TIDDIM CHIN TONES IN HISTORICAL PERSPECTIVE[*]

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Tiddim Chin shows three tones in smooth syllables (syllables ending with sonorants and vowels): rising, level and falling, which are numbered by Henderson (1965) as tones 1, 2 and 3 respectively. Long checked syllables (syllables with long vowels ending with stops) also occur with these three tones. Short checked syllables only occur with a low level tone, which has been considered to be an allotone of tone 3. For convenience of discussion in this article I will refer to this latter tone as tone 4.

In this paper, I propose that the three tones in smooth syllables arise from different types of laryngeal endings interacting with vowel length, and that original checked syllables only took two tones, also depending on vowel length. Tiddim verbs have two alternating forms, usually with different tones, labelled as Form I and Form II. Since the latter is a derivation of the former, Form I verbs will be taken as the basis for our discussion. We will comment on the verbal derivation in our last section.[1]

1. CHECKED SYLLABLES: SHORT (TONE 4) VS LONG (TONE 1)

1.1. I shall first demonstrate that only two tones were original to checked syllables, depending on the length of the preceding vowels. Synchronic short checked syllables always take tone 4. Long checked syllables, however, are recorded with all three of the other tones. Among these, tone 1 (which occurs most frequently) historically reflects early long checked syllables; tone 2 and tone 3 do not. See Tables 1 and 2; Lushai forms are also provided for comparison.

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[1]   Language name abbreviations:

TB	Tibeto-Burman		PTB	Proto-Tibeto-Burman
WB	Written Burmese		WT	Written Tibetan
OC	Old Chinese		rGy	rGyalrong

	Tiddim	Lushai
'weep'	kap^4	ṭap
'snot'	nap^4	hnap
'lac'	gip^4	khrip (WB)
'eye'	mit^4	mit
'kill'	that^4	sat (WB)
'six'	guk^4	ruk
'pig'	vok^4	vok
'pungent'	thak^4	thak
'rain'	guaʔ^4	ruaʔ
'plant (v.)'	tuʔ^4	tuʔ

Table 1. Checked syllables with short vowels.

	Tiddim	Lushai
'fan'	za:p^1	za:p
'suck'	te:p^1	fe:p
'lungs'	tuap^1	cuap
'leech'	li:t^1	hli:t
'worm'	hu:t^1	hu:t
'shave'	me:t^1	me:t
'eight'	giat^1	riat
'rib'	na:k^1	na:k
'walk'	va:k^1	va:k
'lick'	liak^1	liak
'thunderbolt'	ke:k^1	ṭe:k

Table 2. Checked syllables with long vowels.

With tones 2 and 3, synchronic checked syllables with velar [-k] ending usually come from original syllables with final *-r*. See Table 3; again Lushai forms are also provided.

	Tiddim	Lushai
'fowl'	a:k^2	a:r
'bell'	da:k^2	da:r
'flower'	pa:k^2	pa:r
'leprosy'	pha:k^2	pha:r
'pine tree'	ta:k^2	ta:r
'light' (v.)	va:k^2	va:r 'light (not dark)'
'spread'	za:k^2	za:r
'sell'	zuak^2	zuar
'nose'	na:k^3	hna:r

Table 3. Synchronic checked syllables from original syllables ending with *-r.

A few other words, especially ones with final *-p* and *-t*, cannot be explained as derived from **-r*. But most are likely to be recent loans coming with economic and social changes. For examples, *ma:t²* 'a quarter dollar', *sa:p²* 'pay rent', *da:t³* 'electricity', etc. It should also be noted that checked syllables with tone 3 are indeed rare, and are often derived forms having a specific meaning or a different part of speech, e.g. *a:t³* 'cut on someone's behalf' from *a:t¹* 'cut', *na:k³* 'nose' (the nominal form of *na:k²* 'breathe').

