Lost syllables and tone contour in Dzongkha (Bhutan)

Boyd Michailovsky, Martine Mazaudon

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1. Introduction

In the present article[1] we will point out a hitherto undescribed phonological opposition in Dzongkha, the national language of Bhutan, and attempt to trace its origin by comparison with the forms of Classical Tibetan.

The contrast between high and low register words in Central Tibetan and its relationship to the voicing opposition of Tibetan orthography has been long established (Jäschke, 1881:xiii). Later authors, among them prominently Dr R. K. Sprigg, have devoted much attention to refining the analysis (Sprigg, 1954, 1955) and extending it to other dialects, for instance in Sprigg (1966) and mainly Sprigg (1972) which underlines the role of initial clusters. For Dzongkha, the same evolution was recently described by Weidert (1986).

The object of our study is a different contrast, between a level and a falling melodic contour, which intersects with the above mentioned register opposition. A contour contrast has also been described for Lhasa Tibetan by Richter (1964:33-36) and Chang and Chang (1978:1.xix-xxxi). But the Dzongkha contrast differs in many respects: in phonetic realisation, lexical distribution, and historical origin. A common feature is the regressive nature of the transphonologisation. As it appears, a major source of the level vs falling contour opposition in Dzongkha is the reduction of one type of Classical Tibetan disyllables to monosyllables – yet another way of 'reloading the syllable canon' (Matisoff, 1986).

1.1 Dzongkha and Ngalong

'Ngalong' is the name given in Bhutan to the inhabitants of the western third of the country and to their language, which linguistically is a Tibetan dialect. Ngalong itself has several regional dialects, with considerable phonological differences between them. Standard Dzongkha,

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the official 'court language', is said to be close to the Ngalong of the capital Thimphu and to that of Punakha, although there may be some differences. Other varieties commonly cited by Bhutanese are the western dialects of Ha (the westernmost) and Paro, and the eastern dialect, Sha (WT *shar* 'east'), spoken between Wangdi Phodrang and the Pele-la, which marks the eastern limit of Ngalong speech. The speech of Chapcha, about 40 km. south of Thimphu, is also a distinct dialect.

The languages spoken in central and eastern Bhutan are members of the Tibeto-Burman family, but not Tibetan dialects. The main language of central Bhutan is generally called Bumthang, and that of eastern Bhutan Sharchop (or Tsangla). Dzongkha is taught in schools and used as an official language throughout Bhutan.

It should be noted that Dzongkha (WT **rdzong-kha**, lit. 'fortress-language') is not the same as Den-jong-ke (WT **'bras-ljongs-skad**, lit. 'rice-district-language', variously romanized), which is a related Tibetan dialect spoken in Sikkim.

1.2 The data

The present article is based on short periods of fieldwork by the authors in 1977 and in 1986. In January and February 1977 both authors worked in New Delhi with a native of Chapcha district. Our understanding of Dzongkha tone is based mainly on this work. In 1986 one of us (B.M.) spent two months in Bhutan, during which he was able to work a number of hours with a young native speaker of Thimphu dialect, from a village within sight of Thimphu Dzong. All of our earlier examples were checked with this speaker, and the notation in this article is based on these notes. The prosodic system appeared to be similar to that of Chapcha. Some notes were also taken with a Paro speaker.

The article is based on the study of Dzongkha monosyllabic nouns and adjectives. We have not been able to work on the phonology of polysyllables as yet, but it is clear, as Sprigg (1954:146-156, 1955) has demonstrated for Lhasa Tibetan, that the phonology of polysyllables is not that of a string of monosyllables. The domain of tone, in particular, is larger than the syllable. Verbs were generally excluded from the present study, because we were uncertain of their morphology, but some of the nouns and adjectives included are probably verbal derivatives.

2. Dzongkha phonology

2.1 Initials

Dzongkha initials are transcribed as in table 1.

There are four series of initial stops: voiceless, aspirated, voiced, and devoiced, and three of sibilants (the same, less the aspirates). The voiceless and aspirate series are associated with the high register, the voiced and devoiced series with the low register. Bhutanese from the central and eastern parts of the country, who are not native Ngalong speakers, generally confuse the voiced and devoiced series, pronouncing all low-register initials as voiced. (This applies to the majority of Dzongkha language teachers in Bhutan.)

Table 1: Dzongkha initial consonants

stops	k	kh	g	gh
	c	ch	j	jh
	ts	tsh	dz	dzh
	t	th	d	dh
	tr	thr	dr	dhr
	p	ph	b	bh
	pç	pçh	bj	bjh
sibilants	ç		ʐ	ʐh
	s		z	zh

nasals	ng	ny	n	m
voiceless nasals	hn	hm		
liquids	r	l		
voiceless liquid	hl			
glides	y	w		
aspirate	h			

The transcriptions **tr**, **thr**, **dr**, **dhr** represent retroflex initials; **pç**, **pçh**, **bj**, **bjh** represent bilabials with palatal affrication, e.g. [**pç**], etc. This latter series has merged with the palatals **c**, **ch**, **j**, **jh** in the western dialects (as in Central Tibetan): thus Thimphu ^{L}**bjha** 'bird' (WT *bya*) is ^{L}**jha** in Paro, homophonous with 'tea' (WT *ja*).

Voiced nasals, liquids, and glides may be either high- or low-register, except for **r**, which appears to be only low.

Voiceless nasals (**hn**, **hm**), which are high-register, are found in some dialects, but have generally merged with **h** in Thimphu. Thus Chapcha ^{1}**hnap** 'snot' (WT *snabs*) corresponds to Thimphu ^{1}**hap** and to Paro ^{H}**hlap**. Chapcha ^{1}**hnum** 'oil' (WT *snum*) corresponds to ^{1}**hum** in Thimphu. The voiceless liquid **hl** is also less frequent in Thimphu than elsewhere: Chapcha and Paro ^{1}**hlam** 'traditional boot' (WT *hlam*) correspond to Thimphu ^{1}**ham**.

Voiceless initial **h** is high-register, as are non-breathy vocalic initials. Words here transcribed with initial **h** and low register could equally well be regarded as having low-register (and breathy) vocalic initials.

