ʕ}/ 'husband'

There is a robust set of correspondences with /a^{ʕ}/ (exceptions discussed below):

(22) Correspondences with Hongyan /a^{ʕ}/.

Gloss	*HY*	*Mawo*	*Yadu*	*Tao-ping*	*Mian-chi*	*Long-xi*	*Jiuzi*	*PSQ*	*PTB*
bitter	qha^{ʕ}	qhɑ	qhɑ	qhɑ^{55}	qhà	qhà	q'a	*qhɑ (74)	*ka (8)
yellow	χa^{ʕ}	χɑ	χɑʂ	χa^{55} χa^{33}	χá	χá		*χa-χa (1114)	*hwaːr ~ *yar (HP: 429)
big	bz̧a^{ʕ}	bɑɹ	ba	bz̧ɑ^{33}	bz̧à	bɹà	bɹe	*brɑ (68)	
good	na^{ʕ}	nɑ	nɑ	nɑ^{33}	nà	nà	na	*nɑ (420)	*na (HP: 163)

Gloss	*HY*	*Mawo*	*Yadu*	*Tao-ping*	*Mian-chi*	*Long-xi*	*Jiuzi*	*PSQ*	*PTB*
ride	tsaˀ	tsɑ	tsɑ	tsɑ^{33}	tsà	tsà		*tsɑ (781)	
plain (n.)	baˀ	bɑ	bɑ	bɑ^{33}		bà tò		*bɑ (717)	
sole of foot	paˀ	pɑ	pɑq, dʑoq-'pɑ		goù pà		ɟi pa χtie		*p^{w}a-n (HP: 608)
spread, dry in sun	p^{h}aˀ	phɑ	phɑ			phà			
breast	paˀ 'paˀ	pɑ pɑ	pɑ 'pɑ						
wolf	laˀ	lɑ	lɑ	lɑ^{55}					

Taoping ‘yellow’ has /a/ rather than the expected /ɑ/; both /χa/ and /χɑ/ occur in Taoping, so there is no explanation for the vowel in this form. Yadu, Jiuzi ‘big’ have a fronted vowel following *ɹ-, which suggests variation at the PQ level. ‘Wolf’ is an old loan from Chinese láng (狼); the age of the loan can be seen by the lack of nasality. At an earlier stage, all finals were lost in Qiang, but recent Chinese loans maintain them; e.g., Taoping /ɳɑŋ^{55} ɳɑŋ^{55}/ ‘aunt (paternal)’.

The distinctions drawn by Hongyan /u, uˀ/ are not shared throughout Qiang. Both phonemes correspond to Mawo, Yadu /u/. SQ cognates of NQ /u/ forms have either /u/ or /o/ vowels. As discussed in Evans (2001: 150), the distinction between PSQ *u, *o is not clear. This also the case in Ronghong Yadu, as observed by LaPolla: “The functional loads of the /u/ - /o/ contrast and the /i/ - /e/ contrast are not very great: in many cases /o/ and /u/ are interchangeable, and /i/ and /e/ are interchangeable.” (LaPolla 2003: 25) This pattern is common in Tibeto-Burman, as observed by Benedict: “The high medial vowels *u and *i of TB are well maintained in Tibetan, Kachin and Lushei, but partial or complete replacement by lower vowels (o ~ e ~ a) is characteristic of Burmese, Garo and many other TB languages.” (1972: 75). A similar pattern may be observed in Lahu, in which “The mid-

row vowels /e, ə, o/ are particularly high, and are often in free variation with /i, ɨ, u/, especially after labial and velar initials." (Matisoff 1973: 10, ff.)

Taoping and Jiuzi, relatively conservative SQ dialects, have near total agreement on the occurrence of /u, o/ in the following two tables ('drum' is the only exception). Reflexes in these two varieties overwhelmingly prefer /u/ to /o/, suggesting that Hongyan /u, uˤ/ both correspond to PSQ *u. The following table presents cognates of Hongyan /u/ (the first syllable of Mianchi 'navel' has been affected by vowel harmony):

(23) Cognates of Hongyan /u/.

