

I. 'Tone' variation

The Chang-Shefts tonal analysis has the great advantage of having become widely known, through the alphabetization in A manual of spoken Tibetan (1964) and Spoken Tibetan texts (1978), and through Goldstein and Nornang's Modern spoken Tibetan: Lhasa dialect (1970); but it has the disadvantage of showing considerable variation in 'tone' for the same lexical item; e.g. (h. = 'high', f. = 'falling', l. = 'low')

a. high 'tones'

- | | | | | |
|------|------------------|-------------------|-------------|--------------|
| i. | h.-f., h.-h. | tsāā-, tsāl̄- | 'strain' | (1978, xxv) |
| ii. | h.-f., h. | t̄uù, t̄uq- | 'lathe' | (1964, 66) |
| iii. | h.-h., h. | sāā-, sār- | 'new' | (1978, xlvi) |
| iv. | h.-f., h.-h., h. | sūù, sūū, sōō, sū | 'who', etc. | (1964, 88) |

b. low 'tones'

- | | | | | |
|------|------------------|-------------------|-------------|--------------|
| i. | l.-f., l.-l. | šāā-, šāl̄- | 'put down' | (1978, xxxi) |
| ii. | l.-f., l. | t̄uù, t̄uq- | 'Bhutan' | (1964, 67) |
| iii. | l.-l., l. | yīī, yī- | 'are', 'am' | (1964, 13) |
| iv. | l.-f., l.-l., l. | ŋɛɛ, ŋɛɛ, ŋāā, ŋā | 'I', etc. | (1964, 87) |
| v. | l.-f., toneless | reè, re- | 'is' | (1964, 13) |

c. high and low

- | | | | | |
|-----|------------------|-----------------------|-------------------|------------|
| i. | l.-f., l., h.-f. | t̄uù, t̄uq-; -(ī)t̄uù | 'have',
'does' | (1964, 14) |
| ii. | l.-l., h.-h. | qām, qām-, -qām̄ | 'box' | (1978, |

This disadvantage could be removed by taking account of two principles: complementary distribution, especially in relation to the 'tone' (or tonelessness) of a following syllable or a preceding syllable within the word (section II below), and grammatical comparability (section III).

II. Complementary distribution

A. 'Falling' and non-'falling' 'tones'

In (a.i) and (b.i) above, each of the two 'falling' 'tones' is, respectively, in complementary distribution with each of the non-'falling' 'tones':

	<u>'high-falling'</u>		<u>'high-high'</u>
a.i.	tsāā(ɾɒɥīī)	'I strained'	tsāā(ɾīyīī) 'I will strain'
b.i.	šāā(ɾɒrēè)	'(he) shaved'	šāā(ɾīrēè) '(he) will shave'
	<u>'low-falling'</u>		<u>'low-low'</u>

The 'falling' alternative precedes the toneless syllable -ɾɒ; the non-'falling' alternative precedes the 'high'-tone syllable -ɾī.

B. 'Single-vowel' 'tones' and 'geminate-vowel' 'tones' or '-ŋ/-m' 'tones'

Similarly, in (a.ii-iii) and (b.ii-iii) above, each of the two 'tones' appropriate to 'single vowels' ('high' and 'low') is in complementary distribution with one or other of the four 'tones' appropriate to 'geminate vowels and single vowels followed by ŋ or m': 'high' with 'high-high' or 'high-falling', and 'low' with 'low-low' or 'low-falling';

e.g.

	<u>'high-falling'</u>	<u>'high-high'</u>	<u>'high'</u>	
a. ii.	ṭūū		ṭūq(ɾā)	'lathe-operator'
iii.		sāā(ɾā)	sār(ɾ)	'newer'

b. ii.	t̥ùù	t̥uq(p̄)	'Bhutanese'
iii.	yĩĩ	yĩ(p̄ n̄õõ)	'are you'
	<u>'low-falling'</u>	<u>'low-low'</u>	<u>'low'</u> .