2.2 Rhymes

The rhymes of Dzongkha monosyllables are summarized in table 2.

Table 2: Dzongkha rhymes

Rhyme	Associated contour
-V	short open: level (no distinctive contour)
-Vː -Ṽː -Vp -Vm –Vn	long open and short closed: level vs falling contour distinction (except with final -n)
-Vu -aːu -Vːp -Vːm	diphthong and long closed: falling (no distinctive contour) (with a few exceptions)

The inventory of Dzongkha vowel qualities is as follows: i, e, ɛ, a, o, oe, u, ue. The open ɛ and the front rounded oe, ue (IPA [ø], [y]) derive mainly from a kind of umlaut by which a, o, u were fronted before dental finals. (Fronted a seems to have given e in some cases.) In short, open monosyllables there is no opposition between e and ɛ (the realization is rather open), and oe and ue are rare. Length (ː) is phonologically distinctive. Nasalization (˜) is also distinctive, but there is no opposition of length on nasalized vowels, which are realised as long. The diphthongs (found only in open syllables) are ai (in ²ai 'mother'), au, aːu, iu, eu, ɛu, ou and perhaps oeu.

One feature which the non-standard dialects seem to share is the pronunciation õː (perhaps with an open o) corresponding to WT *-ang*, e.g. ^Hlõː 'bullock' in Paro, Chapcha, and Sha, vs Thimphu ^Hlãː (WT *glang*).

The final consonants found on monosyllabic nouns are p, m, n. Before n only the short vowels i, e, ɛ, oe, ue are found.

2.3 Tones

Dzongkha has a four-tone system, in which a high vs low register distinction (found in all syllable types) intersects with a level vs falling contour opposition (on some syllable types only--see below). We have numbered the tones in the order of their absolute pitch: [1] high-level, [2] high-falling, [3] low level, [4] low falling. On short open syllables, and on monosyllables in final -n, which have no distinctive contour, we have noted the registers as [H] and [L]. Where we were uncertain of the contour, we have noted ^H and ^L. (It is not clear that there is a tone contour opposition in the Paro dialect.)

The tonal contours are the most original aspect of Dzongkha phonology and require phonetic description. The melodic aspects of the tones may be seen in the pitch-extraction tracings of

Figure 1 (based on utterances of a male speaker from Chapcha) and Figure 2 (a female speaker from Thimphu). Each tracing contains, from top to bottom, the acoustic signal, the integrated acoustic signal (a measure of intensity), and the fundamental frequency (Fo), corresponding to the tone melody.

The contour opposition is clearest on long, open syllables: tones 1 and 3 rise slightly and end with a glottal stop, while tones 2 and 4 tend to fall, and end smoothly. (See the top row of Figure 1 for low-register examples; similar contours are found in the high register.)

^{1}paː	a cut of meat
^{2}paː	picture, photograph
^{3}bjaː	standing paddy
^{4}bjaː	summer
^{3}dhoː	a porter's load
^{4}dhoː	a pair (of oxen)
^{3}dzeː	leprosy
^{4}dzeː	peg, wedge
^{1}çeː	to know
^{2}çeː	glass

The contours are realised similarly on nasal vowels:

^{1}kãː	marrow
^{2}kãː	to pour
^{1}kõː	scabies
^{2}khõː	they
^{1}sũː	story

Before the finals **-p** and **-m**, the tone contours were more difficult to record consistently, and there may be some errors in our transcriptions. Before final **-m**, the glottalization of tones 1 and 3 is still heard; in addition these tones may be somewhat higher than tones 2 and 4. The top row of Figure 2 shows the melodic contour of all four tones with final **-m**. The same contour difference[2] (in the high register) is seen in context in the bottom row of Figure 1.

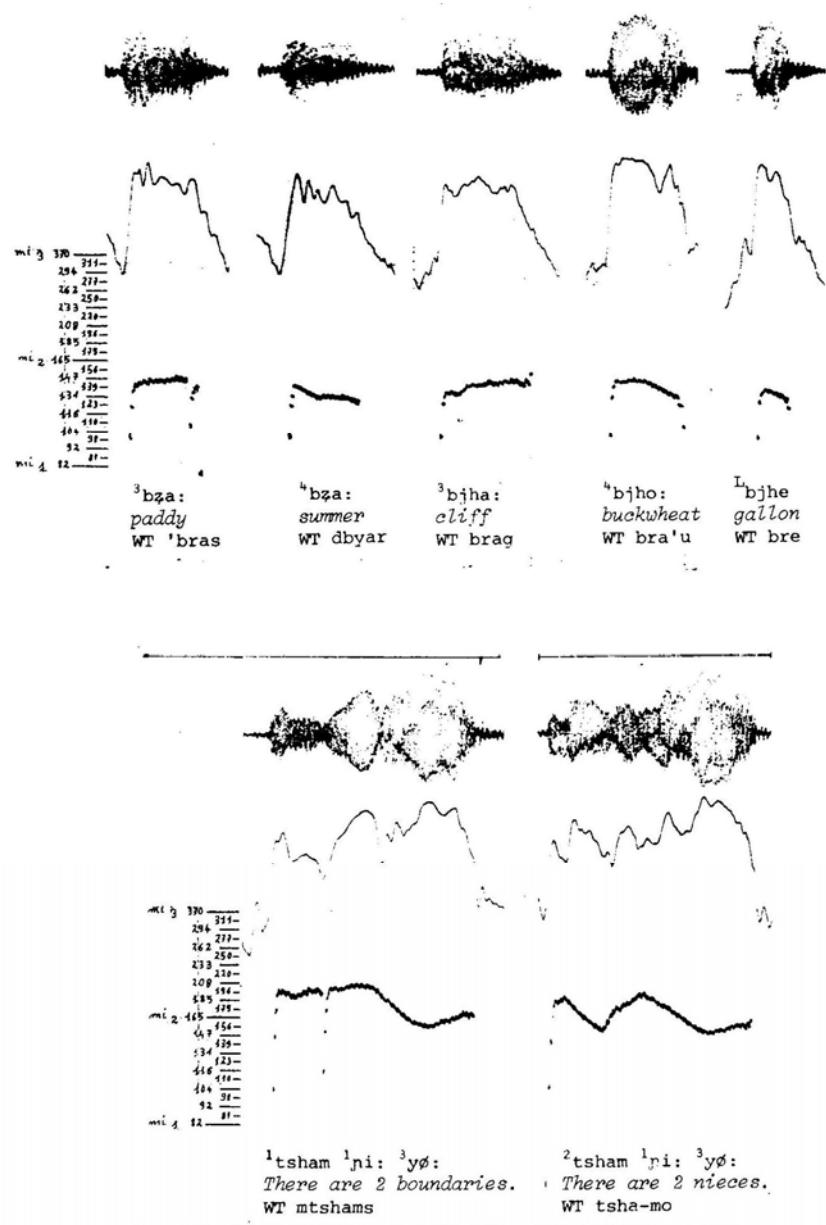|	
^{1}sum	three
^{2}sum	charm, locket
^{3}dzim	tongs
^{4}dzim	eyebrow
^{1}sem	feelings
^{2}sem	bean; syphilis
^{1}chim	liver
^{2}chim	house
^{1}tsham	boundary
^{2}tsham	niece
^{1}kaːm	leg
^{2}kaːm	star

