3 Variegated tonal developments in Tibetan

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1 Introduction

Is the presence of analogous tone systems indicative of a genetic relationship among languages, or a more intimate genetic relationship among dialects of the same language? In a classic article on the subject of tonogenesis, we find definitive answers to both questions in the negative:

Tonal similarities—even regular tonal correspondences—are not to be taken uncritically as evidence for genetic relationship among languages. Indeed, tonal criteria are not even sufficient to establish genetic subgroupings for languages that are already known to be genetically related. (Matisoff 1973:89)

In this pioneering work Professor Matisoff portrayed, with his characteristic humor and insight, the fundamental mechanisms of tonogenesis in monosyllabic languages in terms of transphonologisation of inherent pitch perturbations of the surrounding consonants of a syllable into phonemic tone on the vocalic nuclei. He argued convincingly that these mechanisms may bring about typologically similar tone systems in unrelated languages provided that the languages in question are already drifting toward monosyllabic morpheme structure. Indeed, the tonogenetic scenarios he depicted apply not only to languages with predominant monosyllabic morphemes (Hmong-Mien, Tai-Kadai), but also tonal languages which, at an earlier stage, were incontestably sesquisyllabic, such as the

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Mon-Khmer languages Vietnamese and Va,\(^2\) or polysyllabic, such as the Austronesian languages Jâbèm (Bradshaw 1979) and Tsat (Thurgood 1996).

Owing in part to Professor Matisoff's influential work, most Sino-Tibetanists today will not accept Hmong-Mien and Tai-Kadai as members of Sino-Tibetan on the basis of tonal parallels alone. An as yet unsettled area concerns modern Tibeto-Burman languages like Tibetan and Qiang,\(^3\) which have both tonal and atonal dialects. With such languages, the question is whether the tonal dialects are more closely related to each other vis-à-vis the atonal ones. Indeed, the presence of Old Tibetan (henceforth OT) preradicals and phonemic tones were the main criteria in Róna-Tas' tentative subclassification of Tibetan dialects into 'archaic' and 'non-archaic' subgroups (1966:21). Likewise, Hu (1991:177) treats phonemic tones as the highest-order subgrouping criterion, classifying modern Tibetan thereby into tonal and non-tonal dialects. For these claims to make sense for genetic (rather than typological) classification, tonogenesis would have to be a unique set of phonological innovations occurring in a putative common ancestor of all the tonal dialects as it branched off from the atonal dialect(s). Qu (1988:321) explicitly denies the monogenesis possibility of Tibetan tone and suggests that tone arose first in the dBus-gTsang region during the eighth and ninth centuries and gradually diffused eastward to originally non-tonal Tibetan areas, without giving concrete evidence for the alleged spread of tone across dialect boundaries.

It will be my objective to advocate herein the alternative view that, tonogenesis being such a prevalent sound change areally and typologically, the possibility of tone emerging independently in different Tibetan-speaking areas cannot be lightly dismissed, particularly since different tonal dialects seem to have traveled divergent tonogenetic paths, as I wish to illustrate in the present study. The subsequent sections examine in turn the evolution of (distinctive as well as allophonic) tonal registers (§2), tonal contours (§3), as well as neutralisation of tone (§4) in various dialects reflecting different stages on the Tibetan tonality cline (J. Sun 1997:487). In §4, I summarise the heterogeneous paths of tonogenesis examined in this study and discuss their direct bearing on the subclassification of modern Tibetan.

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\(^2\) Va, a Waic language of Yunnan (personal research), has developed a predominant monosyllabic morpheme structure and a system of three phonemic tones: high, mid, and low, probably under strong areal influences from Tai. Interestingly, its sesquisyllabic Waic neighbors are still non-tonal: Paraok distinguishes two registers (tense versus slack), while the more conservative Lavia (personal research) has neither distinctive tone nor register.

\(^3\) Qiang is customarily subdivided into a northern and a southern dialect; the latter is internally diverse with several mutually unintelligible 'subdialects'. The various subdialects of the southern dialect, despite being mostly tonal and more segmentally degenerate than the generally atonal northern dialect, are yet to be rigorously demonstrated to comprise a valid subgroup.
2 Evolution of tonal registers

It is generally agreed that the fundamental opposition of tone in (tonal dialects of) Tibetan is one between high and low registers. Old Tibetan did not seem to have tone, even at the phonetic level (i.e. the so-called ‘habitual tone’). In this assumed purely atonal stage, still attested in some varieties of Amdo Tibetan, syllables that are not inflectional suffixes are generally high-registered. Tibetan tonal history can be characterised by the genesis of the low register, which has steadily invaded the former territory of the high register (J. Sun 1997:§3.1).4 Three separate factors that gave rise to the innovative low register will be discussed: onset voicing, rhyme length, and aspiration.

