RECONSIDERING THE DIACHRONY OF TONE IN RMA

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Abstract
Prior work has suggested that proto-Rma was a non-tonal language and that tonal varieties underwent tonogenesis (Liú 1998, Evans 2001a-b). This paper re-examines the different arguments for the tonogenesis hypothesis and puts forward subgroup-internal and subgroup-external evidence for an alternative scenario in which tone, or its phonetic precursors, was present at the stage of proto-Rma. The subgroup-internal evidence comes from regular correspondences between tonal varieties. These data allow us to put forward a working hypothesis that proto-Rma had a two-way tonal contrast. Furthermore, existing accounts of how tonogenesis occurred in the tonal varieties are shown to be problematic. The subgroup-external evidence comes from regular tonal correspondences to two closely related tonal Trans-Himalayan subgroups: Prinmi, a modern language, and Tangut, a mediaeval language attested by written records from the 11th to 16th centuries. Regular correspondences among the tonal categories of these three subgroups, combined with the Rma-internal evidence, allow us to more confidently reconstruct tone for proto-Rma.

Keywords: Tonogenesis, Trans-Himalayan (Sino-Tibetan), Rma, Prinmi, Tangut, Historical linguistics

ISO 639-3 codes: qxs, pmi, pmj, txg

1. Introduction
This paper addresses the diachrony of tone in Rma, a group of northeastern Trans-Himalayan language varieties spoken in 四川 Sichuān, China. Rma varieties exhibit diverse word-prosodic systems: most southern varieties are tonal while northern varieties are non-tonal. In prior work, it has been proposed that proto-Rma was a non-tonal language and that tonal varieties underwent tonogenesis (Liú 1998, Evans 2001a-b). This paper re-examines the arguments for the tonogenesis hypothesis and puts forward subgroup-internal and subgroup-external evidence that tone in southern Rma is not a subgroup-internal innovation.

The subgroup-internal evidence for reconstructing tone can be found in tonal correspondences across tonal varieties. Regular tonal correspondences between varieties allow us to put forward a working hypothesis that proto-Rma had a two-way tonal contrast. Furthermore, existing accounts of how tonogenesis occurred in the tonal varieties are shown to be problematic. The subgroup-external evidence comes from...
regular tonal correspondences with Prinmi, a modern subgroup closely related to Rma, and Tangut, a mediaeval Trans-Himalayan language attested by written records dated from 1042 to 1502 CE that is also considered to be closely related to Rma. Regular correspondences among the tonal categories of these three subgroups, combined with the Rma-internal evidence allow us to more confidently reconstruct tone for proto-Rma.

The paper is organized as follows: §2 presents and critically examines prior arguments that tone in Rma is a secondary, subgroup internal innovation; §3 provides subgroup-internal evidence that tone is a shared retention in Rma; §4 provides subgroup-external evidence that tone is a retention; and §5 summarizes the findings of this study and points to areas where further research is needed.

2. Old or new? Issues in reconstructing tone for proto-Rma

Rma varieties are spoken along the upper岷Mín river in the阿坝Rngaba Qiang-Tibetan Autonomous Prefecture of western四川Sìchuān. The area in which Rma is spoken spans five counties:汶川Wènchuān,理Lǐ,茂Mào,松潘Sōngpān, and黑水Hēishuǐ. Although Rma has traditionally been split into two subgroups, southern Rma and northern Rma (H. Sun 1981, Liú 1998, Huang & Zhou 2006), this classification is a typological one and is not based on shared innovations. The relationships between varieties more closely resemble a continuum than they do a simple North-South bifurcation (LaPolla with Huang 2003, C. Huang 2004, Zheng 2015). For example, some varieties in the eastern regions of Máo County, such as the永和Yǒnhé variety, do not fit neatly into a North-South dichotomy and may belong to a separate subgroup (Sims 2016). For this paper, I will refer to the varieties spoken in Lǐ and Wènchuān County as ‘southern,’ the varieties of southeast Máo County as ‘central,’ and the varieties of northern Máo County, Sōngpān County and Hēishuǐ County as ‘northern,’ with the caveat that the internal classification of some of these varieties has yet to be fully worked out and these terms are geographic rather than well-defined genetic subgroups.

Rma varieties exhibit a diverse array of tonal and accentual systems. Many, but not all, geographically southern varieties of Rma have lexical tone, whereas geographically northern varieties lack tone and have lexical stress-accent (H. Šūn 1981:177-78; H. Liú 1991; Liú 1998:106; Evans 2001a-b, 2006; LaPolla with Huang 2003:33-35; C. Huang 2004:25-16). Tonal varieties have two major tones: H(igh) and L(ow). In the tonal southern varieties, these two tones are typically realized as [55] vs. [31 ~ 33] respectively (Evans 2001a-b).