Fig 1. Tone melodies (F$_0$) of a male speaker from Chapcha
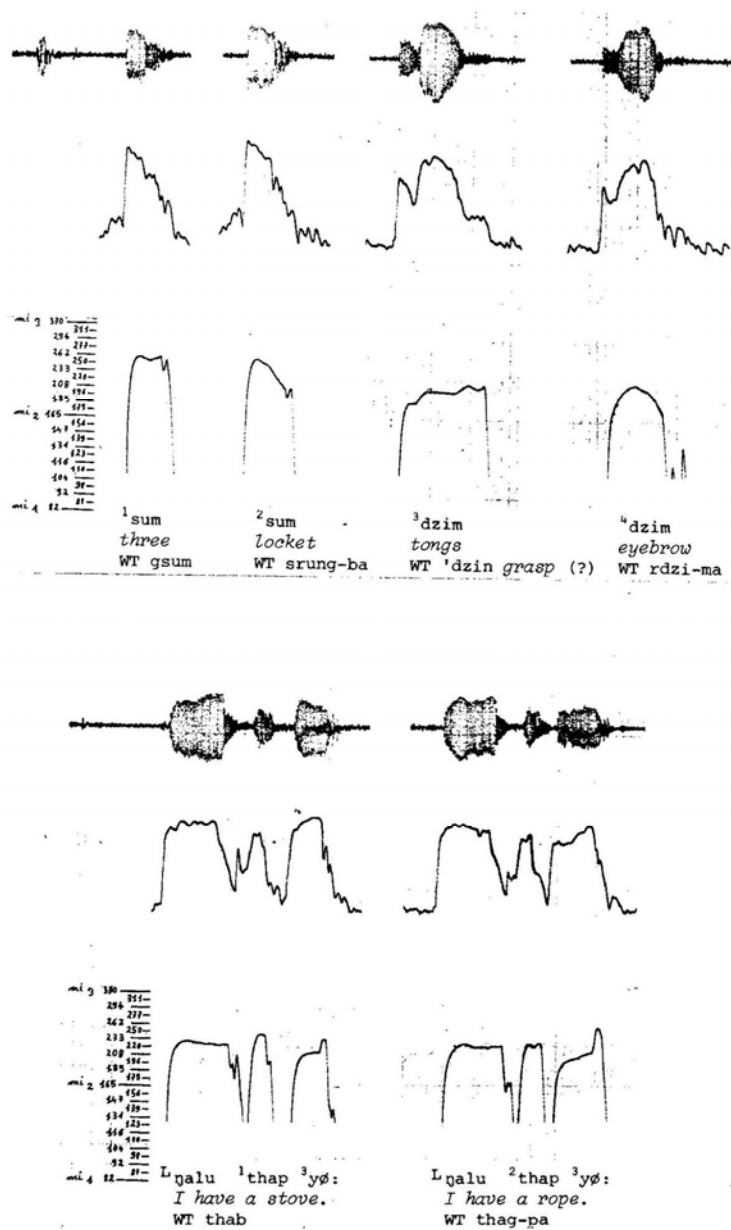
Figure 2: Tone melodies (F₀) of a female speaker from Thimphu

Before final **-p**, the main difference noted was one of absolute pitch; this difference was heard more clearly in the high than in the low register. The bottom row of Figure 2 shows the difference in pitch, in context, between short tone 1 and 2 monosyllables in final **-p**. No contour difference is apparent. We do not have clear examples in the low register.

¹thap	stove
²thap	rope
¹ɕoːp	a lie
²ɕoːp	wing
¹sep	stallion
²kep	waist
¹sap	bit
²tap	the back of a blade

3. The history of Dzongkha rhymes

Dzongkha monosyllabic nouns derive historically from both monosyllables and disyllables (as evidenced by Written Tibetan). Table 3 shows the origin of Dzongkha syllable types with respect to two parameters of the ancestral forms: the rhyme (without regard to vowel quality) of the WT first syllable (or only syllable in the case of a WT monosyllable) on the vertical axis, and the nature (essentially the initial) of the WT second syllable (if any) on the horizontal axis. The WT second syllables which have most frequently entered into the formation of Dzongkha monosyllabic nouns are the suffixes *-ba*, *-bo*, *-'u*, *-pa*, *-po*, *-ma*, *-mo.*

3.1 Classical Tibetan Monosyllables

The Dzongkha reflexes of classical Tibetan monosyllables are shown in the first column of the table. They are monosyllables, either (1) open (of all prosodic types) or (2) closed, short, and level-toned.

3.1.1 WT *CV* > Dz CV (short)

Old open syllables yield modern open syllables. There is no contour contrast and the pitch is phonetically level (at least for the high tone). The vowel is short, and its quality is generally maintained.