2.1 Low register induced by onset voicing

This is crosslinguistically the best-known tonogenetic path, and can be partially explained in terms of articulatory and auditory phonetic mechanisms as due to the tendency for prevocalic voiced obstruents to depress pitch height (Hombert et al. 1979). Yet, as pointed out by Huang (1995:54), the dictum ‘voiceless onsets yielded high tone and voiced onsets yielded low tone’ does not fit all tonal Tibetan dialects. Rather, it seems that as the original OT onset system eroded through obstruent devoicing and cluster reduction, different modern dialects took the same onset-voicing-based tonogenetic course but responded differently to the complicated interplay between the preradicals and the root initials, resulting in different tone rules.

2.1.1 Lhasa

The tonal developments of the Lhasa dialect are representative of a large number of tonal dialects. In Lhasa, register lowering applied across the board to all (originally) voiced obstruent initials. OT unprefixed sonorant initials also became low-toned; whereas prefixed sonorant initials became high-toned;5 e.g.

\[
\begin{align*}
\text{ka}^\text{h} < \text{bka}> & \quad \text{‘order’} \\
\text{ka}^\text{l} < \text{sga}> & \quad \text{‘saddle’} \\
\text{ko}^\text{h} < \text{go} > & \quad \text{‘to hear; to comprehend’} \\
\text{ko}^\text{l} < \text{mgo} > & \quad \text{‘head’}
\end{align*}
\]

\[
\begin{align*}
\eta^\text{a} < \text{nga} > & \quad \text{‘I’} \\
\eta^\text{h} < \text{nga} > & \quad \text{‘drum’} \\
\text{la}^\text{h} < \text{la} > & \quad \text{‘mountain pass’} \\
\text{la}^\text{l} < \text{gla} > & \quad \text{‘wages’}
\end{align*}
\]

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4 The low register has also gained increasingly independence from the phonation feature of breathiness concomitant with devoicing of the OT voiced obstruent initials.

5 Exceptions include OT *db- (and *dbr-; *dby-) and OT *zl-, which consistently yielded high-toned and low-toned reflexes, respectively. One plausible account (Jiang 1997:40) is that prior to the time Lhasa Tibetan acquired distinctive tones, these anomalous clusters had already turned into very different consonants (OT *db- > *w-/*b-; OT *zl- > *d-).
2.1.2 Zaduo

Zaduo (rDza.rdo), a distinct dialect of Yushu Prefecture in Qinghai, has richly diversified ‘habitual tones’ or allophonically predictable pitch patterns depending on initial phonation type (voiceless, voiced, voiceless breathy) as well as rhyme structure (short, long, checked) as shown in the table below (adapted from Huang et al. 1994:115). It suffices for our purposes here to note that, first, plain OT sonorants became low-registered in Zaduo, while OT prefixed sonorants became either devoiced (with OT s-) or preglottalised (with all other OT preradicals) in redundant high register. This phonetically transparent situation represents a likely precursor to the Lhasa sonorant tone split seen above, and shows that distantly related dialects may independently develop to varying extent the same tonegetic seeds. Second, unlike in Lhasa, Zaduo reflexes of OT voiced obstruent initials did not indiscriminately carry the low register. Instead, the dialect underwent an important split whereby simplex OT voiced obstruents became devoiced, breathy, and low-registered, whereas OT voiced obstruents with preradicals remained voiced and took on mid register.

Table 1: Zaduo Monosyllabic Citation Pitch Patterns

<table>
<thead>
<tr>
<th></th>
<th>LONG RHYME</th>
<th>SHORT RHYME</th>
<th>CHECKED RHYME</th>
</tr>
</thead>
<tbody>
<tr>
<td>HIGH</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>41</td>
<td>ta41 &lt;gtar&gt; ‘to bleed [VT]’</td>
<td>ta53 &lt;rta&gt; ‘horse’</td>
<td>ta244 &lt;stag&gt; ‘tiger’</td>
</tr>
<tr>
<td></td>
<td>?naa41 &lt;gna’.ba&gt; ‘wild goat’</td>
<td>?naa53 &lt;maa&gt; ‘ear’</td>
<td>?naa244 &lt;mang&gt; ‘pus’</td>
</tr>
<tr>
<td></td>
<td>‘mi41 &lt;sman&gt; ‘medicine’</td>
<td>‘naa53 &lt;snga&gt; ‘early’</td>
<td>‘nap44 &lt;snabs&gt; ‘snot’</td>
</tr>
<tr>
<td>MID</td>
<td>31</td>
<td>32</td>
<td>23</td>
</tr>
<tr>
<td></td>
<td>da21 &lt;bdar&gt; ‘to grind’</td>
<td>da32 &lt;gda&gt; ‘to be present’</td>
<td>da223 &lt;bdag&gt; ‘self’</td>
</tr>
<tr>
<td>LOW</td>
<td>121</td>
<td>21</td>
<td>12</td>
</tr>
<tr>
<td></td>
<td>ta121 &lt;da&gt; ‘now’</td>
<td>ta123.ta53 &lt;da.lta&gt; ‘now’</td>
<td>ta123 &lt;dag&gt; ‘to be pure’</td>
</tr>
<tr>
<td></td>
<td>na21 &lt;na.ba&gt; ‘marsh’</td>
<td>na21 &lt;na&gt; ‘to be ill’</td>
<td>na212 &lt;nags&gt; ‘forest’</td>
</tr>
</tbody>
</table>

2.1.3 Dege

In Dege (sDe.dge), as in Zaduo, register lowering did not occur in syllables with voiced complex obstruent initials. The relevant Dege data, drawn from Qu (1988:323) and Qu (1991): passim, are all in the high register, e.g.