1.2. So, we may set up historical tones for checked syllables based on vowel length as follows (Table 4). I use *-k* to represent stop endings in general; *-v* stands for short vowels and *-vv* for long vowels and diphthongs.

	Checked endings
	*-k
*-v	vk^4
*-vv	vvk^1

Table 4. Historical tones for checked syllables based on vowel length.

2.   TENSE SYLLABLES: SHORT (TONE 4) VS. LONG (TONE 1)

2.1.   Short checked syllables may end with an oral or glottal stop (*-vp*, *-vt*, *-vk* and *-vʔ*; cf. Table 1). However, the glottal stop ending does not occur with long checked syllables. That the glottal stop may only occur with short vowels is not surprising. Synchronically, the syllable type *-vʔ* may be interpreted as a counterpart of the *-vv* type, i.e. open syllables whose vowels are always long. The possibility that there used to be a *-vvʔ* type cannot be ruled out, however.

If this *-vvʔ* type did exist, it would most likely behave like *-vvk* in developing tone 1, in contrast with short stopped syllables (*-vk* and *-vʔ*) which take tone 4. This, together with the fact that tone 1 in open syllables is frequently accompanied by glottal constriction, leads to my hypothesis that the synchronic open rime with tone 1 (rising tone) originally came from syllables with long vowels ending with a glottal stop. Cognates found in Chepang (Central Nepal) consistently support this hypothesis. See Table 5 (Chepang data from Caughley 1972).

	Tiddim	Chepang
'bird'	va:¹	waʔ
'rat'	zu:¹	yuʔ
'dog'	ʔwi:¹	kuyʔ
'child'	ta:¹	coʔ
'water'	tu:i¹	tiʔ
'flesh'	sa¹	sjaʔ
'blood'	si:¹	wəiʔ
'thin'	pa:¹	beʔ
'tail'	mei¹	meʔ
'buy'	lei¹	leʔ
'fire'	mei¹	hmeʔ
'steal'	gu:¹	kuʔ
'fish'	ŋa:¹	ŋaʔ
'left'	vei¹	weʔ
'bitter'	xa:¹	kháʔ (Karen Pho-Moulmein)
'chin'	kha:¹	kaʔ (Tangsa)

Table 5. Synchronic open syllables with tone 1 originally from
syllables ending with *-ʔ. [2]

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[2]   Lolo-Burmese cognates to these forms are all reflexes of PLB Tone *2. This extremely interesting fact suggests that at least one of the sources of PLB *2 is final glottal stop. [Ed.]

2.2. Setting the glottal stop ending apart from oral stops will revise our historical tonal scheme as shown in Table 6.

	*-ʔ	*-k
*-v	vʔ⁴	vk⁴
*-vv	vv¹	vvk¹

Table 6. Revised historical tones based on vowel length.

3. LAX SYLLABLES: SHORT (TONE 4) VS. LONG (TONE 3)

3.1. In addition to such words as 'rain', Tiddim *guaʔ*, Chepang *waʔ*, where the origin of the glottal stop ending is straightforward (*-ʔ* < **-ʔ*), a number of synchronic Tiddim words ending with a glottal stop etymologically go back to those with TB final **-s*. The last two examples in Table 7 also show interesting corresponding Old Chinese forms with complex finals of the type *stop + s*.

	Tiddim	Chepang
'bone'	guʔ⁴	hrus
'visit'	hoʔ⁴	krus
'two'	niʔ⁴	nis
'sleep'	iʔ⁴	ʔis
'angry'	hɛʔ⁴	ris (cf. rGy khʉs)
'lower lip'	nɛʔ⁴	ɕnəs (rGy)
'seven'	saˡgiʔ⁴	kesnes (rGy)
'rice'	buʔ⁴	bras (WT)
'bear fruit'	gaʔ⁴	fibras (WT)
'thick'	saʔ⁴	tɑt⁵⁵ (Dulong)³
'tie'	xɛʔ⁴	OC *keks 結
'cover'	xuʔ⁴	OC *kaps 蓋
		(cf. WT khebs 'a cover')

Table 7. Synchronic short syllables with glottal stop originally from Early Tiddim short syllables ending with *-h.⁴

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3   For Dulong *-t*: PTB **-s*, cf. 'seven', Dulong *suʔ³¹ ɲit⁵⁵*.