Gloss	*HY*	*Mawo*	*Yadu*	*Tao-ping*	*Mian-chi*	*Long-xi*	*Jiu-zi*	*PSQ*	*PTB*
kidney	χpu 'lu	ʂpu lu	ʂpul	χpə^{33} lo^{55}	pú lò	pú lù		*χpu-lo/u (526)	*pil/r ~ rpul (STEDT)
nine	rgu(ə)	rguə	zgʉə		gú	gú	ʁgue	*χguə (650)	*d-kəw ~ *d-gaw (13)
drum	rbu	rbu	zbə (zbu)	χbu^{241}	bù	bò	ʁbo	*χbu (262)	
wind	mu 'zu	mu ʁu	mo ʁu (mu ʁu)	mɑ^{33} ʁu^{55}		mù ʁó ~ mò ʁó		*χmu (866)-ʁu (1094)	
corpse	rmu		zmu		mó	mó	ə˞ mu	*mo/u (196)	*maŋ (HP 265)
high	bu	bu^{ɹ}		bu^{33}	bzú	bó	bɹu	*bru (965)	*m-raŋ (p43)
board	bu	bu	bu	bu^{33} ə^{ɹ33}			bu	*bu (86)	
hole	dzu	dʑu	(dzuɑ ʁzu)[9]	dʑo^{33}			ɟio	*dʑo (477)	*dwa(:)ŋ (169)
chest	ɹu	ɹu	jə			ʁó			

[9] 'Bore a hole', first morpheme is 'hole'.

Gloss	*HY*	*Mawo*	*Yadu*	*Tao-ping*	*Mian-chi*	*Long-xi*	*Jiu-zi*	*PSQ*	*PTB*
belly, navel	pu 'tʂa	qhuɑ pu-tʃ	'qhuɑ pə, (pu)	pɛ̀ tʂɨ́ tʂɨ	pɛ̀ tʂɨ́ tʂɨ́	qhuà pù	pu	*pu (63)	

Polymorphemic forms in the ‘belly’ set mean ‘navel’; the Longxi form is ‘intestines’. In addition to the above, there is an interesting set ‘sheep’, in which Yadu has disyllabic /ɳo wu/. NQ cognates correspond to the first syllable (Hongyan, Mawo /ɳu/), while SQ forms correspond to the second syllable (Mianchi /ioú/, Longxi /ió/, Jiuzi /u/, Taoping /sɑ^{31}u^{33}/).

Among the cognates of /u^{ʕ}/ forms, ‘all’, ‘deer’, and ‘forehead’ show low vowels in SQ, corresponding to the lowering of the pharyngealized vowel in Hongyan. The first vowel in Longxi ‘forehead’ has been raised by vowel harmony. Both Mianchi and Longxi forms show a preference for /o/ over /u/ among cognates of /u^{ʕ}/, although /u, o/ are roughly equally distributed among cognates of Hongyan /u/. Among Taoping and Jiuzi cognates of both /u, u^{ʕ}/, /u/ is much more common than /o/:

(24) Cognates of Hongyan /u^{ʕ}/.

Gloss	*HY*	*Mawo*	*Yadu*	*Tao-ping*	*Mian-chi*	*Long-xi*	*Jiuzi*	*PSQ*	*PTB*
all, every	zuː^{ʕ}		wu, [10] (zuː)	zɑ^{241}				*za/ɑ	
deer	zdu^{ʕ}	zdu	zdu	χdɑ^{33}	dá			*χdɑ (229)	
forehead	zdu^{ʕ}	zdu ʂku	zdu ʂku	da^{31} χku^{33}		deú kù	da ʁbu	*da - χku (377)	
horse	ɹu^{ʕ}	ɹu	wə, (ɹu)	ʐu^{55}	ʐò	ʁò	ɹu	*Cr o/u	*m-raŋ (145)

[10] Ronghong Yadu ‘all’, ‘horse’ are members of these cognate sets, (R. LaPolla, p.c.)