In addition to the two ‘primary’ tones, some southern varieties possess a small number of ‘minor’ tones. These minor tones are infrequent, positionally constrained (i.e. restricted to certain syllable types), and largely found in either borrowings from Sichuanese Mandarin or cases of syllable coalescence (Evans 2001a-b, Stanford & Evans 2012, Kirby 2001).

Table 1 gives a frequency of occurrence of the tone types in the southern龙溪Lóngxī variety.

<table>
<thead>
<tr>
<th>Pitch pattern</th>
<th>Type frequency</th>
<th>Percentage</th>
<th>Restrictions</th>
</tr>
</thead>
<tbody>
<tr>
<td>[55]</td>
<td>2173</td>
<td>35.33%</td>
<td>none</td>
</tr>
<tr>
<td>[33] ~ [31]</td>
<td>3912</td>
<td>63.61%</td>
<td>none</td>
</tr>
<tr>
<td>[13 ~ 213]</td>
<td>43</td>
<td>0.7%</td>
<td>voiced initials only</td>
</tr>
<tr>
<td>[35]</td>
<td>19</td>
<td>0.31%</td>
<td>borrowings, coalesced syllables</td>
</tr>
<tr>
<td>[51]</td>
<td>3</td>
<td>0.05%</td>
<td>borrowings, coalesced syllables</td>
</tr>
</tbody>
</table>

The data in Table 1 show that the two primary tones account for most of the lexicon and that the minor tones are rare. This paper deals with the diachronic origins of the primary H vs. L tonal distinction and will not deal with the minor tonal melodies.

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4 This tonal contrast was previously misanalysed as a vowel-length distinction (Sims, 2014). However, the concomitant difference in vowel length for H and L toned syllables in isolation was later shown to be secondary to the tonal distinction (Sims 2017).
Prior studies of tone in Rma have described tone as a secondary innovation which arose through either
(1) transphonologization of tone (sensu Mazaudon 1977) via segmental simplification or (2) contact-induced
reanalysis of older stress-accent patterns as tonal melodies.
This section presents and critically examines the arguments that have been given for tone as a subgroup-
internal innovation.

2.1 Tone from segmental simplification

刘光坤 Liú Guāngkūn (1998:117-126) was the first to study the origins of tone in the southern varieties.
Liú argues that tone in the southern varieties arose through a confluence of (1) the simplification of complex
onsets, (2) the loss of coda consonants. I will deal with each of these issues separately.

2.1.1 Tone from onset simplification

Liú (1998:120) notes that northern varieties have large inventories of complex onsets, whereas southern
varieties have much smaller inventories of complex onsets and give evidence that tonal splits may be a result
of onset simplification. A subset of those forms is presented in Table 2.

<table>
<thead>
<tr>
<th>Máo</th>
<th>Míańchí</th>
<th>gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>ksi</td>
<td>si55</td>
<td>‘three’</td>
</tr>
<tr>
<td>si</td>
<td>si31</td>
<td>‘crow (of a rooster)’</td>
</tr>
<tr>
<td>gʐə</td>
<td>zì55</td>
<td>‘give’</td>
</tr>
<tr>
<td>zə</td>
<td>zì31</td>
<td>‘common yellow cow, male’</td>
</tr>
</tbody>
</table>

Máo is a northern, atonal variety with a rich inventory of complex onsets. Mianchi is a southern,
tonal variety with an impoverished set of complex onsets. Liú (1998:121-22) proposes that the simplification
of onsets in varieties like Míańchí has led to the development of a compensatory tonal distinction: *CCV →
CV+H and *CV → CV+L. One issue with this argument is that, as Evans (2001b:216) and Kirby (2001)
have pointed out, there is not a straightforward correlation between onset-complexity and the presence or
absence of tone in each dialect. The Táoping variety provides a nice example of this point. Táoping is a segmentally conservative southern variety with twenty-four distinct consonant clusters in onset
position (H. Sūn 1981; Evans 2001a). Nevertheless, Táoping has essentially the same (H vs. L) tonal system
as southern varieties such as Lóngxī and Míańchí, though the latter two varieties have only retained two or
three onset clusters (Evans 2001a:216). In brief, onset simplification can account for subsequent tonal splits
in Lóngxī and Míańchí but cannot account for the primary tonal distinction found in the conservative
Táoping variety.

2.1.2 Tone from coda loss

Liú (1998:121-22) postulates that the loss of coda consonants may have led to the development of tone in
some varieties. It is the received wisdom that Proto-Trans-Himalayan (hereafter PTH) consonant codas were
lost in all known varieties of Rma, not just the varieties which are tonal, and the codas present in varieties
that have them are secondary developments (Liu 1984). For example, in Rónghóng, a segmentally
conservative northern variety, all PTH consonant codas were lost, yet the variety does not have tonal
distinctions (LaPolla with Huang 2003:23). Rónghóng does possess consonant codas, and even coda
consonant clusters, but these are clearly of secondary origin and have developed due to syllable coalescence
(LaPolla with Huang 2003: 23-28, see also C. Huang 1998, Evans 2001b:87-88, J. Sun 2003 for examples
and discussion).