The type of 'tone' alternation shown by the examples at (a) and (b) (ii)-(iii), and at (b.v), between the two-'tone' set and the four-'tone' set, results from the fact that any lexical item that has a form spelt with a final /q, r, p/ or a final single vowel (e.g. -ĩ, -e) is restricted to one or other of the two 'tones' 'high' or 'low' (or, alternatively, tonelessness), and if, further, that lexical item also has an alternative phonemic form with a 'geminate vowel', it must also alternate in 'tone' with one (or more) of the four 'tones' appropriate to 'geminate vowels': 'high-falling', 'high-high', 'low-falling', and 'low-low'; e.g. (a.ii) t̥ùù and t̥uq-, (a.iii) s̄āā- and s̄ār-, (1978, xxxix) n̄up and n̄ù 'west', (b.iii) yĩĩ and yĩ-, and (b.v) r̄èè and re-.

C. Register variation

The verb lexical item shown at (c.i) above not only shows the alternation just referred to, between a 'low' 'tone' for its form in -q and a 'low-falling' 'tone' for its form in a 'geminate vowel' (-uu), but also shows a variation in register between the range of low 'tones' ('low', 'low-low', 'low-falling') and the high range of 'tones' ('high', 'high-high', and 'high-falling'); and the lexical item in (c.ii) also shows register variation, but for a noun lexical item:

	<u>'low-falling'</u>	<u>'low'</u>	<u>'high-falling'</u>
c. i. verb	t̥ùù	t̥uq(èè)	(mĩ)t̥ùù

'low-low''high-high'

c.ii. noun qam qam(cũũ) 'small box' (yii)qam 'letter box'

In these two examples the lexical items tuù/tuq-/-(ĩ)tuù and qam/qam-/-qam owe their high-register 'tones' to their position as second syllable of the word (regardless of the 'tone' of the preceding syllable): 'the tone of the base after the prefix, and thus in a second syllable, has following a more general morphophonemic rule, the high tone' (1964, 24) [since the authors distinguish three high 'tones', their phrase 'the high tone' here would be better expressed as a high tone, or as one of the high tones; e.g. (c.i.) 'high-falling', (c.ii) 'high-high'].

All the above examples show variation in 'tone' for a given lexical item as a function of difference in tonemic environment or of difference of place within the word, such as: (a/b.i) preceding a toneless syllable versus preceding a 'high' syllable, (a/b.ii) monosyllabic word versus preceding a 'high' syllable, (a.iii) preceding a 'high' syllable v. preceding a toneless syllable, (b.iii) monosyllabic word v. preceding a toneless syllable, (c.i/ii) monosyllabic word v. first syllable of a polysyllabic word v. second syllable of a polysyllabic word. Where this difference in environment carries with it a difference in the phonemic form of the lexical item such that final /Vq/, /Vr/, /Vp/ or /V/ alternates with a final 'geminate vowel' (/VV/), there will be the matching alternation in 'tone' already referred to, between one of the two 'tones' appropriate to the former type of phonemic form as opposed to the four 'tones' appropriate to the latter type.

III. Grammatical comparability

The 'tone' variants for each lexical item in the above examples (section (II)) are complementarily distributed on a phonological basis, in relation to the 'tone' (or tonelessness) of a neighbouring syllable or to place within the word; the examples in this section belong to a special case of complementary distribution, on a syntactic rather than a phonological footing. Thus, the examples at (a/b,iv) fall into four categories on the basis of grammatical comparability: (i) pronoun, (ii) genitive-case pronoun, (iii) dative-case pronoun, (iv) instrumental-case pronoun:

	<u>'high'</u>	<u>'high-high'</u>	<u>'high-falling'</u>	
a. i.	sū 'who'	ii. sūū	iii. sōō	iv. sūū
b.	ɲa 'I'	ɲɛɛ	ɲaa	ɲɛ̀
	<u>'low'</u>	<u>'low-low'</u>	<u>'low-falling'</u>	

The set of 'tones' 'high', 'high-high', and 'high-falling' is complementarily distributed in relation to the four grammatically distinct forms of (a.iv); and so is the set 'low', 'low-low', and 'low-falling' in relation to the forms (b.iv).