ᴴkha	mouth	WT *kha*
ᴸga	saddle	WT *sga*
ᴸgha	who? which?	WT *ga*
ᴴnga	five	WT *lnga*
ᴴnga	drum	WT *rnga*

ᴸnga (register varies grammatically)	I	WT *nga*
ᴴca	hair	WT *skra*
ᴴcha	pair (of shoes)	WT *cha*
ᴸjha	tea	WT *ja*
ᴸnya	fish	WT *nya*
ᴴtsa	grass	WT *rtswa*
ᴴtsa	vein, ligament	WT *rtsa*
ᴴtsa	twenty (in higher numbers)	WT *rtsa*
ᴴtsha	salt	WT *tshwa*
ᴴta	horse	WT *rta*
ᴸda	arrow	WT *mda*
ᴸbha	cow	WT *ba*
ᴴpça	monkey	WT *spra*
ᴸbjha	bird	WT *bya*
ᴴma	wound	WT *rma*

Table 3: The development of Dzongkha rhymes from Common Tibetan (≈WT)

		WT mono-syllables	WT disyllables		
WT 1st syllable: / WT 2nd syllable:		Ø	*-ba, -bo, -'u*	*-pa, -po,...*	*-ma, -mo,...*
-V		-V ( )	-Vu (falling)		
-VC	*-b*	-Vp (level)		-Vp (falling)	-Vm (falling)
	-d	-V: (level)			
	-g				
	-s				
-VC	*-r*	-V: (falling)	-V(:)u (falling)	-V:p (falling)	-V:m (falling)
	-l				
-VN	*-m*	-Vm (level)		-Vm (falling)	
	-n	-Vn ( )			
	-ng	-Ṽ: (level)		-V(:)m (falling)	
		-Ṽ: (falling)			

^{L}ya	one of a pair	WT *ya*
^{L}ra	goat	WT *ra*
^{L}la	mountain	WT *la* 'pass'
^{L}wa	wooden tub	WT *wa* 'channel'
^{H}ça	meat, flesh	WT *sha*
^{H}sa	earth	WT *sa*
^{L}ghi	knife	WT *gri*
^{H}chi	dog	WT *khyi*
^{L}ni	this	WT *'di*
^{H}mi	man, person	WT *mi*
^{L}ri	forest, hill	WT *ri*
^{H}lue ~ ^{H}li	pear-apple	WT *sli, gli*
^{L}ʑi	four	WT *bzhi*
^{L}zi	ornament-stone	WT *gzi*
^{L}gu	nine	WT *dgu*
^{H}cu	ten	WT *bcu*
^{H}chu	water, urine	WT *chu*
^{H}tu	vagina	WT *stu*
^{L}dhru	boat	WT *gru*
^{H}pu	body-hair	WT *spu*
^{L}bhu	son	WT *bu*
^{L}bju	grain	WT *'bru*
^{L}ʑu	bow (weapon)	WT *gzhu*
^{H}ue ~ ^{H}yu	turquoise	WT *g.yu*
^{H}khe	a cereal grain	WT *khre* 'millet'
^{H}ce	tongue	WT *lce*
^{L}je	penis	WT *mje*
^{H}pçhi	flour	WT *phye*
^{L}bjhe	measure, gallon	WT *bre*
^{L}mi	fire	WT *me*
^{L}zʰe	peak, ridge	WT *ze*
^{H}kho	he	WT *kho*
^{L}gu	head	WT *mgo*
^{L}go	door	WT *sgo*
^{H}tsho	lake	WT *mtsho*
^{H}to	cooked rice, dinner	WT *lto*
^{H}tho	span, distance between outstretched thumb and index	WT *mtho*

^{L}do	stone	WT *rdo*
^{L}dho	double measure	WT *do*
^{H}pho	male	WT *pho*
^{L}ba	measure of volume, equal to 20 ^{L}bjhe	WT *'bo*
^{L}mo	she, a female	WT *mo*
^{H}lo	cough	WT *glo*
^{H}lo	heart, mind	WT *blo*
^{L}lo	year	WT *lo*
^{H}ço	dice	WT *sho*
^{L}ʑho	yoghurt	WT *zho*
^{H}so	tooth	WT *so*

Anomalous examples in our data:

^{1}tsaː	rust	WT *btsa*
^{4}rau	horn	WT *rwa*
^{2}uː	head (h)	WT *dbu*
$^{<L>}$bup	insect, worm	WT *'bu* (?via **'bu-pa*)
^{3}dzeː	leprosy	WT *mdze*
^{1}nyoeː	edge of a blade	WT *dngo*

3.1.2 WT *CVC (stop finals -b -d -g -s)* > Dz. CVp/CVː (level contour)

WT bilabial finals are maintained in monosyllables. Thus, with final **-b**:

$^{<L>}$jap	behind	WT *rgyab*
^{1}thap	hearth	WT *thab*
^{3}yap	stirrup	WT *yob, yab*
^{3}yap	father (h)	WT *yab*
$^{<H>}$çap	wedge	WT *tsab*
$^{4?}$ʑhap	leg (h) majesty	WT *zhabs*
^{1}sap	bit (of horse)	WT *srabs* 'bridle, reins'
^{1}hap ~ ^{1}hnap	snot	WT *snabs*
^{1}khep	cover (e.g. of cloth)	WT *khebs*
^{1}sep	stallion	WT *gseb*
^{1}çop	lie, falsehood	WT *shob*

irregular:

^{1}phoː	yeast	WT *phab*
^{1}loː	word, talk	WT *slob*

The other final occlusives are lost, leaving a long, open syllable with level tone.

¹caː	iron	WT *lcags*
¹chaː	hand (h)	WT *phyag*
¹taː	tiger	WT *stag*
¹thraː	blood	WT *khrag*
¹naː	pus	WT *rnag*
¹paː	cut of meat	WT *spags* 'food'
³bjhaː	cliff	WT *brag*
¹yaː	yak	WT *g.yag*
³raː	brass	WT *rag*
³laː	measure of length, hand (i.e. a hand's width)	WT *lag*
¹ciː	one	WT *gcigs*
¹tshiː	joint	WT *tshigs*
¹tshiː	sentence, word	WT *tshig*
¹thiː	line	WT *thig*
³ziː	leopard	WT *gzig*
³druː	dragon	WT *'brug*
³dhruː	six	WT *drug*
³luː	sheep	WT *lug*
³zuː	body	WT *gzugs*
³zʰuː	pain	WT *zug*
¹uː	breath (especially the last breath)	WT *dbugs*
¹teː	shelf	WT *stegs*
¹tshoː	dinner (h)	WT *tshogs* 'assembly'
¹thoː	storey	WT *thog*

irregular:

³gip	rubber	WT *'gyig, sgyigs* (?via **'gyig-pa*)
³bũː	breath	WT *dbugs*

WT final *-d* has had a fronting effect on old *a*, *o*, and *u*, as in Lhasa Tibetan.