Supposing it was the loss of codas rather than the loss of initials which created the conditions for
tonogenesis in Rma, it may be the case that either (1) all varieties underwent tonogenesis and then some
varieties subsequently lost the tonal contrast, or (2) coda-loss happened in a variegated way such that some
varieties became tonal while others never developed tone. A thorough comparison of rhymes of a
segmentally conservative tonal variety of Rma with consonant codas in other Trans-Himalayan languages
that better preserve PTH codas, such as Written Tibetan, is beyond the scope of this paper, but such an
investigation may yet reveal insights into the phonetic origins of tones in Rma.
Having shown that Liú’s proposal that tone arose from onset simplification is problematic for tonal varieties with complex onsets, and that evidence for tone from codas has not been demonstrated conclusively, I now turn to another perspective, suggested by Liu (1998) and taken up by Evans (2001a-b) and Evans & Sun (2013), in which tone arose due to contact with Chinese.

2.2 Tone from reanalysis

Using data from three key southern varieties, Táopíng, Lóngxī, and Miánchí, Evans (2001a) reconstructs a two-way, *L vs. *H, contrast for proto-southern Rma. Evans (2001b:216) finds no evidence for tone in these southern varieties having arisen from segmental origins, and concludes that the Rma data represent “the first documented case of which I am aware in which tonogenesis has occurred without any concomitant loss of segmental information.” Although Evans (2001a-b) considers the possibility that these tonal contrasts predate proto-southern Rma and date all the way back to Proto-Rma, he draws the following conclusions:

1. Tone cannot be a retention from an earlier state and must be a secondary development in the varieties that have it.
2. There is no evidence for traditional tonogenesis (i.e. transphonologization of segmental contrasts into suprasegmental contrasts)
3. Extensive bilingualism with Sichuanese Mandarin played a role in speakers re-analyzing older accentual patterns as tonal melodies.

The following sections critically examine Evans’ arguments for tone as innovation from reanalysis.

2.2.1 ‘Lack of inherited tone from earlier stages’

The first argument Evans (2001a-b) puts forward is that there is no evidence that the tone is inherited from earlier stages. Evans (2001b:77) states that:

There is at this point no evidence that proto-Qiangic was a tonal language. On the contrary, as mentioned above, the most phonologically conservative languages and dialects (e.g. rGyalrong, Daufu/Ergong), languages which preserve PTB initials and codas, do not have phonemic tone… With no evidence for tones at the time depth of proto-Qiangic, the origin of SQ tones cannot reasonably be claimed to pre-date Proto-Qiang). In fact, like rGyalrong and Ergong, Northern Qiang, the phonologically conservative sister to Southern Qiang, bears no evidence of ever having had tones… The complete lack of tonal phenomena in Northern Qiang suggests that tones arose after the Northern and Southern Qiang dialects had diverged from each other.

There are two potential issues with this line of argumentation. Firstly, this argument assumes a close phylogenetic relationship between Rma and Rgyalrongic, namely, that they both belong in the ‘Qiangic’ subgroup. The phylogenetic relationship between these clades has been the subject of some debate (see Chirkova 2012; LaPolla 2013; Jacques 2016b and references therein). Given that the precise relationship between Rma and Rgyalrongic is contested, it is probably best to avoid making claims about the status of tone in proto-Rma based on the presence or absence tone in modern Rgyalrongic languages. Secondly, even aside from the issue of the exact relation between Rgyalrongic and Rma, it is not the case that all Rgyalrongic languages are non-tonal. Since Evans’ work was published, a considerable amount of work has been done on suprasegmental phonology on Rgyalrongic that reveals that suprasegmental contrasts may be a conservative feature of some varieties. Consider the ‘Horpa’ sub-branch of Rgyalrongic, which contains three major mutually unintelligible varieties: Northern, Western, and Central. The Northern and Western varieties are tonal, whereas the Central varieties exhibit variation. Two sub-varieties of Central Horpa, Rta’u (Stau) and Dgebshesrtsa, are atonal, whereas the other, Upper Stongdgu, has contrastive phonation (J. Sun, Tian, & Chiu 2017, J. Sun to appear). Outside of Horpa, tone is also found in other subgroups of Rgyalrongic. The Wobzi variety of Khroskyabs (Western Rgyalrongic) has a two-way, H vs. HL tonal contrast (see Lai 2017). 卓克基 Zhuókèjī Rgyalrong has a privative tonal contrast between /HL/ and /Ø/ (Lin 2012). Jacques (2005) has shown that some non-tonal varieties of Rgyalrong proper, such as Japhug Rgyalrong, were once tonal, but have since lost tonal contrasts. Thus, although the suprasegmental

5 If in quotes, the section title refers to a corresponding section in Evans’ 2001 paper.
phonology of proto-Rgyalrongic has yet to be reconstructed, we cannot rule out the possibility that ancestral language had suprasegmental contrasts.