4   The PLB or Loloish cognates to these words are also from PLB Tone **2 (BONE, TWO, SEVEN), unless they descend from earlier syllables with final stop (SLEEP < PTB**yip*). [Ed.]

The correspondence Tiddim -? / PTB *-s has been well known among scholars in the field (cf. Benedict 1972); however, it has remained phonetically mysterious how -s would develop into a glottal stop -?. I propose that -s first became -h, a normal change evidenced in many Southeast Asian languages. The glottal spirant -h, which needed enough continuum as domain, then became -? due to the relative abruptness of preceding short vowels.[5] The change must have occurred earlier than the time of the tone split in Tiddim, since all words of this type have perfectly integrated themselves with the regular -v? type.

3.2. We would expect there to be corresponding long syllables plus spirant of the *-vvh type. This final -h, like its glottal stop counterpart, has become lost after long vowels. The trace of the contrastive finals is then found in the tones: *-vvh becomes open syllables with tone 3 while *-vv? becomes open syllables with tone 1. Again, cognates in Chepang are found to retain this -h ending (see Table 8).

	Tiddim	Chepang
'know'	thei³	təyh (cf. WT çes)
'say'	ci:³	dayh
'moon'	xa:³	lah
'spleen'	la:³	leh
'wind'	hui³	hut (Hayu)[6]

*Table 8. Synchronic open syllables with tone 3 originally from Early Tiddim long syllables ending with *-h.*[7]

3.3. At this point our historical tonal scheme is that shown in Table 9:

	*-h	*-?	*-k
*-v	v?⁴	v?⁴	vk⁴
*-vv	vv³	vv¹	vvk¹

Table 9. Further revision of historic tones.

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5   See Appendix 1.
6   For Hayu -t: PTB *-s, cf. 'bone' Hayu *rut*.
7   At least two of these words have Lolo-Burmese cognates descending from PLB Tone *3: MOON (PLB *la³*), KNOW (WB *si'*). [Ed.]

4. PLAIN OPEN SYLLABLES AND TONE 2

4.1. Open rimes with tone 1 and tone 3 have been shown to come from long vowels plus laryngeals *-? and *-h respectively. What we have left now is the open rimes with tone 2, which I propose come from plain open syllables.

	Tiddim	Chepang
'tongue'	lei^2	le
'die'	si:^{2}	si
'fat'	tha:u^2	chəw
'bamboo'	gua^2	cawe
'laugh'	nu:i^2	ni

Table 10. Examples of synchronic open syllables with tone 2 originally from Early Tiddim plain open syllables.[8]

4.2. Vocalic length is neutralized in plain open rimes, as in most Southeast Asian languages. So we do not have syllables of the *-v type contrasting with *-vv.[9] Our historical tonal scheme is thus completed (Table 11):

	*-ø	*-h	*-?	*-k
*-v	—	v?^{4}	v?^{4}	vk^4
*-vv	vv^2	vv^3	vv^1	vvk^1

Table 11. Final historical tonal scheme.

5. SUMMARY OF TIDDIM TONAL DEVELOPMENT

5.1. In syllables with long vowels, glottal stop (tense) and glottal spirant (lax) endings induce rising and falling pitches respectively. These pitches became prominent (i.e. became tones) as the endings weakened into corresponding laryngealized qualities, creaky and breathy; the latter later became lost while the former is still found to co-occur with the respective tone. The plain syllables (zero ending) stay neutral by taking level tone (Table 12).