¹keː	noise, speech	WT *skad*
³gɛː	eight	WT *brgyad*
¹cheː	a fine	WT *chad*
³neː	illness	WT *nad*
³giː	measure of length: fist and thumb	WT *khyid* 'fist'
¹lueː	body image for exorcism	WT *blud*

³luːe	manure	WT *lud*
¹pɕheː	half	WT *phyed*
⁴ghoeː	measure, about 2.5 kg. of butter	WT *grod(-pa)* 'belly'
¹choeː	you (sg.)	WT *khyod*
³dhroeː	heat, fever	WT *drod*

irregular:

³gep	alms, lama's fee	WT *'gyed*

WT final **-s**, which also has produced umlaut in Central Tibetan, only does so sporadically in Dzongkha, and probably as the result of Central Tibetan influence.

³dzeː	gunpowder, explosives	WT *rdzas*
³naː	barley	WT *nas*
³bjaː	paddy (in the field)	WT *'bras*
³reː	unhusked rice	WT *'bras*
³reː	wick	WT *ras*
³laː	work	WT *las*
¹seː	prince	WT *sras*
¹hãː	pillow	WT *sngas*
¹nyiː	two	WT *gnyis*
¹tsiː	account	WT *rtsis*
³ʑiː	estate	WT *gzhis*
³dhueː	time	WT *dus*
³buː	centre	WT *dbus*
³ghoː	man's robe, clothing	WT *gos*
¹choː	religion, scripture	WT *chos*
³dhoː	load	WT *dos*

3.1.3 WT *CVC* (liquid finals *-r -l*) > Dz. CVː (long, falling contour)

The WT final liquids (**-r**, **-l**) are lost, with compensatory lengthening. The tone is falling.

⁴gaː	herder's camp	WT *sgar*
²tshaː	cane, bamboo strips	WT *tshar*
²paː ~ ²pãː	picture, photograph	WT *par*
²phaː	there	WT *phar* 'away'
⁴bjaː	summer	WT *dbyar*
⁴maː	butter	WT *mar*
⁴maː	down	WT *mar*
⁴yaː	up	WT *yar*

²ça:	person from Eastern Wangdi District	WT *shar*
⁴ghũ:	tent	WT *gur*
<L>ze:	nail, peg	WT *gzer*
²se: ~ ²sẽ:	gold	WT *gser*
⁴dho:	pair (of bullocks)	WT *dor*
⁴no:	cow, cattle	WT *nor* 'wealth'
²so:	a measure equal to the width of a finger	WT *sor*

WT *-l*, like *-d*, palatalizes the vowel (as in Central Tibetan).

²khe:	load (of an animal), twenty	WT *khal*
⁴ghe:	line, row	WT *gral*
²thre:	tax	WT *khral*
⁴bhe:	wool	WT *bal*
⁴ʑhe:	face (h)	WT *zhal*
²si:	cool (weather)	WT *bsil*
²ngue:	silver, money	WT *dngul*
⁴bue:	snake	WT *sbrul*
²ue:	country, home region of Bhutan	WT *yul*
⁴dhrĩ: ~ ⁴dhre:	mule	WT *drel, dre-mo* 'she-mule'
²çe:	glass	WT *shel*

3.1.4 WT *CVN* > Dz. CVm level / CVn level/ CṼ: falling (except some *-ng*)

As with the stop finals, the bilabial, *-m*, is preserved, and the vowel remains short. The tone is generally level:

¹cham	mask dance	WT *'cham*
¹tsham	boundary; meditation, retreat	WT *mtshams*
³dam	mud	WT *'dam*
²nam	sky	WT *gnam*
³lam	road	WT *lam*
¹ham ~ ¹hlam	Tibetan-style boot, shoe	WT *lham*
<L>zim	sleep (h)	WT *gzim*
¹sum	three	WT *gsum*
¹hum ~ ¹hnum	oil, grease	WT *snum*
¹sem	heart, feelings	WT *sems*
³drom	box	WT *sgrom*

Irregular (falling):

[2]chim	house	WT *khyim*
? [2]heːm	shovel	WT *khyem, khem*
[4]dhom	bear	WT *dom*

WT *-n* is also preserved in the dialect of Thimphu, leaving a short vowel; the tone is again level and the vowel palatalized. There is apparently no contour opposition before *-n*, probably because almost all examples derive from monosyllables (the exception known to us is [1]soen 'seed' (WT *sa-bon*)). In the dialect of Chapcha, WT final *-n* has often been lost, leaving a long nasalized vowel with falling contour, e.g. [4]dẽː 'carpet', [2]pçhẽː 'fart'.

[H]cen	eye (h)	WT *spyan*
[H]nyen	ear (h)	WT *snyan*
[L]nyen	to listen	WT *nyan*
[L]den	sleeping-carpet	WT *gdan*
[H]men	medicine	WT *sman*
[L]len	answer	WT *lan*
[H]pçin	glue, gum	WT *spyin*
[L]duen	seven	WT *bdun*
[H]pçhen	fart	WT *phyen*
[L]ghoen	cucumber	WT *gon*
[H]tsoen	prisoner	WT *btson*
[H]poen	king, lord	WT *dpon*
[2]õẽː	left	WT *g.yon*

WT *-ng* is lost, leaving a long nasalized vowel; the tone contour is usually falling, but there are a number of exceptions, with no clear conditioning factor.