2.2.2 ‘Correlation of tonality and borrowing’
Another argument for the newness of tone is, as initially pointed out by Liú (1998:121-26), and discussed at length in Evans (2001a-b) and Stanford & Evans (2012), is the fact that varieties with more loanwords from Chinese tend to be more tonal. One issue with this claim is that although the key southern varieties have different rates of borrowing from Chinese (see Evans 2001b:80), all three have the same basic H vs. L contrast in the native lexicon (Evans 2001a-b). It appears that, for some southern varieties, contact with Chinese has played a role in expanding the number of tonal types (see Table 1 above). However, there is no evidence to show that the incorporation of Chinese loans was the impetus for the major tone contrast (H vs. L) found in the native lexicon.

2.2.3 ‘Weak role of tone in tonal dialects’
Another argument for tone as an innovation is that tone has a low functional load in the varieties that have it (Evans 2001a:213-214; Evans 2001b:78). Evans (2001b:78) states that there is a small number of tonal minimal pairs and that this “minimal degree of functionality runs contrary to expectations for a longstanding tonal system.” Evans (2001b:80) goes on to state that:

Further evidence for the weak role of tone in SQ dialects comes from the widely diverging frequency of occurrence of tones in each dialect ... In Longxi and Mianchi Low tones/pitches are about twice as common as High tones/accented syllables, and minor tones occur on only a few percent of the vocabulary. By contrast, in Lolo-Burmese languages, whose tonality can be traced back to the first millennium, tones *1 and *2 occur with virtually identical frequency (Matisoff 1998:9).

There are two potential issues with this argument. First, while it is the case that tonal minimal pairs are infrequent in the data, one could shift perspectives and view the limited nature of tone in the southern varieties as representing an incomplete preservation of an older tone system which has been completely lost in the northern varieties. Second, it is not clear why the frequency of occurrence of a given contrast would be an indicator of the age of that contrast.

2.2.4 Reanalysis of accent
Evans argues that the best explanation of the presence of tone in the southern varieties is that tone was developed through reanalysis and contact between southern Rma and Sichuanese Mandarin as an explanation for reanalysis. That is, extensive bilingualism and contact with Sichuanese Mandarin led speakers of southern Rma to reanalyze older accentual patterns as tonal melodies. More recently, Evans & Sun (2013) have stated that tone in the southern varieties “probably originates from a reanalysis of historical weak-strong stress patterns as L-H tones, due to borrowings of tonal words from Chinese (Evans 2001)”.

Reanalysis of accent as tone is an attested, if somewhat uncommon, pathway to tonogenesis (Kingston 2011:2320-2321). In Swedish and Norwegian, tonogenesis came from the reanalysis of the F0 correlate of stress in the ancestral language as tone (Riad 1998, 2003). The role of stress-accent patterns in tonogenesis has also been documented in Trans-Himalayan-speaking regions. Caplow (2009, 2017) has shown that the stress-patterns of proto-Tibetan, which was non-tonal, played a formative role in the development of tone in the modern tonal varieties. In modern tonal varieties of Tibetan, there is an asymmetry such that for disyllabic non-verbs (nouns, adjectives, numerals), the first syllable may carry either a L or H tone, but the second syllable invariably carries a H tone. Caplow (2009, 2017) argues that this patterning is a reflex of an iambic stress-accent pattern typical of non-verbs in proto-Tibetan.

A crucial difference, however, between the situation for Rma and the scenarios described for Swedish, Norwegian, and Tibetan is that Rma varieties present a binary tonal contrast on monosyllabic forms. If we consider ‘accent’ as a relative notion of syllable prominence, reanalysis can readily explain how disyllabic iambic and trochees become L-H and H-L tonal melodies respectively. However, reanalysis cannot readily account for the development of tonal contrast on monosyllabic forms. Table 3 gives examples of
monosyllabic forms which constitute tonal near-minimal pairs in the tonal southern and central Rma varieties, but have no tone in the northern varieties.\(^6\)

**Table 3: Monosyllabic tonal near-minimal pairs in Rma**

<table>
<thead>
<tr>
<th>southern</th>
<th>central</th>
<th>northern</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lóngxī</td>
<td>Miánchí</td>
<td>Táoping</td>
</tr>
</tbody>
</table>
| pù H     | pó H    | po\(^{55}\)H  
| piá L    | piá L   | pa\(^{33}\)L 
| tsi H    | tsi H   | xtṣø\(^{55}\)  
| tēá L    | tēá L   | tē\(^{33}\)L 
| sì L     | sì L    | sə\(^{33}\)L  