Gloss	*HY*	*Mawo*	*Yadu*	*Tao-ping*	*Mian-chi*	*Long-xi*	*Jiuzi*	*PSQ*	*PTB*
								(487)	
swim	ʁluˤ		ʁlu			ʁǿ là			
silver	ŋuˤ 'zə	ŋuə zi	ŋuə	χŋu^{55}	ŋó	ŋú	ʁŋu	*χŋu (852)	*d-ŋul (pp15-16)
meet	tsuˤʁ	rmu tsu	tu 'tsu	a^{55}tsu^{33} pɑ^{33}	mè tsò	tsó pà		*ts o/u- pɑ (290)	
ditch, valley	χuˤtʂ	χuʂ	χotʂ (χuʂ)	tsuə^{33} χu^{33}	tsuè χoù			*tsuə - χu (1061-242)	*k(l)uk ~ *klu(ː)ŋ (127, HP 287)
jump	qhsuˤ	qhsu	χsu (qhsu qhsu)	tshu^{33}	soú	tshó (tà)	(tɤ) ts'u	*qhs u/o- tɑ (523)	
fear	quˤ	qu	qu	qu^{33}	kòu	qò	qu	*q o/u (327)	*k/grok ~ *k/grak (473, HP 327)
family, home	'tsa quˤ	quːʁ	qu 'pi	tɕi^{55} ko^{33}	tɕì qó	qò	ci ko	*tɕ e/i-k/q o (492)	
spine	tsuˤɹ		tsuːʁ			tsù bò ɹà ká	de su		
tower	ʁluˤ				ló dzʮ	tɕé ʁù			
rock, stone	ʁluˤ 'pi	ʁlu pi	ʁlu 'ɸi	ʁo^{241}	lò	ʁò piá	ɣo	*χlo (933)	*r-luŋ (88, HP 47)
sky	muˤ tuˤ	mu tup	mu 'tu	χmə^{33} da^{241} pə^{33}	mú pià	mù tó		*χmu (866)	*(r-)məw (488)
plow (n.)	tuˤ		tuəq			tò		*to (722)	
walnut	ɹguˤ				ʁò lò				

Gloss	*HY*	*Mawo*	*Yadu*	*Tao-ping*	*Mian-chi*	*Long-xi*	*Jiuzi*	*PSQ*	*PTB*
hail	'lu zuˤ	zu	zu						

The mid vowel pair /ə, əˤ/ of Hongyan is difficult to compare across dialects, because of vowel harmony in compounds (to which /ə/ is especially prone), and because there are few monosyllabic cognate sets. Hongyan /ə/ corresponds to three different PSQ vowels (*ɨ, *u, *i), as shown below. Taoping and Ekou Yadu show variation between /i, ə/ for the morpheme 'two'; cf. Taoping /(χ)nə^{31} sɑ^{33}/ 'twenty'; Ekou /jɪ/ 'two', /hɑ ɳə/ 'twelve'.

(25) Cognates of Hongyan /ə/.

Gloss	*HY*	*Mawo*	*Yadu*	*Taoping*	*Mian-chi*	*Longxi*	*Jiuzi*	*PSQ*	*PTB*
heavy	dzə	dzi	dzə	[dzɿ^{33}]	dzɨ	zɨ	dzɻ	*dzɨ (457)	*s-liy (95)
four	gzə̣	gzə̣	ɣzə̣	dʒɿ^{33}	zɨ	zɨ	dzɿ	*dzɨ (p149)	*b-liy (410)
six	χtʂə	χtʂə	χtʂuə	χtʂu^{33}	tʂóu	tsú	χtʂu	*χtʂu (860)	*d-ruk (411)
bee	bə	bə	bə	bə^{31} dʑy^{33}	bù-ʑoú	bù-iù	bʏ ɟio	*bu (130)	*bəw (27)
seven	stə	stə	ɕtɕə	ɕiŋ^{33}	nə́	ɕí	n̥ə	*sni (827)	*s-nis (5)
two	ɦia 'nə	ɣnə	jə	ɳi^{55}	nə̀	nə̀	nʏ	*(χ)ni ~ *(χ)nə (1031)	*g-ni-s (4)
money	'dzə.ku	dzi ku	dzə kʰuə̣	χgy^{33}	kó	dʑí gù		*dzi *χgu/y (616)	

The forms with PSQ *ɨ cognates come from PTB *-iy, while the PSQ *-i sets come from PTB *-is rhymes.