[1]kãː	marrow	WT *rkang*
[3]gãː	hill, peak of mountain	WT *sgang*
[3]ghãː	snow-mountain	WT *gangs*
[4]ghãː	-ful (with measures of volume)	WT *gang*
[2]chãː	beer	WT *chang*
[4]jhãː	mud-brick wall	WT *gyang*
[2]tshãː	nest	WT *tshang*
[1]pãː	meadow, grassland	WT *spang*
[4]bjãː	honey	WT *sbrang*
[4]jhãː	cold	WT *grang*(*-ba*)
[2]lãː	bullock, ox	WT *glang*
[2]wãː	blessing, power	WT *dbang*

^{⟨L⟩}zʰã̀ː	copper	WT *zangs*
²sã̀ː	measure of weight, balance	WT *srang* 'ounce'
⁴mĩ̀ː	name	WT *ming*
¹çĩ̀ː	wood	WT *shing*
⁴ʐʰĩ̀ː	dry field	WT *zhing*
²hĩ̀ː	secret grudge	WT *snying* 'heart'
⁴dũ̀ː	sting (of bee)	WT *mdung*
²lũ̀ː ~ ^{⟨H⟩}luma	wind	WT *rlung*
⁴lũ̀ː	handle (as of a teacup)	WT *lung*
⁴lũ̀ː	blessing, precept	WT *lung*
⁴zʰũ̀ː	pair (of tiles, shingles)	WT *zung*
¹çũ̀ː	tale	WT *gsung*
¹kõ̀ː	scabies, itch	WT *rkong*
²khõ̀ː	they	WT *khong* 'he'
⁴dzõ̀ː	fort	WT *rdzong*
⁴dõ̀ː	face	WT *gdong*
⁴dʰõ̀ː	hole, passage	WT *dong* 'deep hole'

3.2 Classical Tibetan Disyllables

Dzongkha has collapsed many WT disyllables into (mainly) falling-tone monosyllables with either diphthongs or consonant finals.

3.2.1 WT suffixes *-ba -bo -'u* > Dz. diphthongs in -ʊ

The WT noun-suffixes *-ba* and *-bo* appear after open syllables and syllables in *-r* and *-l*; *-'u* follows only open syllables (being written in place of the final). The Dzongkha reflex is a monosyllable whose nucleus is a diphthong in -u. When the first syllable vowel is *u*, the result is uː (WT *ku-ba* > ²kuː 'gourd'.

There is no contour contrast on diphthongs; phonetically the contour is falling. Length is not generally distinguished except in the case of au vs aːu. Thus WT *-r* and *-l*, which would be expected to lengthen the vowel, fail to do so, except that

WT *-ar-ba* > Dz. -aːʊ (while WT *-a-ba* > -aʊ and WT *-al-ba* > -eʊ or -ɛʊ).

²kaʊ	pillar	WT *ka-ba*
²khaʊ	snow	WT *kha-ba*
⁴jaʊ	beard	WT *rgya-bo*
²tsaʊ	owner	WT *rtsa-ba* 'root'
²tshaʊ	nephew, grandson	WT *tsha-bo*
⁴daʊ	moon, month	WT *zla-ba*

²pau	shaman, healer	WT *dpa'-ba*
⁴bau	goiter	WT *lba-ba*
²lou ~ ²lau	musk deer	WT *gla-ba*
²ɕau	stag	WT *shwa-ba*
⁴ʐhau	lame	WT *zha-ba, zha-bo*
²kuː	gourd	WT *ku-ba*
²kiu	birth	WT *skye-ba*
²chiu	tusk	WT *mche-ba*
²tiu	navel	WT *lte-ba*
²thiu	seal, imprint	WT *the-bo* 'thumb'
⁴niu	relative	WT *nye-ba*
²kou	leather	WT *ko-ba*
⁴dhou	taro; a wild yam with palmate leaves	WT *do-ba*
⁴dhrou	taste	WT *bro-ba*
? ᴴnoeː	sharp	WT *rno-ba*
²phou	belly	WT *pho-ba*
²lou	lung	WT *glo-ba*
⁴zou	carpenter	WT *bzo-ba* 'worker'
²thrau	multi-colored	WT *khra'u*
⁴bjhoː	tartary buckwheat	WT *bra'u*
⁴diu	bullet	WT *mde'u*
²khaːu	stick	WT *mkhar-ba*
⁴gaːu	blacksmith	WT *mgar-ba*
⁴dhaːu	buttermilk	WT *dar-ba*
²phaːu	wolf	WT *'phar-ba*
⁴ʐhaːu	blind	WT *zhar-ba*
²siu	hail	WT *ser-ba*
⁴zʰou	sickle	WT *zor-ba*
²thɛu	dust	WT *thal-ba*
²pɕeu	forehead	WT *dpral-ba*
²ɕeu	leveller; a toothless harrow	WT *shal-ba*
²seu ~ ²soeu	lunch (h), breakfast(h)	WT *gsol-ba*

3.2.2 WT *CV(C)* (non-nasal finals) + *-pa*/*-po* > Dz CV(ː)p (falling)

When a WT open syllable or syllable with an oral consonant final (*-b -d -g -s*) is followed by a suffix *-pa* or *-po* (or the root *pha* in one case), the Dzongkha reflex is a closed, short monosyllable in -p, with falling tone.

The vowel is long if the WT first syllable ended in **-r** or **-l** (and sometimes **-s**), otherwise short (WT –**b**, **-d**, **-g**, **-s**). (Compare the reflexes of WT monosyllables, whose lost stop finals have on the contrary given long vowels.) The contour, always falling, does not depend on the identity of this final consonant.

In some examples in the Paro dialect, the suffix **-pa** has had the effect of preserving preceding final **-g** (as a final **-k**, unknown in the standard dialect). In Ha, these words are said to remain disyllabic, with assimilation of the suffix-initial, e.g. ^Hmakku 'husband'.