- gu41 <dgua> ‘nine’
- zii41 <gzig> ‘leopard’
- dë41 <gdan> ‘cushion; bolster’
- gâ41 <sgam> ‘trunk; box’
However, Gesang and Gesang (2002:109) expressly state for this dialect that 'tone in (modern) syllables with voiced obstruent initials is unstable—one can pronounced them either in the high tone or in the low tone'. On the basis of her instrumental study of Dege tones, Katrin Häsler notes that such voiced obstruents show a tendency toward devoicing, and 'if a decrease of voicedness occurs the tendency towards low register tone is more pronounced' (citing Haller 1999:88; fn 13). The production of the low register in Dege, therefore, seems to have fallen into step with obstructive devoicing—both processes occurred by stages, affecting the simplex obstruents first before extending their effects to prefixed obstruents. The tonality state of Dege is true of many other dialects of the Khams area, such as Dighing (bDe.chen; Lu 1990, Hongladarom 1996), Chamdo (Chab.mdo; Liu 1984), and Batang (Gesang 1989, Haller 1999).

2.1.4 Baima

Baima, a divergent form of Tibetan spoken in Pingwu, Jiuzhaigou, and Wenxian counties across the Sichuan-Gansu border (Nishida and Sun 1990, Huang and Zhang 1995), has minimally distinguished tone register on some of its syllables. The history of tone development in this dialect is markedly idiosyncratic.

Among the short syllables (from OT syllables with zero, -r, or stop codas), only those carrying prenasalised onsets (from OT stops/affricates with nasal preradicals m- and n-m)

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6 Although her recordings show different tone values from those reported by previous authors on Dege, Huang (1995:§2.5) agrees with Gesang and Gesang (2002) on the free variability of tone in such syllables.

7 The development of the low register seems to have acquired a firmer footing in Batang, where syllables with voiced obstruent can potentially contrast in tone register (see Gesang 1989:§4.2.5).

8 Huang and Zhang (1995) recognises as many as five tones in the speech of a native Baima from Yase Village of Baima Township in Pingwu County (Sichuan). This more inclusive tone inventory seems to incorporate pitch patterns that are strictly speaking alltones conditioned by stress (as is the case of the low falling contour occurring on syllables of reduced stress) or rhyme length. My reinterpretation of the Baima tonal history is made possible by the skillful primary analysis of these authors, who have painstakingly sorted out the major tonal correspondences which are, as in all dialects, plagued by exceptions. I have not availed myself of the Baima material in Nishida and Sun 1990 (representing the speech of a different village in Baima Township) since the latter source contains factual and analytical differences from Huang and Zhang (1995) I cannot resolve.

9 Short syllables with non-prenasalised onsets automatically carry a lower register (phonetically 5) if the onsets are voiced obstruents (from OT voiced oral obstruent clusters; e.g. d.ga<lmjag> 'tongue'; ja<lmjag> 'billion'), otherwise the associated register is high (phonetically 5) irrespective of voicing of the proto-onset (e.g. sh.a<lmjag> 'meat'; sa<lmjag> 'to eat'; na<lmjag> 'forest'). Syllables with breathy sonorant onsets (from certain OT sonorant cluster onsets) are redundantly long in the low-register (phonetically 5; e.g. lha<lmjag> 'god, Buddha'; māna<lmjag> 'medicine').

10 Huang and Zhang (1995:99) correctly attributes this distribution pattern to the early loss of OT -r.
show a tone register distinction. OT voiced and voiceless (aspirated) consonants with nasal preradicals merged into modern voiced prenasalised stops/affricates, causing a compensatory split in tone. Surprisingly, OT voiced and voiceless consonants in this case yielded respectively high and low registers, the reverse of the universal pattern of voicing-based tone bifurcation:

\[ \text{\d}_{\text{d}z\text{g}}^\text{H} \text{<d're} \text{e}> \text{‘to trip up’ [sic]}^{12} \]
\[ \text{\d}_{\text{d}z\text{u}^\text{b}}^\text{H} \text{<mdzo> ‘crossbreed between a yak and a cow’} \]
\[ \text{\d}_{\text{du}^\text{e}} \text{‘thog> ‘to pluck; to pick’} \]
\[ \text{\d}_{\text{d}z\text{u}^\text{g}} \text{<mtsho> ‘lake’} \]