<table>
<thead>
<tr>
<th>Yǒnghé</th>
<th>Rónghóng</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>pù H</td>
<td>pə</td>
<td>'buy'</td>
</tr>
<tr>
<td>piá L</td>
<td>pie</td>
<td>'pig'</td>
</tr>
<tr>
<td>tsi H</td>
<td>xtṣø</td>
<td>'gall'</td>
</tr>
<tr>
<td>tēá L</td>
<td>tsi</td>
<td>'daughter'</td>
</tr>
<tr>
<td>sì L</td>
<td>sə</td>
<td>'who'</td>
</tr>
<tr>
<td>sâ L</td>
<td>sə</td>
<td>'blood'</td>
</tr>
</tbody>
</table>

While it is possible that the tonal distinction in these words has a phonetic origin (i.e. loss of codas for words such as ‘pig’ (cf. Written Tibetan གག ‘pig’, Japhug Rgyalrong paʁ ‘pig’)), the forms in Table 3 appear to have always been monosyllabic and show no evidence of syllable coalescence or other types of restructuring. That is, the tonal contrasts on these forms do not appear to have roots in older patterns of syllable prominence.

In summary, neither onset simplification nor reanalysis of accent patterns are convincing arguments for explaining the tonal contrasts present in the southern and central Rma varieties. Having outlined the weaknesses in the arguments for tone as an innovation internal to southern Rma, the following sections give subgroup-internal and subgroup-external evidence that the H vs. L distinction reconstructed by Evans for proto-southern Rma is in fact a shared retention from proto-Rma.

### 3. Subgroup-internal evidence for tone as a retention

In this section, I present regular correspondences between the tones of the southern varieties and the tones of the central Yǒnghé variety as evidence for reconstructing tone for proto-Rma. The tonal correspondences between the tonal southern varieties and the Yǒnghé variety are regular. However, the interpretation of these correspondences depends on the genetic relationship between Yǒnghé and the southern varieties. If Yǒnghé belonged in a subgroup with southern Rma, regular tonal correspondences may be the result of a sub-group internal innovation. If, on the other hand, Yǒnghé belonged in a subgroup with northern varieties, regular tonal correspondences between Yǒnghé and southern varieties would suggest that tonal contrasts, or their phonetic precursors, date back to proto-Rma.

Central varieties may be more closely related to the northern groups. Huang (2010:252) has stated that central varieties, such as Yǒnghé, pattern with the northern varieties with respect to verbal morphology. There is some evidence to support this view. For example, Yǒnghé possesses an ‘upstream’ directional prefix, /nə-/ , which is cognate with the ‘upstream’ directional prefix, *nu- reconstructed by Evans (2004:20) for proto-northern-Rma. The evidence is not necessarily conclusive, however, because the ‘upstream’ prefix in central and northern varieties may be a shared retention from proto-Rma rather than a shared innovation among the varieties that have it. Evans (2014:20) has shown that southern Rma varieties have innovated a series of perfective-marking verbal suffixes, whereas northern varieties have not shared in this innovation. In this respect, Yǒnghé patterns with the northern varieties.

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\(^{6}\) I have included data from Lóngxī, Táoping, Miánchí (data from Evans 2001a), and Yǒnghé (data from author). In addition to these, I include cognates from the non-tonal Rónghóng variety (data from LaPolla with Huang 2003). The sources consulted represent suprasegmental phenomenon in various ways. Some use the Chao (1930) system of transcribing pitch using superscript numerals 1 to 5 to represent the lowest and highest pitches respectively. Others use diacritics to represent tone. The L tone in the Yǒnghé variety (phonetically [LH]) is represented with a hachêk.
The correspondences are given in the following tables. Table 4 shows a regular correspondence between H in the southern varieties and H in the Yǒnghé variety.

**Table 4: Comparison of /H/ across Rma varieties**

<table>
<thead>
<tr>
<th>southern</th>
<th>central</th>
<th>northern</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lóngxī</td>
<td>Miánchí</td>
<td>Táoping</td>
<td>Yǒnghé</td>
</tr>
<tr>
<td>zà müé</td>
<td>mè mèé</td>
<td>χma²³³</td>
<td>mò</td>
</tr>
<tr>
<td>tè kù</td>
<td>tēi</td>
<td>tēi²³⁵ ko³³³</td>
<td>tēi</td>
</tr>
<tr>
<td>pʰē</td>
<td>pʰi</td>
<td>pʰi²³⁵</td>
<td>pʰi</td>
</tr>
<tr>
<td>sì</td>
<td>sì</td>
<td>sì²³³</td>
<td>sì</td>
</tr>
<tr>
<td>tɕ</td>
<td>tɕ</td>
<td>tɕ</td>
<td>tɕi²³³</td>
</tr>
</tbody>
</table>

The data in Table 5 show a regular correspondence between /L/ in the southern varieties and /L/ [LH] in Yǒnghé. In Yǒnghé, /L/ is [LH] in isolation (see Sims 2017 for discussion).