^Ldzep	leper	WT *mdze-pa*
⁴gap	headman	WT *'go-pa*
²ap ~ ^Ha-pa	father	WT *a-pha*
²tap	back of a blade	WT *ltag-pa*
²thap	rope	WT *thag-pa* (Paro ^Hthak)
^{2?}nap	black	WT *nag-po* (Paro ^Hnak)
²phap	pig	WT *phag-pa* (Paro ^Hphak)
²map	husband, son-in-law	WT *mag-pa* (Paro ^Hmak)
⁴lap	hand	WT *lag-pa* (Paro ^Llak)
²tsip	stone wall	WT *rtsig-pa* (Paro ^Htsik)
^Hmip	hoof	WT *rmig-pa*
¹hlip ~ ¹hluep	testicle	WT *rlig-pa* (Paro ^Hhlik)
^Hthuep	porridge, soup	WT *thug-pa*
² pɕhup	rich man	WT *phyug-po* (Paro ^Hchuk)
³huːp	owl	WT *'ug-pa*
⁴gop	onion	WT *sgog-pa*
²tsop	dirty	WT *btsog-pa*
⁴bjop	nomad herdsman	WT *'brog-pa*
²ɕop	wing	WT *shog-pa*
⁴zʰop	bad	WT *zog-po* 'false'
⁴gep	old (of things)	WT *rgad-pa*
²chep	one who collects fines	WT *chad-pa* 'punishment'
²tshɛp	malaria, heat	WT *tshad-pa* 'heat, fever'
²pep ~ ²poep	leech	WT *pad-pa*
²lep	brain	WT *glad-pa*
^Hkuep	brother-in-law	WT *skud-po*
^Hkuep	thread	WT *skud-pa*
²kep	waist	WT *rked-pa*
⁴bhɛp ~ ⁴bhoep	Tibetan	WT *bod-pa*
²eːp	right	WT *g.yas-pa*
²thrip	bile	WT *mkhris-pa*

¹tsiːp	astrologer, religious practitioner	WT *rtsis-pa*
²chop	religious practitioner	WT *chos-pa* 'monk'
⁴dhoːp	porter	WT *dos-pa*
²kaːp	white	WT *dkar-po*
²chaːp	rain	WT *char-pa*
²maːp	red	WT *dmar-po*
²saːp	new	WT *gsar-pa*
⁴aːu	thief	WT *ar-pa*
²cup	sour	WT *skyur-po*
²seːp	yellow	WT *ser-po* 'yellow'
²phoːp	cup	WT *phor-pa*
⁴geːp	back (of body)	WT *sgal-pa* 'small of back'
⁴geːp	king	WT *rgyal-po*
⁴beːp	frog	WT *sbal-pa*

3.2.3 WT *CVN* (nasal finals) + suffix > Dz CVm/CVːm (falling)

When the final of the WT first syllable was a nasal before a suffix (with any initial), the Dzongkha reflex is a closed monosyllable ending in **-m**. If the WT final was **-m** or **-n**, the vowel is short; if **-ng**, the vowel is often long. Some of these long vowels we heard as nasal with our Chapcha speaker, but we were unable to confirm this observation with other informants.

Where the old final was **-ng** before **-pa** or **-po** the tone contour seems to be unpredictable (compare the contour of old monosyllables in **-ng**). With other finals, the tone is generally falling, but with notable exceptions, such as ¹chim 'liver' (WT *mchin-pa*), which makes a striking minimal contour-pair with ²chim 'house' (WT *khyim*). The latter should of course be level (tone 1) according to our theory.

¹kaːm	leg	WT *rkang-pa*
²caːm	seedling	WT *ljang-pa*
⁴dhaːm	first	WT *dang-po*
?¹nyiːp	old	WT *rnying-pa*
ᴴnyeːm	old	WT *rnying-pa*
¹tim	heel	WT *rting-pa*
ᴸrim	long	WT *ring-po*
²pum	shoulder (esp. the point)	WT *dpung-pa*
¹thoːm	ploughshare	WT *thong-pa*
²sum	charm, locket	WT *srung-ba*
²pɕhem	rosary	WT *'phreng-ba*
⁴bjam	bee	WT *sbrang-ma*

[2]sim	younger sister (of a male)	WT *sring-mo*
[2]oːm	Wang-mo (p.n.)	WT *dbang-mo*
[4]zaːm	Zang-mo (p.n.)	WT *bzang-mo*
[L]ngem	bad, evil (e.g. of a person)	WT *ngan-po*
[1]chim	liver	WT *mchin-pa*
[3]dzim	pincers	WT *'dzin-po* 'to grasp'
[2]sim	demon	WT *srin-po, srin-mo*
[4]goem	guest	WT *mgron-po*
[2]loem	green, wet	WT *rlon-pa*
[L]ʑoem	young	WT *gzhon-pa*
[2]hoem	blue, green	WT *sngon-po*
[2]sem	lentil, dried bean, a small bean	WT *sran-ma*
[2]tsuem ~ [2]tsim	queen, lady	WT *btsun-mo*
[2]oem	left, left hand	WT *g.yon-ma*
[1]kam	dry	WT *skam-po*
[4]zham	bridge	WT *zam-pa*
[L]bom	big	WT *sbrum-pa* 'pregnant'
[2]kham	peach	WT *kham-bu*

3.2.4 WT *CV(C)* + *-ma/-mo* > Dz CVm/CVːm (falling)

When the WT suffix was *-ma* or *-mo*, the Dzongkha reflex is a closed monosyllable in -m, regardless of the WT first-syllable final. (For examples derived from nasal first-syllable finals, see 3.2.3 above.) The vowel is short except where the WT final was *-r* (we have no examples of WT *-l* in this context) and, occasionally, *-ng*. The tone contour is falling, except in the case of [3]goem 'mare' (WT *rgod-ma*), which forms a minimal pair with [4]goem 'guest' (WT *mgron-pa*).

