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The inefficiency of 'tone change' in Sino-Tibetan descriptive linguistics

('Plus ça change, plus c'est la même chose')

R. K. Sprigg
S.O.A.S., University of London

Preamble

I wish to acknowledge my debt to the author of the phonetic and phonemic part of Love Songs of the Sixth Dalai Lama Tshangs-dbyangs-rgya-mtsho (Peiping, 1930) for the liberating principle whereby he allows his two tones to have overlapping phonetic realizations (cf. p. 178 below).

It is to the 6th Conference, and especially to Pulleyblank, that I owe the stimulus to contribute a paper on tone change to the 8th Conference: during the discussion of, I think, Löffler's paper ('Bawm verbal forms, and the tonal system of Central Chin') at San Diego I mentioned that I thought the 'tone change' concept to be unsound; and I then noticed Pulleyblank smiling sadly over this aberration of mine, due, he may have thought, to the strength of the California sun; but in the cool, and occasionally stimulating, climate of England too the suspicion has continued to trouble me that 'tone change' is among the less serviceable weapons in the armoury of linguistics.

I. The sandhi (or junction) type of tone change

For the first of the two major types of tone change that I wish to criticize in this paper I take as my starting point the familiar sentence from Pike 1948:

> 'forced meaningless substitutions of one toneme for another may be called PERTURBATIONS of tonemes, in which one toneme is perturbed by another in REGULAR TONE SANDHI' (p. 25).

The 'tone sandhi' (or tone junction) notion has been much used to account for an important type of tone change, perhaps the most important, whereby a particular lexical item, morpheme, or word has been assigned to one tone (or toneme) in one junction context, but to another tone in another type of junction.

'Basic tones' versus 'sandhi tones' or 'modified tones'

In such cases one might reasonably expect a double or a multiple tone classification to be given to the lexical item, morpheme, or word concerned, in accordance with the two or more tones (or tonemes) that were attributed to it. This would mean that a lexical item that had both tones 2 and 6 attributed to it, like de 'water' in passage (1c) below, quoted from Downer 1967, would be classed, tonally, as a tone-2/6 lexical item, and šɔ 'hot' as a tone-3/5 lexical item; but in practice it is usual to

give one of the variant tones a different status from the other tone or tones, as being the 'basic tone' or 'normal tone', while the other variant tones are said to be the result of 'perturbation', and are ranked as 'sandhi tones' or 'modified tones':

1. Downer 1967

a. '- - - a total of eight tones is found in W[hite] M[iao]. The realizations of these tones - - - are - - -
(1) High level (55) - - -. (2) High falling (51) - - -.
(3) Mid rising (35) - - -. (4) Low level (11) - - -.
(5) Mid level (33) - - -. (6) Mid falling (31) - - -.
(7) Low falling (21) - - -. (8) Low rising (13) - - -', (p. 591).

b. '- - - a considerable number [of monosyllable morphemes] is found with two allomorphs, one with what shall be called 'basic tone' and one with a modified tone. The environment in which the modified tone may occur is - - - immediately after syllables with WM tones 1 and 2 - - -: items with basic tones 2, 4, 7 may occur as tone 6; basic tone 3 may occur as tone 5; and basic tone 5 may occur as tone 4.' (p. 592).

c. 'de^2 "water" $kɯ^2de^6$ "ditch" - - - $ʂɔ^3$ "hot" $de^2ʂɔ^5$ "hot water" - - -', (p. 593).

Overlapping in phonetic realization not permitted

The reasons why Downer describes the relationship between, for example, the 51 pitch of the lexical item *de* in the monosyllabic word de^2 'water' and its 31 pitch in the two-syllable sequence $kɯ^2de^6$ 'ditch' as one of tone change I take to be: (i) that *de* in $kɯ^2de^6$ has the same 31 pitch as the lexical item *na* has in the monosyllable na^6 'rain', (ii) that he will not allow overlapping in phonetic (pitch) realization between one tone and another, and (iii) that in such cases of variation the pitch of the lexical item in the second-syllable place is to be assigned to whichever tone it is that has that pitch as its realization in the monosyllable. Thus, if *na* is classified as tone-6 in the monosyllable na^6 'rain', *de* must be classed as tone-6 in the disyllabic example $kɯ^2de^6$, not as continuing to be tone-2 with an alternative phonetic realization (31) that happens to overlap the realization of tone 6 in this context.