**Table 5: Comparison of /L/ across Rma varieties**

<table>
<thead>
<tr>
<th>southern</th>
<th>central</th>
<th>northern</th>
<th>Gloss</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lóngxī</td>
<td>Miánchí</td>
<td>Táoping</td>
<td>Yǒnghé</td>
</tr>
<tr>
<td>mà</td>
<td>mà</td>
<td>χma²³³</td>
<td>mǎ</td>
</tr>
<tr>
<td>sá</td>
<td>sá</td>
<td>sa²³³</td>
<td>sǎ</td>
</tr>
<tr>
<td>bǎ</td>
<td>bɑ</td>
<td>bɑ</td>
<td>bǎ²³³</td>
</tr>
<tr>
<td>--</td>
<td>zà</td>
<td>zɛ²³³</td>
<td>jà</td>
</tr>
<tr>
<td>tè</td>
<td>tēi</td>
<td>tēi²³³</td>
<td>tēi</td>
</tr>
<tr>
<td>χù</td>
<td>mù</td>
<td>χma²³³</td>
<td>hù</td>
</tr>
<tr>
<td>tɕu</td>
<td>kuɑ</td>
<td>kuɑ²³³</td>
<td>kwɛ</td>
</tr>
<tr>
<td>liá</td>
<td>liá</td>
<td>lie²³³</td>
<td>lã</td>
</tr>
</tbody>
</table>

The correspondences between the geographically southern varieties and the Yǒnghé variety are conspicuous. The tones of the central and southern varieties pattern together, whereas the northern variety is completely non-tonal. While not conclusive, Yǒnghé is most likely external to southern Rma, perhaps in a subgroup with northern Rma, and thus tone appears to predate southern Rma. The following sections provide subgroup-external evidence for tone, or the immediate precursor to tone, at the level of proto-Rma.

### 4. Subgroup-external evidence for reconstructing tone in Rma

The following section provides some comparisons of the tones of the southern and central Rma varieties with two other tonal subgroups of Trans-Himalayan languages: Prinmi and Tangut. Both subgroups belong with Rma within a sub-branch of the family that has been termed ‘Northern Qiangic’ by H. Sun (1991, 2001) and ‘macro-Rgyalrongic’ by Jacques (2014). Sagart et. al (2019:10320) place Tangut with Rgyalrongic inside their ‘Tibeto-Dulong’ subgroup. In this section, each subgroup is introduced, Prinmi in §4.1 and Tangut in §4.2, and some methodological issues related to comparing tones across subgroups are discussed in §4.3 before examining the tonal correspondences in §4.4. The comparison shows that tonal correspondences between Rma and Prinmi are quite regular, while tonal correspondences between these two and Tangut are less robust but nevertheless likely to be cognate.

#### 4.1 Prinmi

Prinmi (also called Pûmi) is a group of tonal language-varieties spoken by people belonging to the 普米 Pûmi nationality in 云南 Yûnnán Province and by people belonging to the Tibetan nationality in Sichuan Province. Prinmi is quite closely related to Rma within the family (Sun 2001, 2004; Daudey 2014). Thurgood (2003:17) has noted that “the consensus that Qiang proper [Rma – NAS] and Prinmi belong in the
same subgroup is easily and fully substantiated by careful examination of cognate sets.” There has hitherto been no systematic exploration of the relationship between the tones in Prinmi and the tones in Rma.

4.1.1 Tonal inventories of Prinmi varieties

Unlike Rma, all documented varieties of Prinmi are tonal. Prinmi varieties typically have between two and three tones on monosyllabic nouns (see Ding 2001:57-58 for discussion). All varieties have a /H/ tone. Some varieties also possess a /HL/ tonal melody. In some varieties, the contrast between /H/ and /HL/ is realized as [55] vs [53] on monosyllabic forms in isolation (Ding 2014). In others, the contrast between /H/ and /HL/ is neutralized on monosyllabic forms in isolation, but the underlying contrast emerges when suffixes or clitics are attached to the nouns (Daudey 2014; Ding 2006, 2014).

All varieties also have a ‘non-high’ tone which is sometimes analyzed as /L/ and sometimes as /LH/. In the 瓦都 Wǎdū variety (Daudéy 2014), /L/ tones are realized as [LH] in isolation. Matisoff (1997) describes the 大洋 Dàyáng variety as having a /H/ vs. /L/ contrast in which /H/ is phonetically level and /L/ is phonetically rising. Jacques (2011) analyzes [LH] words in 水洛 Shuǐluò Prinmi as underlingly /L/ which are realized as rising because of a post-lexically inserted H tone. Ding (2014) describes the 牛窝子 Niúwōzǐ variety as lacking /L/, but as having /H/, /LH/, and /HL/ on monosyllabic forms. Nonetheless, one might alternatively posit that the [LH] pattern is underlying /L/ which are realized as rising because of a post-lexically inserted H tone. Ding (2014) describes the 兰坪 Lánpíng, 桃巴 Táobā, and 箔花 Qīnhuā (Lu 1983, 2001) varieties as phonetic. Thus, in these data, [55] pitch-patterns may potentially reflect either /H/ or /HL/ tonal phonemes. Likewise, the [13 ~ 35] surface pitch-patterns may reflect either /L/ or /LH/ tonal melodies.