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[8] LB cognates to these words descend from PLB *1, except for BAMBOO (PLB *wa$^?$). [Ed.]

[9] Bhaskararao (1996) also recorded short open rimes (-v) contrasting with long open rimes (-vv). I follow Henderson's material here.

*-vv?	>	*-vv?	>	-vv¹ (rising)
*-vvh	>	*-vvʰ	>	-vv³ (falling)
*-vvø				-vv² (level)

Table 12. Development of tone in syllables with long vowels and glottal stop/glottal spirant/zero endings.

5.2. In syllables with short vowels, both glottal stop and glottal spirant neutralized in favor of the former. The merger was phonetically motivated by the shared quality of relative abruptness between the glottal stop and the short vowels. This syllable type then took the low tone (Table 13).[10]

*-v?	>	*-v?	-v?⁴ (low)
*-vh		*-v?	

Table 13. Development of tone in syllables with short vowels and glottal stop/glottal spirant endings.

5.3. Checked syllables, which originally did not possess tones, associated themselves with tense syllables, motivated by their shared stopped quality. Thus, short checked joined with short tense to take tone four, and long checked joined with long tense to take tone 1.

*-v?	>	v?⁴	*-vv?	>	-vv?¹	(>-vv¹)
*-vk	>	vk⁴	*-vvk	>	-vvk¹	

Table 14. Development of tone in checked syllables.

5.4. So far we have not discussed the syllables ending with sonorants (*-vN* type; I use *-N* to stand for sonorant endings in general). But we would expect that the parallel development should apply to them as well. That is, the syllable types *-v(v)N?*, *-v(v)Nø* and *-v(v)Nh* should join with the syllable

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[10]   If there ever was an early *-vø* type, it could have become *-v?* as well.

types *vvʔ*, *vvø* and *vvh* to take tones 1, 2 and 3 respectively.[11] Table 15 illustrates this point.

	Tiddim	Chepang
'tree'	siŋ¹	siŋʔ
'hair/feature'	mul¹	menʔ
'dream'	maŋ¹	maŋʔ
'fire'	xa:l¹	waʔl (Garo)
'you'	naŋ¹	naʔŋ (Garo)
'stand'	diŋ²	ciŋ
'star'	a:k²	kar
'bear' (n.)	vom²	yom
'heart'	luŋ²	hluŋ
'forehead'	tal³	jelh
'liver'	sin³	sinh
'yawn'	ha:m³	kamh
'smell'	nam³	namh

Table 15. Tiddim tones in syllables ending with sonorants.[12]

The Tiddim tonal system in historical perspective thus looks like a version

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[11] There are a few words in tone 4 which show Tiddim -*lʔ* and -*k* corresponding to Lushai -*lʔ* and -*rʔ* respectively. This is the only group of words where Lushai shows glottalized sonorant endings. These few words must have different origins from our type at hand and are perhaps better interpreted as more recently integrated into the languages.

	Tiddim	Lushai
'wear'	silʔ⁴	silʔ
'lock'	kalʔ	kilʔ
'awake'	hak⁴	harʔ
'swamp'	cik⁴	cirʔ

Chepang also sometimes shows counter-examples to the scheme. For example, 'road' Chepang *ljam* / Tiddim *lam¹* (we would expect the Chepang form to have a glottalized nasal ending). But, in the light of the overall regularity of the system, we must consider such forms as exceptions.

[12] Here comparisons with LB are not illuminating. Among the cognate words, TREE and DREAM have LB final stops (*sik*, *mak*); SMELL, YOU, and BEAR are < *1; LIVER is < *2; HAIR shows *1 ~ *2 variation. [Ed.]

of Haudricourt's classic tonogenetic scheme. Weidert (1987) must have had a similar scheme in mind when working out his thesis on Tibeto-Burman laryngeals and tonology. The system independently reached here, however, has developed primarily from pieces of evidence within Tiddim, though the concrete support for these hypotheses has come from comparison with such languages as Chepang (also stressed as an important language in this connection by Weidert). This study has also taken vocalic length, in addition to postvocalic segments, as another important mechanism which shaped Tiddim tonal development. The checked syllables and the syllables with early sibilant final are also simultaneously integrated into the whole system. In fact, it is through consideration of all these interrelated aspects that the jigsaw puzzle of the Tiddim historical tonal system has been put together.