Correspondences of Hongyan /əˤ/ are quite regular, as shown in the cognates below. NQ has /ə/, as above with Hongyan /ə/. SQ varieties all have a high back component: Longxi /u/, Taoping and Jiuzi /uə/,[11] and Mianchi /u(e)/, which correspond to PSQ *uə (Evans 2001: 160).

[11] The phonemicization of this Jiuzi rhyme is this author's; the published version is given below in square brackets Jiuziying co-articulated initials represent a trans-phonologization of rounding from the nucleus to the initial, as can be seen in the following pairs, which include two phonemicizations of the same Jiuzi data. 'Mole' is a borrowing from Chinese:

Gloss	*Jiuzi (Wen)*	*Jiuzi (Evans)*	*Longxi*	*Mianchi*	*Taoping*
water	ptsʅ	tsuə	tsù	tsuè	tsuə^{33}
boy, son	tsʅ	tsɨ	tɕì	tsɨ	tʃʅ^{33}
small	ptʂʅ	tʂuə	-tsú (suffix)	-tsú (suffix)	
mole, wart (b)	tʂʅ	tʂɨ	tsɨ̌	tʂɨ̌	tʂʅ^{13}
chopsticks	bdɤ	duə	bə tɕá	dù [bdù]	duə^{33}
give birth	dɤ	də			də^{33}

(26) Correspondences of /əˤ/.

Gloss	*HY*	*Ma-wo*	*Yadu*	*Tao-ping*	*MC*	*Long-xi*	*Jiuzi*	*PSQ*	*PTB*
water	tsəˤ	tsə	tsə	tsuə^{33}	tsuɛ̀	tsù	/tsuə/ [ptsɿ]	*tsuə (p160)	*twəy (#168)
field	zəˤ	zə	zə	zuə^{33}	zuè	zù	/dzu̯ə/ [bzu̯]	*zuə (p160)	
fire	məˤ	mə	mə	mə^{31} khuə^{55} ‘smoke’	mú	mú		*mu (#351)	*məy (#290)
breath	məˤs		məs			mú sú			
poor	bəˤ	bɤ	bɑ ˈhɑ^{12} (bə χɑ)						

Among cognates of Hongyan /əˤ/, the consistent presence of /u/ in SQ, and the lack of /u/ in NQ cognates is the strongest evidence that Hongyan /ə, əˤ/ correspond to two different categories of rhyme at an earlier stage.

The following table summarizes the correspondences between Hongyan plain and velarized vowels and vowels in other varieties of Qiang:

[12] The vowel of the first syllable has harmonized with the second.

(27) Vowel Correspondences.

Northern			*Southern Qiang*					
HY	*Mawo*	*Yadu*	*PSQ*	*Tao-ping*	*Mian-chi*	*Long-xi*	*Jiuzi*	*Comments*
i	i	i	*ie, *iam	i(e)	i(e)	i(a)	i(e)	
iˤ (1)	e	e (ɛ)	*e	e	ɛ	e	e	
iˤ (2)	i	ie, ue	*G-a	(y)a	y/i-a	u/i-a	ua/ie	
a	a	e, ɑ	*a, *(i)e	ie	ɛ	a, e	a	
aˤ	ɑ	ɑ	*ɑ	ɑ	a	a	a	Yadu, Jiuzi /e/ /ɹ̩/ more common than /o/ in TP, JZ.
u	u	u, ə	*u	u, o	u, o	u, o	u, o	
uˤ (1)	u	u(ə)	*u	u, o	u, o	u, o	u, o	
uˤ (2)	u	u	*ɑ	ɑ, a	a	?	a	
ə (1)	ə, i	ə	*ɨ	ɨ	ɨ	ɨ	ɨ	
ə (2)	ə	(u)ə	*u	u	ou	u	u, o	
ə (3)	ə, i	ə	*i	i	ə	i, ə	ə, ɤ	
əˤ	ə, ɤ	ə	*u(ə)	ə	u(e)	u	uə	