Baima long syllables deriving from OT contracted disyllables display another tone split at variance with the expected voicing-based tonogenetic pattern, producing a low register if the OT disyllable began with voiceless consonants and a high register if the OT disyllable began with voiced consonants. Incidentally, since OT syllables with continuant codas except -r, the other main source of Baima long syllables, gave high-registered (phonetically \(35 \sim 354 \sim 35\)) reflexes regardless of onset voicing, tone register is also phonologically significant in long syllables with voiceless onsets. Consider these examples:

\[ \text{ko:}^\text{c} \text{<ka.ba> ‘pillar’} \]
\[ \text{s}^\text{b}^\text{a:}^\text{c} \text{<sol.ba> ‘charcoal’} \]
\[ \text{\d}_{\text{sa}^\text{g}} \text{<shes> ‘to know how’} \]
\[ \text{\d}_{\text{co}^\text{c}}^\text{H} \text{<kryang> ‘to extend; to reach’} \]
\[ \text{\d}_{\text{co}^\text{c}}^\text{H} \text{<gyang> ‘wall’} \]
\[ \text{\d}_{\text{y}^\text{a}}^\text{c} <\text{nyi.ma> ‘sun’} \]
\[ \text{\d}_{\text{w}^\text{a}}^\text{c} \text{<ib.a.ba> ‘goiter’} \]
\[ \text{\d}_{\text{dz}^\text{a}}^\text{c} \text{<mtshan> ‘night’} \]
\[ \text{\d}_{\text{dz}^\text{a}}^\text{c} \text{<’dzul> ‘to enter (a hole)} \]
\[ \text{\d}_{\text{na}^\text{c}}^\text{c} \text{<nyal> ‘to go to bed’} \]

2.2 Low register induced by rhyme length

Syllable duration is seldom included as a contributing factor in the historical development of tone; however, several cases of long rhymes fostering the rise of low register have been noted from various dialects. The association between long (bimoraic) rhymes and low register can be seen in the Lhasa low-tone spreading rule, whereby in disyllable phonological words the low tone in the initial syllable spreads to the following (tonally neutral) long syllable regardless of the original tone register of the latter (J. Sun 1997:505–509), and the Sherpa rule of tone neutralisation whereby non-initial long syllables become predictably low-registered (see further section §4.1). Rhyme length

\[11\] Written with the achung ‘<’> in the Tibetan script.

\[12\] The verb means ‘to slip; to slide’ in standard written Tibetan.
either serves as a phonological environment for a subphonemic low register as in Zhangla and Qiuji, or underlies primary tonal splits as the case seems to be in Zhuoni.\textsuperscript{13}

2.2.1 Zhangla\textsuperscript{14}

The Tibetan spoken in Zhangla (\textit{Icang.la}) District of Songpan County is a form of the Amdo dialect. In Zhangla, the low register correlates directly with rhyme length at the phonetic level, such that monosyllables containing long rhymes tend to be realised in a redundant low (phonetically low rising) tone, especially when the onset is voiced or voiceless aspirated:

\begin{tabular}{ll}
\textit{ka} & \<ka.ba\> ‘pillar’ \\
\textit{bön} & \<cmthong\> ‘to see’ \\
\textit{dzal} & \<zl.ba\> ‘moon’ \\
\textit{gê} & \<sprin\> ‘cloud’ \\
\textit{yi} & \<zhang\> ‘field’ \\
\textit{läl} & \<lang\> ‘to stand’ \\
\textit{lön} & \<lhung\> ‘to fall’ \\
\end{tabular}

2.2.2 Qiuji\textsuperscript{15}

Qiuji (\textit{Chos.rje}) is a little-explored dialect of eastern Ruo’ergai County and neighboring areas of Jiuzhaigou County. Among the unusual phonological traits of this dialect, OT voiced unprefixed obstruents were kept as such (e.g. \textit{go} \<go\> ‘to hear’), OT voiceless unprefixed obstruents became voiced (e.g. \textit{ga} \<ka.ba\> ‘pillar’), whereas OT voiced obstruents with preradicals (nasal or non-nasal) became distinctively breathy (e.g. \textit{kho} \<sgo\> ‘door’; \textit{gan} \<sngo\> ‘blue/green’).\textsuperscript{16} There is no phonemic tone in Qiuji,\textsuperscript{17} but

\begin{flushleft}
\textsuperscript{13} In Zhouchu (\textit{Brug.chu}), long syllables with originally voiceless onsets also take the low register (e.g. \textit{ka} \<ka.ba\> ‘pillar’; \textit{rê} \<sems\> ‘mind’), at least in the limited data given in Huang (1995:49-53).
\textsuperscript{14} Personal research. My Zhangla consultant comes from Mayi (\textit{niti.sws}) Village in Zhangla District of Songpan County.
\textsuperscript{15} The Qiuji Tibetan data were collected in my recent fieldwork with the help of a native from Mazang Village in Qiuji Township (J. Sun, in preparation). Qiuji Tibetan is strikingly different from the surrounding dialects: Zhouqu (\textit{Brug.chu}) to the east, Amdo to the west, and Zhongu (\textit{Zhao.ngu.khog}) and Baima to the south. It is said to be mutually intelligible with the markedly different Thewo dialect of Ruo’ergai and Diebu counties, probably due to prolonged contact.
\textsuperscript{16} As the OT voiced stop/affricates with oral preradicals became devoiced and distinctively low-toned in Lende Tibetan, they also became concomitantly breathy (e.g. \textit{tha} \<do\> ‘stone’; Huber (forthcoming). Qiuji has carried the development of breathy phonation much further than Lende, however. Incidentally, Qiuji prenasalised consonants and \textit{n} (\<OT r\>) are redundantly breathy (e.g. \textit{ng} \<mgo\> ‘head’; \textit{rin} \<cru\> ‘to rot’). \textsuperscript{17} Qiuji is the same dialect as what is called ‘Ruo’ergai’ in Huang (1995), for which as many as four tonemes are described. Our different tonal analyses stem from the different segmental inventories we
\end{flushleft}
phonetic-level ‘habitual tone’ is more deeply entrenched in this dialect. Monosyllables (even with voiced or breathy onsets) are generally spoken on a high register, except th. syllables containing long rhymes and aspirated or breathy initials are invariable accompanied by low register (phonetically low-rising); compare:

- $kʰʝ查阅 <khang.ba> ‘house’
- $sʰ查阅 <sems> ‘mind; soul’
- $kʰ查阅 <sgam> ‘trunk’
- $m查阅 <mang> ‘to be many; much’
- $g查阅 <gangs> ‘snow-capped mountain’
- $kʰ查阅 <kho> ‘s/he’
- $kʰ查阅 <dgos> ‘to want; to be necessary’

2.2.3 Zhuoni

Zhuoni (Co.ne) Tibetan is spoken at Lintan County of Gannan Prefecture in Gansu Province (Qu 1962). Zhuoni appears to distinguish only two tonemes, high and low. Modern short syllables, which originated from OT open and checked syllables, underwent the usual register split caused by proto-voicing:

- $kʰ查阅 <kha> ‘mouth’
- $tʰ查阅 <tub> ‘to cut’
- $lo查阅 <glo> ‘girth’
- $gu查阅 <dgu> ‘nine’
- $tu查阅 <dug> ‘poison’
- $le查阅 <lo> ‘age’

Initial voicing is irrelevant to tonal development in long syllables, which come from OT monosyllables with sonorant codas and contracted disyllables. Long syllables are generally low-toned, except that those deriving from OT syllables containing non-nasal preradicals are high-toned:

- $tʰ查阅 <tsil> ‘grease’
- $ka查阅 <gang> ‘where’
- $n查阅 <nyan> ‘to listen’
- $tʰ查阅 <mthong> ‘to see’
- $do查阅 <mdung> ‘spear’
- $ka查阅 <skal> ‘share [N]’
- $ba查阅 <sbang> ‘to soak’
- $to查阅 <stong> ‘to be empty’
- $du查阅 <sdong.po> ‘tree’

Tone splits are therefore governed by entirely different factors in Zhuoni short and long syllables. The familiar tone splitting caused by onset voicing only affected short syllables, and most long syllables, irrespective of original onset voicing, took on the low register.

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posit. I consider aspiration in Qiuji voiceless fricatives and breathy phonation as distinctive, whereas Huang does not.

18 Including voiceless aspirated spirants.

19 Zhuoni is a Tibetan dialect spoken at Lintan County of Gannan Prefecture in Gansu Province (Qu 1962). The four tones posited by Qu, short high ($'$), short low ($''$), long high ($'''$), and long low ($''$), can be reasonably reduced to just high ($''$) and low ($''$) if one relegates rhyme length to the segmental or moraic tier.

20 There are some exceptional cases of OT liquid codas -ɾ and -ɾ yielding short instead of long Zhuoni vowels.
Zhuoni thus provides another example in modern Tibetan of rhyme length being critically involved in the genesis and propagation of the distinctive low register.\textsuperscript{11}

\subsection*{2.3 Low register induced by onset aspiration}

Aspirated onset consonants have been observed to lead to tone lowering in various Chinese dialects and Southeast Asian languages (see Ho 1990). Despite its unclear underlying phonetic mechanisms and the existence of completely contrary developments,\textsuperscript{2} the phenomenon is attested in at least two Tibetan dialects we have worked on: Qiuji and Tiebu.

As shown in \S2.2.2, a Qiuji monosyllable takes on a subphonemic low register if it satisfies two conditions: (i) that the rhyme is long, and (ii) that the onset consonant is either breathy or aspirated.

The role of aspiration as a tone depressor works somewhat differently in Tiebu Tibetan.\textsuperscript{3} In this dialect, modern syllables containing sonorant or voiceless unaspirated obstruent onsets have acquired a distinction in (high versus low) tone, in all other syllables tone register is predictable from onset consonant types and syllable structure. As a striking phonological trait of this dialect, aspirated onset consonants (i.e. voiceless aspirated stops, affricates, and spirants) are associated with the high register in checked syllables, but with the low register in non-checked ones, as in:

\begin{align*}
\text{pha}^\ddagger & \quad <\text{phag}> \quad \text{‘pig’} & \text{sha}^\Delta & \quad <\text{sa}> \quad \text{‘earth’} \\
\text{ts\textipa{h}} & \quad <\text{khrag}> \quad \text{‘blood’} & \text{x\textipa{e}l} & \quad <\text{shel}> \quad \text{‘glass’}
\end{align*}

\section*{3 Evolution of tonal contours}

On rare occasions, one finds Tibetan dialects showing further evolved tone systems with a minimally distinctive falling contour superimposed on the basic high-low register contrast.