6. TENSE-LAX ALTERNATION: THE SWEEPING VERBAL DERIVATION

6.1.   Tiddim verbs are known to have two alternating forms: Form 1 as a base and Form 2 as a derivation. The derivation primarily involves the change of tonal categories, namely from tones 1 and 2 to tone 3. I propose that the underlying mechanism of this verbal derivation is Tense-Lax Alternation, i.e. the original tense ($-^?$) syllable becomes lax and the original lax ($-^h$) syllable becomes tense. (Other changes, such as vowel shortening, may then be entailed by the alternation).

I adapt (in Table 16) information given by Henderson (1965:72-82) to show this Tense-Lax Alternation scheme for regular verbs (I incorporate some of Henderson's irregular verbs as well). Closed syllables here also include those which end in glides (-*i* and -*u*).

We shall now discuss a few points from the above scheme. First, the tensing of the Lax type has concurrent shortening effect on the preceding vowel. As a result, the tone 3 base verbs become tone 4 instead of tone 1.[13]

Second, the neutral syllable type (*-ø) may join with either the Tense type (to become lax, cf. closed syllables) or the Lax type (to become tense, cf. open syllables). However, some phonetic motivation may cause this split behavior. In open syllables, the *-*vvø* type is closer to the *-*vv^h* type in term of both

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[13]   It may be useful at this point to provide a rough reminder of the phonetic attributes of these cover terms Tense and Lax:

	vocal cords	duration/airflow
*-?	close-tense	short-constricted
*-h	open-lax	long-continuant

duration and continuant airflow. On the other hand, if we assume that all finals are unreleased, which is the case in most Southeast Asian languages, plain

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Closed syllables

Form I		Form II
tone 1 (*-ʔ)	—→ >	tone 3 (-h)
tone 2 (*-ø)		
tone 3 (*-h)	———— >	tone 4 (-ʔ)

Examples:

lei¹	>	lei³	'buy'
la:m²	>	la:m³	'dance'
la:m³	>	lap⁴	'lift up'

Open syllables

Form I		Form II
tone 1 (*-ʔ)	———— >	tone 1 (long checked)
tone 2 (*-ø)		
tone 3 (*-h)	——→ >	tone 4 (short checked)

Examples:

pa:¹	>	pa:t¹	'thin'
ba:²	>	bat⁴	'owe'
pha:³	>	phat⁴	'good'

Table 16. Tense-lax alternation in verbs.

closed syllables are then closer to Tense type syllables in terms of their relative abruptness. The semi-vowels *-i* and *-u* seem to be best interpreted in this context as glide endings rather than a part of diphthongs.

Third, checked syllables behave like Tense syllables (compare examples [1a] with [1b] and [2a] with [2b] below). Long checked with tone 1 become lax with tone 3 (*-vvkʲ > *-vvkʰ > -vvk³). Short checked (tone 4), however, remain checked (tone 4). As we have already discussed, the glottal spirant *ʰ* needs enough preceding voicing continuum as its domain. Therefore, when the

regular Tense-Lax Alternation applied to the short checked syllables, the lax quality is simultaneously cancelled ($*-vk^4$ > $*-vk^h$ > $-vk^4$). What remains is thus the same short checked type for both basic and derived forms:

(1a) 'fan'   za:p^1 > za:p^3 (1b) 'fall'   za:m^1 > za:m^3

(2a) 'bite'   bak^4 > bak^4 (2b) 'tired'   ba?^{4} > ba?^{4}

Fourth, why in open syllables do the alternations often result in checked syllables? Henderson in fact described these as an irregular type of verb. However, they also possess apparent regularities, especially in terms of Tense-Lax Alternation (i.e. Lax syllables become 'short' checked while Tense syllables become 'long' checked). Moreover, it would be strange if most open syllables were irregular. It is tempting to think that a stop suffix, namely $*-t$, might be involved in this verbal derivation. This $*-t$ survives in open syllables and thus puts the derived forms into the checked type (see Table 16). In closed syllables, this $*-t$ has become lost, but may leave its trace in the final alternation from velar nasal (base forms) to alveolar nasal (derived forms). In other word, the velar > alveolar change resulted from assimilation of the base velar to the alveolar suffix $-t$. Examples:

(3)   'defend'   pa:ŋ^1 >   pa:n^3
(4)   'perch'   tuaŋ^2 >   tuan^3
(5)   'pale'   da:ŋ^3 >   dat^4

A difficulty with this suggestion is that in open syllables we also have a number of derived forms ending with velar $-k$ (e.g., $za{:}^1$ > $za{:}k^1$ 'hear', $sa{:}^2$ > sak^4 'hot'). This problem will have to be left for future studies.[14]

6.2.   Our proposal in this section further substantiates our earlier conclusion that the Tiddim tonal system was or has been laryngeal-based. Whether or not these features and system may be pushed back to the Proto-Chin or Proto-Tibeto-Burman levels is, however, another story.[15]

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[14] One possibility is to assume a suffix $*-r$, which according to a regular Tiddim sound change became $-k$ post-vocalically. Still, the proposal that the alternation between velar-final base forms and alveolar-final derived forms might have resulted from the influence of alveolar suffixes can still be valid.

[15] This paper is in fact a considerable contribution to TB tonogenetics in general. [Ed.]

APPENDIX

The change from glottal spirant *-h* to *-ʔ* after short vowels may be more readily understood in terms of morae. Most Tiddim syllables are two-morae (either vowels or sonorant endings can be counted as one mora; long vowels are two morae). Only those with short vowels plus non-sonorant endings are one-mora. For example:

Two-morae syllables
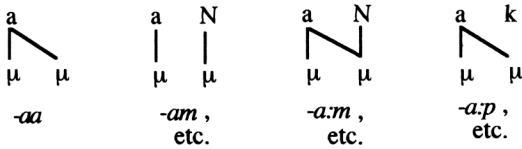
One-mora syllables
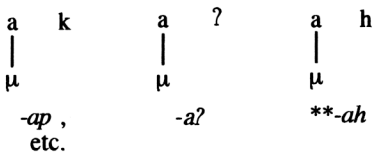
Spirant *-h* needs a two-morae time duration to maintain its continuant property. See also section 6.1, where *-h* cannot co-occur with short checked syllables for proper verbal derivation.

REFERENCES

BENEDICT, Paul K. 1972. *Sino-Tibetan: A Conspectus*. James A. Matisoff, contributing ed. Cambridge: Cambridge University Press.

BHASKARARAO, Peri. 1996. "A computerized lexical database of Tiddim Chin and Lushai." *A computer-assisted study of South-Asian languages*, ed. by Tsuyoshi Nara and Kazuhiko Machida, 27-143. Tokyo: Tokyo University of Foreign Studies.

CAUGHLEY, Ross C. 1972. *A Vocabulary of the Chepang Language*. Kirtipur: SIL and Tribhuvan University.

HAUDRICOURT, André G. 1954. "De l'origine des tons en vietnamien." *Journal Asiatique* 242:68-82.

HENDERSON, Eugénie J. A. 1965. *Tiddim Chin: A Descriptive Analysis of Two Texts*. London: Oxford University Press.

WEIDERT, Alfons. 1987. *Tibeto-Burman Tonology*. Amsterdam: John Benjamins.