From the above table and its supporting forms, the following observations may be drawn:

The vowel features of words that correspond to Hongyan [+/- pharyngealization] are not completely clear-cut. This is not surprising. Correspondence sets in Qiang (and in Qiangic) are often riddled with forms that deviate slightly from the dominant sound laws (Chang 1967, Evans 2001). There is also a lower level of cognacy than might be expected, given the relatively shallow time depth.

Within NQ, the distinction maintained by [+/- pharyngealization] in Hongyan is clearest in the sets that correspond to /i/ vs. /iˤ/ and /a/ vs. /aˤ/.

In addition to these two vowel oppositions, SQ (except Longxi) maintains a distinction between words that in Hongyan are distinguished by /ə, əˤ/. This distinction is actually clearer in the daughter forms than in the reconstruction of PSQ (see (25, 26), Evans 2001), which suggests that some revision of PSQ is needed.

The following section considers two possible sources of pharyngealization in Hongyan.

3. POSSIBLE ORIGINS OF PHARYNGEALIZATION IN HONGYAN.

One plausible scenario to consider is that PTB *-w- may have given rise to a backing of the nucleus in Hongyan reflexes. We observe this correspondence in the following forms:

(28) Hongyan V^{ʕ} corresponding to PTB *-w-.

Gloss	*HY*	*MW*	*Yadu*	*Tao-ping*	*Mian-chi*	*Long-xi*	*Jiuzi*	*PSQ*	*PTB*
pig	pji^{ʕ}	pi	pie	pa^{33}	pià	pià	pi(e)	*pia (708)	pwak (43)
yellow	χa^{ʕ}	χɑ	χɑʂ	χa^{55} χa^{33}	χá	χá		*χa-χa (1114)	*hwaːr ~ *yar (HP: 429)
water	tsə^{ʕ}	tsə	tsə	tsuə^{33}	tsuɛ̀	tsù	/tsuə/ [ptsɻ]	*tsuə (p160)	*twəy (#168)
light, bright	ɕi^{ʕ}	siu	ʂue (ʂuɑχ)	ɕya^{33}	ɕyá	ɕuá	sua	*ɕya (121)	
sole of foot	pa^{ʕ}	pɑ	pɑq, dʑoq-'pɑ		goù pà		ɟi pa χtie		*p^{w}a-n (HP: 608)

Although not as numerous, there are also non-pharyngealized vowels that correspond to PTB *-w- or to PSQ *-u-:

(29) Hongyan plain V corresponding to PSQ, PTB *-w-.

Gloss	*HY*	*MW*	*Yadu*	*Taoping*	*Mianchi*	*Longxi*	*Jiuzi*	*PSQ*	*PTB*
bear	ti	ti	tɕi	ti^{33}	tí	tɕá	ti	*tiam (51)	*d/t-wam (461)
nine	rgu(ə)	rguə	ʐguə		gú	gú	ʁgue	*χguə (650)	*d-kəw ~ *d-gaw (13)
hole	dzu	dʑu	(dzuɑ ʁzu)[13]	dʑo^{33}			ɟio	*dʑo (477)	*dwa(ː)ŋ (169)

A similar pattern is observed throughout the Qiangic branch, where there is a tendency for reflexes of PTB *-a to front and raise in the direction of /-i/. This tendency has been noted for Xixia and Tosu (known from historical records) by Nishida (1976), and for the whole Qiangic subfamily by Matisoff (2004). Matisoff, following 19th century European tradition, terms this effect "brightening." The phenomenon is not as straightforward as *-a > /i/. Rather, it is a tendency that occurs to varying degrees by cognate set and by language. Not surprisingly, the tendency to brighten is impeded by velar initials. The following sets of brightened and non-brightened cognates are a representative sample from Matisoff (2004); Xixia reconstructions cited therein are from Gong (1999), and extant Qiangic data are from Sun, et al. (1991). Where I have found Hongyan cognates, they are included:

(30) 'Borrow' PTB *r/s-ŋ(y)a

Xixia	njir^{2}	Ergong	ʐŋi	Guiqiong	ŋi^{55}
Mawo (NQ)	ŋuə sa	Muya	ŋɯ^{53}	Namuyi	ntʂhɳ^{55};ɳi^{33}
Taoping (SQ)	da^{241}ɳi^{33}	Queyu	tə^{35}ɳi^{55}	Shixing	ɳɛ^{35}

[13] 'Bore a hole', first morpheme is 'hole'.

(31) 'Child/son' PTB *za ~ *tsa

Xixia	zjɨ; zji[1]; zjij[2]	Taoping (SQ)	tʂi^{33}bzi̯^{33}	Ersu	ja^{55}dzɻ^{55}
Mawo (NQ)	tɕi: mi	Pumi Taoba	tɕĩ^{35}		
Hongyan	tɕi^{ʕ} 'mi^{ʕ}	Guiqiong	e^{55}le^{55}tsi^{33}		

(32) 'Come' PTB *la

Xixia	ljɨ[1]-rjar[1]	Taoping (SQ)	ly^{33}	Shixing	liu^{55}
Mawo (NQ)	ly	Muya	ri^{35}		

(33) 'Edge' PTB *m-dzya

Mawo (NQ)	zi ka	Pumi Dayang (Matisoff 1998)	dzɨ [dzɣ]	Queyu	zi^{55}kha^{53}
Pumi Taoba	zi^{35}pe^{35}	Muya	zyi^{35}	Shixing	zɿ^{33}la^{55}

(34) 'Flesh/meat/animal' PTB *sya

Xixia	tśhji[1]	Pumi Qinghua	ʃɤ^{55}	Namuyi	ʂɿ^{33}
Taoping (SQ)	tʃhɿ^{55}	Guiqiong	ɕi^{53}	Shixing	biɛ^{33}tshɛ^{55}
Pumi Taoba	ʂə ^{53}	Ersu	ʂɿ^{55}		

(35) 'Tongue' PTB *s-lya

Xixia	lhjwa[1]	Pumi Qinghua	ɬie^{55}qho^{55}	Namuyi	ji^{33}ɬɛ^{55}
Taoping (SQ)	zɿ^{31}qə^{55}	Ergong	vʑɛ	Shixing	ʂɿ^{55}
Pumi Taoba	ɬiɛ^{53}	Guiqiong	dzɻ^{35}		

With the exception of Muya, Qiangic 'eat' forms are both fronted and raised:

(36) 'Eat' PTB *dzya

Xixia	dzji[1]; dzjo[1]	Muya	ndzɯ^{35}	Shixing	dzɛ^{53}
Mawo (NQ)	dzə	Ersu	dzɿ^{33}		
Taoping (SQ)	dʒɿ^{33}	Namuyi	dzɿ^{53}		

(37) 'Forget' PTB *ma-t

Xixia	mjɨ[2]	Pumi Qinghua	thə^{13}mə^{13}	Shixing	mɛ̃^{33}
Mawo (NQ)	rmə	rGyalrong	kɐ jməs		
Taoping (SQ)	χmi^{55}	Pumi Taoba	nə^{35}mɛ̃^{53}		

In the case of PTB *-w- forms, the brighening effect is reduced. For ‘handspan’, the effect has been to raise *a to a high back vowel or glide in most cases:

(38) ‘Handspan’ PTB *m-twa

Mawo (NQ)	tɤ	Ersu	dzua^{55}	Namuyi	tʂu^{55}
Taoping (SQ)	tu^{33}	Ergong	tɕɯ	Shixing	tʂu^{55}
rGyalrong	tə twa	Muya	tɐ^{35}tɕuɯ^{55}		