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\textsuperscript{11} Qu (1988:323) suggests rather complicated tone shifts to account for the Zhuoni scenario.

\textsuperscript{2} In the Nakhonsithammarat (Haas 1958) and Songkhla (Henderson 1959) dialects of Thai and in the Waic (Mon-Khmer) language Va (personal research), aspirated consonants conditioned high rather than low tone register.

\textsuperscript{3} Tiebu (The-bo), like Qiuji, is an under-researched form of Tibetan spoken by the agricultural Tibetans of Chong'er, Re'er, and Donglie Townships of Tiebu District in Ruoergai County, as well as of the abutting Diebu District on the Gansu side of the Sichuan-Gansu border. I worked briefly with my first two Tiebu consultants in 1994. The Tiebu data cited herein, from another male speaker Mr. Tshe'bum, were recorded by my student Ms. Lin Youjing under my supervision during fieldwork in Sichuan in the fall of 2001.
3.1 Falling contour induced by the glottal stop coda

The widely attested tendency for the syllable-final glottal stop \( ? \) to lead historically rising tone has been experimentally verified and accounted for by Hombert et al. (1979: §2.2.2), who showed that the postvocalic glottal stop produces a significant and perceptible rise in \( F_0 \) in the preceding vowel. As exemplified by the following varieties of Central Tibetan, the contrary effect seems to be the norm in Tibetan, attributable probably to a variant realization of the glottal stop (according to Peter Ladefoged, cited in Hombert et al. 1979:51). Indeed, a variant realization of the glottal stop coda in Lhasa-Tibetan is a fall in pitch accompanied by some degree of glottal stricture (Chang and Chang 1978:xix–xx).

3.1.1 Lhasa

In Lhasa, we find falling allotones in syllables taking the glottal stop coda, as in (Hu et al. 1982):

\[
\begin{align*}
&\text{ka}^1 [\text{ka}^{12}] <\text{s}\text{ga}> \text{ ‘saddle’} \\
&\text{ka}^7 [\text{ka}^{132}] <\text{g}\text{ag}> \text{ ‘to be clogged’} \\
&\text{kam}^h [\text{ka}^{m3}] <\text{s}\text{ka}> \text{ ‘to be dry’} \\
&\text{kam}^? [\text{ka}^{m3}] <\text{bs}\text{k}\text{a} > \text{ ‘make dry [PF]’}
\end{align*}
\]

3.1.2 Rikeze

In some varieties of Central Tibetan the glottal stop completely elided, leaving in its wake a distinctive falling tone.\(^\text{24}\) This is best exemplified by Rikeze (gZhis.ka.rtse; Qu 1981a:187, Qu 1988:324–326, Haller 1999) where the lexically random drop of the glottal coda triggered a secondary tone split, transforming the original two-tone system into a four-tone system:

\[
\begin{align*}
&\text{ke}^H [\text{ke}^{33}] <\text{s}\text{ke}> \text{ ‘neck’} \\
&\text{tsh}\text{a}^H [\text{tsh}\text{a}^{31}] <\text{kh}\text{rag}> \text{ ‘blood’} \\
&\text{ro}^L [\text{ro}^{12}] <\text{ro}> \text{ ‘corpse’} \\
&\text{r}\text{a}^L [\text{ra}^{13}] <\text{ras}> \text{ ‘cloth’}
\end{align*}
\]

\(^{24}\) Marked below with the grave accent. Since the high register tone may also fall slightly at the phonetic level, especially when the syllable is short, the innovative falling tone is realised by a distinctively steep fall.
3.1.3 Zhibo

In Zhibo (Qu 1988:324), the split generating falling tone took effect only in the high register, resulting in two distinctive high-register tones. In the low register, the loss of the glottal stop coda is compensated for by vowel length only, e.g.

so\textsuperscript{13} [so\textsuperscript{33}] <so> ‘tooth’
so\textsuperscript{4} [so\textsuperscript{41}] <srog> ‘life’
ma\textsuperscript{4} [ma\textsuperscript{113}] <mar> ‘butter’
si\textsuperscript{1} [si\textsuperscript{113}] <gzig> ‘leopard’

3.1.4 Langkazi

The tone split in question was narrowly confined to one phonological environment in Langkazi (sNa.dkar.rtse; Qu 1988:324–325), namely low-registered syllables closed by a nasal coda, where the OT secondary coda -s conditioned falling pitch, presumably compensating for the loss of an earlier glottal-stop reflex of OT -s. Notably, the falling contour in this dialect is allotonically predictable as it is always correlated with lack of vowel length:

kam\textsuperscript{1} [kam\textsuperscript{113}] <sgam> ‘trunk’
kam\textsuperscript{4} [kam\textsuperscript{113}] <bgams> ‘eat powdery food [PF]’