Pitch variation and Firthian phonology ('prosodic analysis')

Downer solves the problem that I have illustrated from his White Miao material through change of tone; I, on the other hand, see it not as a problem of tone change but as a problem of pitch variation, variation in the pitch of a lexical item from one junction context to another. I have been influenced in my approach to this problem by passages such as the following from the teaching of J. R. Firth:

'If sounds are described, classified, and explained by

this statistical contextual technique, most contemporary theories of elision, coalescence, and assimilation will be seen to be confusing and, what is more to the point, entirely unnecessary' (Firth, 1935 and 1957, p. 37).

Following Firth, then, I should return to the unanalysed phonetic data, the variation in pitch, and, where Downer identifies a given pitch register and contour in the second-syllable place with the tone that those pitch features are realizations of in the monosyllable, I should be willing not merely to allow a given tone to have more than one register and contour as its phonetic realization but also to allow the pitch exponent to be identical with (and, therefore, to overlap) the pitch exponent of another tone in some of its contexts, such as the second-syllable place referred to above. In other words, what Downer states as tone sandhi I should treat merely as pitch sandhi, or pitch variation.

Accordingly, I have no need to treat each of these pairs of variant pitch patterns as an example of tone change but simply as a pair of alternative phonetic exponents (or phonetic realizations) of each tone appropriate to one or other of two different types of junction, and, for certain combinations of tones, overlapping each other phonetically. I see the variation, that is, as a problem of pitch harmony and exponent (or realization) harmony, operating at the phonetic level, without any need to go to such drastic lengths as stating the variation as change of tone, which is, of course, a phonological change, reflecting a significant structural difference.

Contour harmony, register harmony, and both

Downer's tones 1, 6, and 8 show no variation in pitch in any type of junction; it is tones 2, 3, 4, 5, and 7 that I wish to state as having alternative pitch exponents according as these five tones harmonize, in junction, with the preceding high-register pitch (level or falling, 55 or 51) of tones 1 and 2, or harmonize with the contrasting range of pitch features that comprises mid register (35, 33, 31), lower-mid (21), or low (11, 13) as a feature of preceding tones 3, 4, 5, 6, 7, and 8. I therefore find it necessary to distinguish two types of pitch harmony extending over the two syllables concerned; and, since this harmonizing relationship, like vowel harmony and the harmony of other phonetic features, seems to me to be proof of a high degree of union between the two syllables concerned in it, I proceed to give phonological recognition to a unit comprising both of them, which I term 'word'.

One of these two types of pitch-harmony (disyllabic) 'words' I term 'high', because it has high register (55, 51) at the beginning of its first syllable, with a matching variant pitch feature, of tones 2, 3, 4, 5, and 7, in the second syllable; the other type of 'word' it is convenient to term 'low', because it has register features other than high at the beginning of its first syllable (35, 33, 31, 21, 11, 13), and a matching alternative

pitch feature for those five variant-feature tones in its second syllable, as shown in the table below:

Tone	Phonetic exponents: 'high word'	Phonetic exponents: 'low word'	Pitch figure: common	
2	mid	high	falling	31 / 51
3	level	rising	mid	33 / 35
4	mid, falling	low, level	---	31 / 11
5	low	mid	level	11 / 33
7	mid	lower-mid	falling	31 / 21

Tone 2, then, could be described phonetically as a 31/51-pitch tone, tone 3 as a 33/35-pitch tone, and so on for the other three, according to their alternative phonetic exponents; but my analysis of these pitch figures into their register and contour components in the above table gives a better idea, to my mind, of the significance, or contrastive role, of the pitch features than can be gained from the unanalyzed figures; and these differences in the significance of identical figures for different tones can usefully be borne in mind when examining the phonetic overlapping in the second syllable of the 'high word' between, for example, tones 2, 4, and 7: all three share the pitch figure 31; but its variant significance for tone 4 ('mid, falling') is different from the 'mid' significance that it has for tones 2 and 7. Tones 3 and 5, and tones 4 and 5, also overlap, but not in the same circumstances: tone 3 has its 33 pitch pattern as its exponent in the 'high word'; but tone 5 has 33 as its alternative for the 'low word'; and, further, my table shows that the significance of the 33 pattern is 'level' (versus 'rising') for a tone-3 lexical item, e.g. ɓɔ̀ 'hot', but 'mid' (versus 'low') for a tone-5 lexical item, e.g. ntoŋ 'tree' (Downer 1967, p. 593).

Classification of tones in relation to the 'word'

In the second-syllable place my five alternative-exponent tones 2, 3, 4, 5, and 7 occur freely, in their alternative