4.1.2 Diachrony of Prinmi tone

For the tones of Prinmi to have bearing on the reconstruction of tone for proto-Rma, it is necessary that the tone in Prinmi is not a subgroup-internal innovation. There are two arguments that tone in Prinmi is an inheritance. First, the tonal correspondences are regular across varieties (see Ding 2007; Matisoff 1997: 206-207). Matisoff (1997) notes the regular tonal correspondences and suggests proto-Prinmi was a tonal language with at least a two-way distinction. Second, there is no evidence for tonogenesis from transphonologization of segmental features. For example, while Prinmi varieties vary in the degree to which complex-onsets from PTH are preserved, the onset-simplification found in some northern varieties appears to have had no effect on the tonal categories. Michaud and Jacques (2010) use evidence from early wordlists to show that the simplification of complex-onsets in the northern varieties did not occur until sometime in the 19th century. Thus, the Prinmi tones did not arise because of complex-onset simplification.

While it is established that proto-Prinmi had tonal contrasts, more work is needed to determine whether the contrasts between /H/ and /HL/ or /L/ and /LH/ are secondary innovations in the varieties that have them, or whether more than two tones should be reconstructed for the ancestral language.

4.2 Tangut

Tangut (also called 西夏语 Xīxià Yǔ), the official language of the former Tangut Empire, is the language under consideration with a native written tradition. Its early date of attestation (11th century), large number of both religious and secular works in the language, and the growing body of linguistic research on the language make it an invaluable resource for historical-comparative research. Although it was initially thought that Tangut was closer to the Lolo-Burmese languages (Nishida 1967), it is now generally accepted that Tangut is more closely related to Rma and Prinmi (H. Sun 2001, Jacques 2014, Jacques & Michaud 2011, Matisoff 2004, Ikeda 2007).

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7 Jacques (2011) describes 水洛 Shuǐluò Prinmi as having four tonal categories to account for alternating verbs, but since I am more focused here on reconstructing the tone for the nominals, I will ignore this issue for now.

8 For English language introductions to the Tangut language and writing system, the reader is directed to Clauson 1964; H. Gong 2003, H. Gong 2017; Kornicki 2012; and Nishida 1967.

9 Tangut logographs are followed by the corresponding number in Li Fanwen’s (2008 [1998]) dictionary, the segmental representation in Gong’s (2002) system, the rhyme category, Jacques’ (2014) reconstruction of the pre-Tangut form (when available), and the English gloss. Thus, 嶢 3582 kjür 2.85 < "S-krvvt ‘gall’. In Jacques’ reconstructions, hyphens do not always imply a morpheme boundary.
4.2.1 Tonal categories of Tangut

Tangut had two tones (Clauson 1964; Gong 2003, 2017; Miyake 2012; Nishida 1967; inter alia). In the native written tradition, these two tones were referred to using the Chinese terms 平 ping ‘level’ and 上 shǎng ‘rising’ respectively. Miyake (2012:255) has pointed out that these terms were “obviously adopted from the Chinese phonological tradition and may not be meant to be taken at face value as descriptions of tonal contours.” Because the language is no longer spoken, it is not possible to collect more data or to check the phonetics of the tones. The two tones are referred to as tone 1 and tone 2 respectively (Gong 2003).

4.3 Methodological issues in comparing proto-Rma, proto-Prinmi, and Tangut

As noted above, Tangut is a valuable resource for historical-comparative work. However, the language presents some difficulties. The Tangut script is a logographic one which does not directly encode phonetic information. Various segmental representations of Tangut have been proposed (Sofronov 1968; Nishida 1976; H. Gong 2002); each system paints a slightly different picture of the phonology (see Jacques 2014). I rely on H. Gong’s (2002) system, which has been deemed reliable by Matisoff (2004), Jacques (2014), Hill (2015), and Gong (to appear), with the inclusion of a few minor changes suggested by Jacques (2014) and Hill (2015).

Another potential issue in the comparison of these languages involves the selection of the comparanda. As a way of dealing with the potential for methodological opportunism, all forms that have been proposed as cognate between Rma, Prinmi, and Tangut in the literature are taken into consideration. The data come from many sources (Huang & Dai 1992; Daudey 2014; H. Gong 1999; Jacques 2006, 2009, 2011, 2012, 2014, 2016a; Li 2004; Matisoff 1999, 2003; Nishida 1964, 1976; Sun 2004), and cognate sets proposed in the Sino-Tibetan Etymological Dictionary and Thesaurus (STEDT) were sought.