3.2 Falling contour induced by sonorant codas and syllable coalescence

In some varieties of Dzongkha (rDzong.kha) Tibetan, a basic high-versus-low register distinction is operational in all syllable types, but some syllable types (long open syllables and short syllables closed by bilabial codas) distinguish an additional level-versus-falling contour (Mazaudon and Michailovsky 1989).\textsuperscript{23} The origins of the Dzongkha innovative contour tone are now clear, thanks to the skilled historical comparison provided by these authors. The loss of the OT liquid codas -r, and -l produced distinctive falling contour,\textsuperscript{24} as shown by:

pa\textsuperscript{11} <spags> ‘cut of meat’
pa\textsuperscript{4} <dpar> ‘picture’

bja\textsuperscript{4} <’bras> ‘paddy (in the field)’

bjä\textsuperscript{4} <dbyar> ‘summer’

---

\textsuperscript{23} In a valuable recent study (Watters 1996), a radically different phonological analysis of Dzongkha prosody is offered. Watters recognises more consonant types including preglottalised sonorants and prenasalised stops, and finds the variety of Dzongkha he investigates to be only incipiently tonal. Unfortunately, Watters does not specify exactly which Dzongkha dialect (down to the level of village) his data represent.

\textsuperscript{24} The OT velar nasal coda was also reflected by (non-distinctive) falling tone on long nasalised vowels in Dzongkha.
Likewise, contracted disyllables containing the suffixes \(-pa/-po\), \(-ba/-bo\), \(-ma/-mo\) became Dzongkha monosyllables in falling tone:

\[
\begin{align*}
\text{sum}^H < \text{gsum} & \quad \text{‘three’} & \text{lam}^L < \text{lam} & \quad \text{‘road’} \\
\text{sùm}^H < \text{srung.ba} & \quad \text{‘locket’} & \text{bjak}^L < \text{sbrang.ma} & \quad \text{‘bee’} \\
\text{cp}^H < \text{shob} & \quad \text{‘lie’} & \text{côp}^H < \text{shog.pa} & \quad \text{‘wings’}
\end{align*}
\]

4 Tone neutralisation

The Tibetan tone system is a kind of template word-tone characterised by initial-dominance (J. Sun 1997:§4) whereby contrastive tone register is borne solely by the stressed initial syllable in a phonological word while non-initial syllables are redundantly high-registered.\(^{27}\) Discussed in the following are two exceptions to the foregoing generalisation.

4.1 Sherpa

In Sherpa (Shar.pa), the predominant register in tonally neutral non-initial syllables appears to be low rather than high (Tan 1987). Disyllabic words show two patterns of neutralisation depending on the morphological makeup. The minor pattern, motivated probably by trochaic stress, is found with words consisting of a main root not checked by a glottal-stop coda plus a suffix. The main root keeps its monosyllabic citation tone shape,\(^{28}\) whereas the suffix is spoken invariably in low register (phonetically low falling \(3^1\)), as in:

\[
\begin{align*}
\text{a}^H\text{-pa}^L & < \text{gla.bo} \quad \text{‘day-laborer’} & \text{phe}^L\text{-pa}^L & < \text{bod.pa} \quad \text{‘Tibetan’} \\
\eta^H\text{-ma}^L & < \text{mgar.mo} \quad \text{‘to be sweet’} & \text{tham}^L\text{-mo}^L & < \text{dwangs.mo} \quad \text{‘to be sunny’}
\end{align*}
\]

In the majority pattern occurring elsewhere, non-initial syllables show a quantity-related register split—short rhymes are high-registered (phonetically \(5^3\)) and long rhymes are low-registered (phonetically \(3^1\)); e.g.

\[
\begin{align*}
\text{phu}^L + \text{ts}^H\text{hap}^H & < \text{bu.ts}h\text{ab} & \rightarrow & \text{phu}^L\text{-ts}^H\text{hap}^H \quad \text{‘adopted son’} \\
\text{c}^L + \text{n}^L & < \text{zha.ne} & \rightarrow & \text{c}^L\text{-n}^L \quad \text{‘lead (metal)’} \\
\text{m}^L + \text{k}^L\text{em}^H & < \text{me.khyem} & \rightarrow & \text{m}^L\text{-k}^L\text{em}^L \quad \text{‘fire-shovel’} \\
\text{nup}^L + \text{n}^L\text{im}^L & < \text{nup.nyin} & \rightarrow & \text{nup}^L\text{-n}^L\text{im}^L \quad \text{‘day and night’}
\end{align*}
\]

---

\(^{27}\) Barring unstressed clitic syllables and occasional local assimilation to preceding low register (see J. Sun 1997:§2.2, 3.2).