The following languages have fronted reflexes:

(39) ‘Handspan’ (brightened)

Pumi Qinghua	tə^{55}tshyi^{55}	Queyu	tə^{35}tɕhi^{53}	Guiqiong	te^{33}tʃʮ^{55}

‘Five’ and ‘hoof’ show decidedly anti-fronting tendencies, due to velar influence. Although Hongyan ‘five’ appears to be an exception to this tendency, /ə/ is merely the default vowel for numerals in Hongyan. The Qiangic forms for ‘five’ suggest medial *-w- at the Proto-Qiangic level:

(40) ‘Five’ PTB *b/l-ŋa

Xixia	ŋwə^{2}	rGyalrong	kə mŋo	Ersu	ŋuaˈ^{33}
Mawo (NQ)	ʁua	Ergong	wŋuɛ	Namuyi	ŋa^{33}
Hongyan (NQ)	ʁuə	Muya	ŋa^{35}	Shixing	ɲã^{55}(ko^{33})
Taoping (SQ)	ʁua^{33}	Pumi Taoba	ŋuɐ^{55}	Guiqiong	ŋɛ̃^{35}
Queyu	ŋua^{55}tɕã^{53}	Pumi Qinghua	ɣuã^{55}		

(41) ‘Hoof’ PTB *kwa

Xixia	kwej^{1}	Pumi Qinghua	spa^{55}	Muya	quɐ^{33}tshɯ^{53}
Mawo (NQ)	ʁdzʮku	rGyalrong	ta ka	Guiqiong	nga^{35}
Pumi Taoba	kua^{55}ɬa^{55}	Ergong	zʮko	Ersu	nkhua^{55}

In contrast to medial *-w-, PTB initial *w- permits brightening, as in ‘axe’, ‘bird’, and ‘rain’:

(42) ‘axe’ PTB *r-p^{w}a

Xixia	wji^{1}	Ergong	lvi	Shixing	bi^{55}mi^{33}
Pumi Qinghua	spy^{55}	Guiqiong	pi^{55}zi^{55}		

(43) ‘bird’ PTB *wa

Xixia	we^{1}	Queyu	bõ^{35}wi^{55}	Guiqiong	wi^{55}tsi^{53}
Mawo (NQ)	wə				

(44) ‘rain’ PTB *g/r-wa

Xixia	dzjụ^{2}	Pumi Taoba	gui^{53}	Shixing	ɸui^{55}za^{55}
Hongyan (NQ)	mə^{ʕ} 'ʁi^{ʕ}	Pumi Qinghua	gui^{55}	Queyu	xu^{53}
Pumi Dayang	gwí	Ersu	gua^{33}		

In addition to *-w-, other velars can also impede brightening; cf. Pumi ‘chin’:

(45) ‘chin’ PTB *m-ka

Pumi Taoba	ma^{35}kɛ^{35}	Muya	mɐ^{55}ŋkhĩ^{55}	Guiqiong	nɛ^{33}nkø^{53}
Pumi Qinghua	mø^{13}ka^{55}	Queyu	mɛ^{35}khi^{53}	Ersu	ja^{55}dzɛ^{55}

Throughout the Qiangic family, then, PTB *-w- has attenuated the brightening tendencies of *-a. In Hongyan, *-w- appears to have led to a retraction of the tongue root (anti-brightening), resulting in pharyngealization. In some cases, NQ has high back vowels corresponding to Southern Qiang *a, *ɑ; the Hongyan cognates have a retracted vowel:

(46) SQ /a, ɑ/ corresponding to NQ /u, uˤ/.

gloss	*HY*	*Mawo*	*Yadu*	*Tao-ping*	*Mian-chi*	*Longxi*	*Jiuzi*	*PSQ*
all, every	zuːˤ		wu, (zuː)	zɑ^{241}				
deer	zduˤ	zdu	zdu	χdɑ^{33}	dá			*χdɑ (229)
forehead	zduˤ	zdu ʂku	zdu ʂku	da^{31} χku^{33}		deú kù	da ʁbu	*da - χku (377)

Once pharyngealization came into being in Hongyan, it could have spread through reinterpretation of certain plain vowels as pharyngealized variants of other vowels. This process would have led to a reduced vowel inventory, which we observed in section 1.1. In Hongyan, a lowered and retracted /iˤ/ appears to have absorbed PQ *e. Note that Hongyan [iˤ] is impressionistically similar to [e] in other languages:

(47) Hongyan /iˤ/ corresponding to /e/ (copied from (17)).