IV. Tone and pitch variation

By applying the two separate but related principles (II) complementary distribution and (III) grammatical comparability the variation in 'tone' for particular lexical items that is to be seen in the Chang-Shefts transcription can be treated as merely variation in pitch; and the number of tones can be reduced from the two sets, one of two and the other of four 'tones', to a single set of two morphemic tones (morphotonemes); e.g.

	<u>'high-falling'</u> (toneless)	<u>'high-high'</u> ('high')	
a.i.	tsā̀à(payī̀ī)		} tone 1
		tsā̀ā(qīyī̀ī)	
b.i.	šā̀à(parèè)		} tone 2
		šā̀ā(qīrèè)	
	<u>'low-falling'</u>	<u>'low-low'</u> ,	

or

	<u>'low-low'</u>	<u>'low-low'</u>	<u>'high-high'</u>	
c.ii.	qam	qam(cūū)		} tone 2
			(yī̀i)qām	

or

		<u>pro.</u>	<u>g. pr.</u>	<u>d. pr.</u>	<u>i. pr.</u>	
a.iv.	<u>h.</u>	sū				} tone 1
	<u>h.-h.</u>		sūū	sōō		
	<u>h.-f.</u>				sūū	
b.iv.	<u>l.</u>	ŋa				} tone 2
	<u>l.-l.</u>		ŋεε	ŋaa		
	<u>l.-f.</u>				ŋεè	

V. Allo-toneme and morpho-toneme

If translated into phonemic, or, rather, tonemic terms a statement such as that in (IV) above would mean that the (complementarily distributed) allo-tonemes of, for example, (a.i), 'high-falling' and 'high-high', are comprised in a morphemic tone 1 (or morpho-toneme 1), appropriate to verbs, and the allo-tonemes 'low-low' and 'high-high' of (c.ii) in a morpho-toneme 2, appropriate to nouns.²

VI. Syllable-based analysis and word-based analysis

Although I believe that this exercise in morphemicizing the Chang-Shefts tonemic analysis has the advantage of making that analysis simpler, by reducing it from 2/4 tones to 2, I prefer a type of tonal analysis that is based on the word rather than the syllable, an analysis in which each word is classified as either tone-1 or tone-2; e.g. (Sprigg 1954, 150-1, but with a translation added)³

	<u>vb.</u>	<u>part.</u>	<u>part.</u>	<u>vb.</u>	<u>part.</u>	<u>part.</u>
tone 1:						
	phi: gi	Je:		phe: bə	Je	
	'(he) will come.'			'(he) came.'		
tone 2:						
	juŋ gy	Je:		jɔŋ a	Je	
	'(he) will come.'			'(he) came.'		

This analysis is more syntagmatic in its approach to the pitch features than the Chang-Shefts analysis. In accordance with it it is possible to give the verb lexical items a tonal classification, through their relationship with the characteristic pitch patterns of one or other of the two types of word tone. Thus the verb lexical item [phi:]/[phe:] occurs in tone-1 words, occupying the first-syllable place of the two tone-1-word examples above, and therefore receiving the high register that is appropriate to that first-syllable place, with either level pitch, as in the first example, or falling pitch, as in the second, as its share in the overall pitch pattern of tone-1 trisyllabic word units: [-phi:] and [ˈphe:]. A corresponding relationship between [-juŋ]/[jɔŋ] and the tone-2 word makes that lexical

item classifiable as a tone-2-word lexical item, sharing in the pitch features of the tone-2 word according to its syllable place, which, in the two examples above, is the first syllable place, whence it derives its low register, and its rising pitch (symbolized by) in the first example, or its falling pitch in the second (with a rising-falling alternative when the word is emphasized).

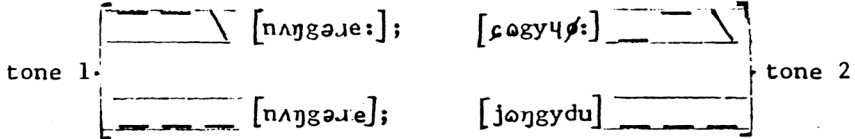
The particle lexical items occur in words of either tone, and cannot, therefore, be usefully classified tonally; but the particle [gi]/[gy] generally occurs in the type of word exemplified in the left-hand column, as second syllable, and therefore receives the high, and level, pitch appropriate to that place in the word, whether tone-1 or tone-2, while the second-syllable particle [bə]/[a] receives low, and level, pitch.