\(^{28}\) Except for a subphonemic detail: the pitch shape in high-registered long rhymes changes from (citation) high-falling to high level.
4.2 Baima

As shown above, Baima is embryonically tonal with a register opposition restricted to certain syllable types, namely short syllables with prenasalised onsets and long syllables with voiceless onsets. Tonal distinction seems drastically reduced in Baima polysyllabic phonological words, as elsewhere in modern Tibetan. It is a token of the high aberrancy of this dialect that, unlike any other Tibetan dialect known to us, the target of Baima tonal neutralisation is the initial syllable. Thus, most disyllabic words cited in Huang and Zhang (1995) show an indistinct low register (phonetically a low fall \(2i\); unmarked herein) in the initial syllable:

\[
\begin{align*}
\text{jia} & \quad \text{[jia\textsuperscript{42}]} + \text{sa} & \quad \text{[sa\textsuperscript{35}]} <\text{rgya.zhwa}> & \rightarrow & \text{\textipa{jiæ-śa\textsuperscript{31} [jiæ\textsuperscript{41}-śa\textsuperscript{35}]}} & \text{‘Chinese-style hat’} \\
\text{jya} & \quad \text{[jya\textsuperscript{33}]} + \text{tsho} & \quad \text{[tsho\textsuperscript{32}]} <\text{lug.tshang}> & \rightarrow & \text{\textipa{jya-tsho\textsuperscript{31} [jya\textsuperscript{33}-tsho\textsuperscript{32}]}} & \text{‘sheep-pen’}
\end{align*}
\]

In fact, this low-high register pattern characterises most disyllabic words in Baima (Huang and Zhang 1995:84). Unfortunately, the data provided in this source are insufficient for determining the degree to which the Baima non-initial syllables are also subject to tonal neutralisation.

5 Summary and conclusions

Tibetan tonal typology is a subject attracting increasing scholarly attention (Mazaudon 1977, Qu 1981a, Qu 1981b, Qu 1988, Tan 1984, Yip 1993, Huang 1995, J. Sun 1997, Huber to appear). The present study makes a small contribution to this growing literature by demonstrating that (i) the same phonetic motivations underly the evolution of the high-versus-low register contrast in Tibetan produced different developments in different dialects (§2.1); (ii) in addition to onset voicing and laryngeal codas, rhyme length and open glottal states (breathy voice and aspiration) also turn out to be important but hitherto underrated pathways leading to distinctive low register (§2.2); (iii) the emergence of the secondary level-versus-falling contour contrast may also be heterogeneously actuated in different dialects (§3), and (iv) though all known tonal dialects have template (i.e. non-spreading) word-tone systems, tone neutralisation strategies in polysyllabic words are not uniform across the tonal dialects.

The diverse diachronic tone rules inspected herein suggest that as spoken Tibetan was subject ubiquitously to the drift toward reduced consonantism and syllable structure, a
small number of dialects managed to bear the strain of segmental attrition witho
exploiting pitch modulations even at the allophonic level,\textsuperscript{30} while most other dialec
responded by setting their course for tonogenesis. Different dialects may well ha
independently developed to varying extents the same tonogenetic potentials or explr
divergent tonogenetic paths, producing the observed scale of tonality types ranging fro
transparent allophonic pitch patterns (e.g. Zaduo, Qiuji) to stable and synchronically
opaque phonemic tones comprising both distinctive registers and contours (Rikeze).

The moral of this study for the classification of the Tibetan dialects is clear. Rigorou
methodology demands that only shared innovations unlikely to be independer
developments are diagnostic of a period of common history, hence admissible as reliabi
subgrouping criteria. Given the strong possibility for the seeds of tone to sprout in
different times and in different Tibetan-speaking areas, the mere presence of analogou
tone systems in two forms of Tibetan tells us little about the degree of their geneti
affinity. This is of course not to deny the value of \textit{diachronic tone rules}. Quite th
contrary, I believe that they are a largely untapped resource of phonological innovation
that should properly figure in any comprehensive classification of modern Tibetan.\textsuperscript{31} The
important task at hand is to rank the observed tone rules in terms of their usability for the
purpose of dialect subclassification. Phonetically well-motivated, recurrent globa
similarities of tone are probably due to parallel phonological development and are to be
sifted out. On the other hand, idiosyncratic rules of tone split and neutralisation, some of
which are presented in this paper, should be sought out in earnest for their potential value
in the armory of Tibetan dialectologists.

In conclusion, the sagacity of the quote at the beginning of this paper holds true also for
the classification of Tibetan dialects, and I only hope Prof. Matisoff will smile indulgingly
at my belaboring a point he already made so plain almost three decades ago.

References

Bielmeier, Roland, 1982, Problems of Tibetan dialectology and language history with
special reference to the \textit{sKyid.gron} dialect. \textit{Zentralasiatische Studien des Seminars für


Chang, Kun and Betty Shefts Chang, 1978, \textit{Spoken Tibetan Texts} vol.1 (Institute of History

\textsuperscript{30} An extreme case in point being Zhongu (J. Sun to appear), which remains completely atonal despite the
fact that only as few as nine monophthongal rhymes remain in its inventory of contrastive rhymes.

\textsuperscript{31} Phonological innovations have been utilised in several recent papers bearing on Tibetan subclassification
(e.g. Bielmeier 1982, Nishi 1986, Zhang 1993). But these deal mainly with segmental sound changes.


In preparation, Phonological profile of Qiuji Tibetan.