Gloss	*HY*	*Mawo*	*Yadu*	*Tao-ping*	*Mian-chi*	*Long-xi*	*Jiu-zi*	*PSQ*	*PTB*
needle	χiˤ	χe	χa (χɛ)	χe^{55}	χè	χé ~ χèi	xe	*χe (640)	*kap (52), *k-rap (HP: 336)
plate	biˤ	be	pe	be^{33}					
steam (n.)	liˤ	lʁ	lue				le		

Another possible influence in the development of pharyngealization in Hongyan is the presence of phonemic velarization in the geographically nearest Qiangic neighbour to Hongyan, namely the rGyalrongic languages (cf. J. Sun 2000, 2004). All rGyalrongic languages contain plain and velarized vowels, in which "the dorsum of the tongue [is] arched toward the

soft palate" (J. Sun 2000: 215). In the Puxi variety of Shangzhai, we observe the following contrastive pairs (ibid.):

(48) Puxi (rGyalrongic) velarization pairs.

/zə/	'male person'	/rtsʌ/	'root'	/spu/	'solid food in soup'
/zəˠ/	'to be tender'	/rtsʌˠ/	'deer'	/spuˠ/	'lid'

Although widespread in rGyalrongic, velarization appears to be a secondary development, as in the following sets, where Puxi velarized vowels correspond to back rounded vowels in other rGyalrongic languages (ibid.):

(49) Cognates of Puxi (rGyalrongic) velarization.

Gloss	*Puxi*	*Geshizha*	*Mu'erzong*	*Caodeng*	*Zhuokeji*
'hail'	lmə̲ˠ	lmu	lmoʔ	tə-rmu	tə-rmo
'to be fat'	tsʰəˠ	tsʰuə	tsʰoʔ	tsʰo	tsʰo
'to melt'	dʒvəˠ	dʑə	dʑə	ⁿdʒwiʔ	
'to dare'	znə̲ˠ	snə	mnə	'nos	nos

J. Sun notes that "When Professor Huang Bufan joined me in my Luoxi Lavrung sessions in Fall 2002, she commented that the Luoxi velarized vowels sounded like what she had previously described as 'tense vowels' in Muya (see Huang 1991: 101)" (J. Sun 2004: 272n).

Velarization and pharyngealization are very similar acoustic effects, as mentioned by Ladefoged: "There is very little difference between velarized and pharyngealized sounds, and no language distinguishes between the two possibilities" (1982: 211). Correspondences among Qiangic languages are not adequately regular to reconstruct a Proto-Qiangic vowel system, much less its suprasegmental features. There is no evidence thus far to suggest that rGyalrongic velarization and Qiang pharyngealization are shared innovations from Proto-Qiangic. It is also not clear to what extent

rGyalrongic languages have had contact with Hongyan or other varieties of Qiang spoken in Heishui County.

Given the undeniable presence of pharyngealization in at least one dialect of Qiang, velarization in the entire rGyalrongic branch (and possibly Muya), it is strongly recommended that those doing fieldwork on Qiangic languages keep an ear open for (post-)velarization in their vowel systems.

ABBREVIATIONS

DIR	directional marker	PQ(ic)	Proto-Qiang(ic)
G	glide	PSQ	Proto-Southern Qiang
HY	Hongyan	PQ'ic	Proto-Qiangic
V	vowel	PTB	Proto-Tibeto-Burman
NQ	Northern Qiang	SQ	Southern Qiang

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