The particle lexical item [je:]/[je] that occurs in the third, and word-final, syllable place alternates between the high register, and falling pitch, appropriate to that place in the type of word in the left-hand column (future-tense), and the low, and level, pitch characterizing it in the type of word in the right-hand column (past-tense), with a matching alternation in vowel length.

VII. Word tone and sentence intonation


Associating tone with the word rather than the syllable makes a more flexible approach possible to differences in sentence intonation. Both tone-1 and tone-2 words such as those exemplified in section (VI) above not uncommonly have an alternative pitch pattern in which all syllables have low and level pitch; and the two tones are distinguished, if at

all, by word-initial consonant features; e.g. (Sprigg 1954, 144-5; with minor changes in phonetic transcription)



The alternative pattern with the low and level pitch throughout the word is appropriate to emphatic sentences in which a word earlier in the sentence has been emphasized, and is therefore equally an example of word tone and early-emphasis sentence intonation; the other tone-1 and tone-2 pitch patterns, which make use of the upper and lower registers, are appropriate to sentences in which the intonation is non-emphatic.

The examples thus far given in section (VI) and this section are of the verb-and-particle type of word; the noun word, too, gains from a tonal statement based on the word; e.g. (Sprigg 1955, 147, but again with minor changes in phonetic transcription)

tone 1 ; e.g. [tʃɑ:gam] 'iron box'

tone 2 ; e.g. [gʌmdʒɔ:] 'small box'.

In these examples of disyllabic words the lexical item [-gam]/[gʌm-] has low pitch as its share of the tone-2-word pitch pattern, of which it occupies the first-syllable place, but high pitch as its share of the tone-1-word pitch pattern, where it occupies the second-syllable place. This lexical item occurs in both tone-1 and tone-2 words alike, but with the important difference that in tone-2 words it can occupy the first-syllable place, whereas in tone-1 words it is confined to the second-syllable place.

ts distribution in relation to tone-1 and tone-2 words can be indicated by classifying it as a 'tone-2' lexical item, the distribution of a 'tone-1' lexical item being the reverse of this:

<u>Class of lexical item</u>	<u>syllable place</u>			
	<u>tone-1 word</u>		<u>tone-2 word</u>	
tone-1':	1st	2nd		2nd
tone-2':		2nd	1st	2nd

Notes

1. Read at the 12th Sino-Tibetan Conference, Paris, October, 1979.

2. It is noteworthy that Jäschke 1881 (2nd ed. 1934) also

described 'the Spiti, Tsang and Ü dialects' in terms of two tones (p. xiii), 'high-toned' and 'deep-toned' (xiii-xiv;

vi-xviii); and so, in the first analysis of Lhasa Tibetan

in accordance with the phoneme theory, does Y. Jaw (Y.R. Chao),

in Yu D. and Jaw Y. 1930: 'There are 2 tonemes in Tibetan,

the high (falling) tone (53:) and the low (rising circumflex)

tone (131)' (27).

3. Y.R. Chao's tonemic transcription, in Yu D. and Jaw Y. 1930,

is syllable-based: each syllable is identified with

either the 'high (falling)' toneme or the 'low (rising

circumflex)' toneme, either by marking it with the ʏ

symbol (53) or with the ʌ symbol (131) or by making a

suitable syllable-initial consonant letter serve the same

purpose: 'high tones with voiceless initials or low tones

with voiced initials are not marked'; but he foreshadows

the use of the word as the most suitable unit for the tonal

analysis of Lhasa Tibetan: 'The actual tones in connected

speech follow the general principle of one tone being

spread over two or more connected syllables. Thus, the high falling tone often becomes a high level tone, the following syllable or syllables, whatever its original tone, taking up a low or falling tone; the low circumflex tone often becomes a rising tone, the following syllable or syllables taking up a low or falling tone' (27-8).

For a survey of word-based tonal analysis see Mazaudon 1976, especially section 3, 'Development of tone on polysyllabic units' (76-90).

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