[2]tsham	niece, granddaughter	WT *tsha-mo*
[4]dzam	earthen cooking-pot	WT *rdza-ma*
[H]tham	edge	WT *mtha-ma*
[2]nam	daughter-in-law	WT *mna'-ma*
[2]pçham	millet	WT *phra-mo* '*Panicum miliaceum*'
[4]bjham	hen	WT *bya-mo*
[4]yaːm	a cold, sinus trouble	WT *ya-ma*
[2]lam	lama	WT *bla-ma*
[4]ʑham	hat	WT *zha-mo*
[4]nyim	sun	WT *nyi-ma*
[4]dzim	brow	WT *rdzi-ma*
[4]dhrim	odour	WT *dri-ma*

⁴num	younger sister (of a female)	WT *nu-mo*
⁴bhum	daughter	WT *bu-mo*
⁴bjhim	sand	WT *bye-ma*
²sem	syphilis	WT *se-mog*
²om	breast, milk	WT *o-ma*
² pçhaːm	broom	WT *phyag-ma*
⁴jum ~ ^Lju-ma	tail, sausage	WT *mjug-ma*
²som	fontanelle (soft part of infant's skull)	WT *mtshog-ma*
²teːm	show, entertainment	WT *ltad-mo*
²pɛːm ~ ^Hpe-ma	Pema (p.n.)	WT *pad-ma*
³goem	mare	WT *rgod-ma*
²ʔtshoeːm	vegetable dish, greens, curry	WT *tshod-ma*
²neːm ~ ²nyem	wife	WT *gnas-mo* 'landlady'
²sɛːm	princess	WT *sras-mo*
²kaːm	star	WT *skar-ma*
²ngaːm	sweet	WT *mngar-mo*
²thum ~ ²thuːm	spoon	WT *thur-ma*
⁴dhoːm	trousers	WT *rdor-ma*
ʔ²tsãː	thorn	WT *tsher-ma*

Note: The numeric superscripts (2, 3, 4) and bracketed tone markers <L>, <H> are tone notations in the original and are rendered as written.

3.2.5 Numeral derivatives in *-pa* or *-po*

When we elicited the following forms from a Chapcha speaker in 1977, we believed them to be ordinal numbers, but this may have been a misunderstanding. Our 1986 informants gave disyllabic forms for the ordinals (e.g. ^Hnyiːba 'second'). The monosyllabic forms turned up later as collective nouns, e.g. ⁴duem 'the seven, all seven' (WT *bdun-po*).

²nyiːp	?second, twosome	WT *gnyis-pa*
²sum	?third, trio	WT *gsum-pa*
⁴ʑip	?fourth, quartet	WT *bzhi-pa*
²ngap	?fifth, quintet	WT *lnga-pa*
⁴dhrup	?sixth, sextet	WT *drug-pa*
⁴duem	?seventh, septet	WT *bdun-pa*
⁴gep	?eighth, octet	WT *brgyad-pa*
⁴gup	?ninth, the nine	WT *dgu-pa*
^Hcup	?tenth, the ten	WT *bcu-pa*

4. Conclusion

Dzongkha monosyllabic nouns derive from both monosyllabic and disyllabic ancestors. This dual origin accounts for the comparative richness of the Dzongkha syllable canon. In particular, length, nasality, pitch contour, and certain vowel features (e.g. front rounding), are distinctive on more syllable types (especially stopped syllables) in Dzongkha than in Lhasa Tibetan. The fact that it is almost exclusively WT suffixes that have entered into the formation of Dzongkha monosyllables from disyllables may suggest the existence of an old root-stress.

Notes

1. An earlier version of this paper was presented to the 19th International Conference on Sino-Tibetan Languages and Linguistics, Columbus, Ohio, 12-14 September 1986.
We are indebted to M. Bernard Gautheron and Mme Annie Rialland for their help in using the pitch-extraction equipment, designed by M. Gautheron, at the Institut de Phonétique in Paris.
Abbreviations: WT = Written Tibetan; (h) = honorific; p.n. = proper noun.
The WT forms cited are not all equally old.

2. It is interesting to compare the tracing in Chang and Chang (1978:xxii, Figure 6), showing a clear fall in Lhasa on the word 'meditation', with the clearly level contour of Dzongkha 'boundary' (Figure 2). These are in fact the same WT etymon.

References [from the consolidated volume bibliography, pp. 302-330]

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Errata:

p. 123: In Table 3, the empty parentheses represent phonetically level contour on syllable types where there is no contour opposition. The second outcome of WT monosyllabic **-Vng** rimes has been changed to 'falling'; it was erroneously printed as identical to the first outcome in the printed version.

p. 128: In §3.1.4, the word ²**nam** 'sky' should have been listed with the irregular falling-contour words at the top of p. 129.

Epilogue (2006)

The present offprint is a preprint of the published article, repaginated to correspond with the published version. A few obvious typographical errors have been corrected (see also the errata above). The phonological transcription of Dzongkha is printed here in bold roman rather than regular italics, reserving italics for WT transliteration.

We have not had the opportunity to pursue our investigation of Dzongkha phonology, in particular to cover polysyllabic words, or to confirm the contour tone opposition on monosyllables of the form **CVp**.

The present article was accompanied in the same volume by an article on Dzongkha orthography (Michailovsky 1988). One of us (Mazaudon 1985, 2002) has published on the Dzongkha vigesimal number system, which we first recorded in Anon. 1977 (see below). We have also published an article on the Bumthang languages of central Bhutan (Michailovsky and Mazaudon 1994).

Van Driem (1998:113) confirms the contour tone opposition on all of the syllable types for which it is reported here, but he does not choose to transcribe it in his grammar, except in a list of 16 minimal pairs which includes most of those presented here. Like us, he does not offer an example of the opposition on low-register **CV(:)p** syllables.

Sprigg (1993) argues against the existence of lexically distinctive contour tones in Dzongkha as well as in Lhasa, considering that they are spelling pronunciations not heard in connected speech. His warning against reliance on single-word elicitation is well-taken. (The use of a frame in examples in our Figures 1 and 2 is duly acknowledged.) But we believe that the case for contour tones is convincingly made, in particular for Lhasa, by Chang and Chang (1978), who incidentally point out a number of discrepancies between the orthography and the distribution of falling tones. Connected speech pronounced in a lively manner by their informant, Nawang Nornang, can be heard on the tapes made at the Berkeley Language Laboratory in 1967 to accompany their teaching manual (Chang and Shefts 1964).

Bibliographical note: the manual listed as 'Anon. 1977' in the references was in fact prepared by the late Lopon Nado in Thimphu. The phonological transcription was revised by us in New Delhi at the request of our late friend Dasho Rigdzin Dorji. The vigesimal numbers in the manual were added by us.

Additional references (2006)

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