The segmental correspondences between Rma, Prinmi, and Tangut have yet to be established. Thus, it is not always possible to differentiate cognates from (1) older loans from neighboring languages (such as Tibetan or Chinese) or (2) coincidentally similar forms. More research will be needed to separate the wheat from the chaff. Nevertheless, attempts have been made to identify known loanwords and Wanderwörter. Forms which are marked as belonging to the same etymon in STEDT, but which may not be strictly cognate, have been removed.

Certain portions of the lexicon are tonally unpredictable and present problems for comparison. Firstly, in Rma, the tone of affixes and clitics are often context-dependent (Evans 2008, Zheng 2015). This is also true of many Prinmi varieties (Daudey 2014: 68-69; Ding 2006, 2014; Grief 2010; Jacques 2011), and was probably true of Tangut as well (Jacques 2014:259). Thus, this study does not examine the tonal properties of affixes or clitics. Secondly, Rma, Prinmi, and Tangut all possess verbs with alternating tones (Daudey 2014: 108-113, Ding 2014, Evans 2008, Jacques 2011, H. Gong 1998, 2003). These verbs have been excluded from this study. Thirdly, because numerals in Rma and Prinmi are bound elements which obligatorily co-occur with classifiers, the tone of numerals and classifiers are mutually dependent. Furthermore, numerals are generally irregular in the family (Bradley 1989:338-340, 2005; Matisoff 1997). Thus, I have excluded numerals and classifiers from comparison in this study. Fourthly, I have excluded forms which derive from older compounds, as these words often exhibit unpredictable variation in tonal patterns in Rma (Evans 2008) and in Prinmi (Daudey 2014:187-101, Matisoff 1997:207-209). Lastly, I have excluded terms of address because in many Rma varieties, such terms obligatorily take a ‘kinship prefix’ which may influence the tone of the kinship term (Evans 2004). Having acknowledged the limitations inherent to this comparative endeavor, we can begin comparing forms across languages.

4.4 Correspondence sets

The presentation of these data is as follows. Numbers, such as #0045, represent STEDT etyma set numbers. a. = Rma (LX = 龙溪 Lóngxī, MC = 绵池 Miánchí, TP = 桃坪 Táoping, YH = 永和 Yǒnhé), b. = Prinmi (SL = 水洛 Shuǐluò, WD = 瓦都 Wǎdū, NWZ = 牛窝子 Niúwōzi, DY = 大洋 Dàyáng, TB = 桃巴 Táobā, LP = 兰坪 Lánpíng, QH = 箔花 Qínhuā, JL = 九龙 Jiǔlóng), c. = Tangut. Forms with non-expected tonal correspondences are placed in braces. Cognate portions of longer forms are bolded. Brackets around a pre-Tangut form indicate that the form is not found in Jacques 2014, but is derived using Jacques’ (2014)

10 Though, the comparisons of Prinmi and Tangut, as well as Tangut with Rgyalrong in Jacques 2006, 2014 provide a useful starting point for understanding potential correspondences.
methodology. Supporting evidence for these forms is given in footnotes. Within each sub-section, the data are organized first by the tonal correspondence and then by the place and manner of the syllable onset.

4.4.1 Rma – Prinmi correspondence sets
We begin with the forms which are cognate between Rma and Prinmi but which do not have apparent cognates in Tangut. Examples (1-20) show a correspondence between Rma H and Prinmi H.

1. #2153 ‘bloom’
   a. LX tə̀ pá, {MC pɛ̀}, YH tə̀-pá
   b. QH tə⁵⁵ pɐ⁵⁵

2. #0075 ‘blow’
   a. LX pʰú, MC pʰú, {TP pʰɔ̃³³}, YH pʰú tɛ̀
   b. LP pʰʊ⁵⁵ py⁵⁵

3. ‘open’
   a. LX tə̀ pʰé ‘open (eye)’, MC pʰʃ, TP pʰʒa⁵⁵
   b. TB kʰʃ²⁵ pʰa⁵³, LP tʰʃ²⁵ pʃa⁵⁵ ‘split open, rend’, JL kʰuᵣ¹¹ pʰɔ⁵⁵

4. #3629 ‘dragon’¹¹
   a. LX bú, MC bú, TP ɕbə²⁴¹
   b. TB bʐo⁵⁵

5. ‘harvest / reap’
   a. MC kú ~ kù, YH ɦɛ̀ kwɛ́
   b. LP xɔ¹³ kɯ⁵⁵, JL kɯ⁵⁵ ʐe⁵⁵

6. ‘fight / go to war’
   a. LX qù qùá, MC dʐuɛ̀ quá, YH dʑɛ̀ quá
   b. LP qo⁵⁵ quɑ⁵⁵

7. ‘life’
   a. LX tsi
   b. LP tsi⁵⁵ ‘lifespan’, {JL tsi³⁵}

8. #0370 ‘beard’
   a. TP tˢu³³ ɕma³³, YH tʰ⁵₃ mü
   b. TB a³⁵ sɔ⁵³, QH a¹³ stɯu⁵⁵, JL a³³ sʊ⁵⁵

9. #2763 ‘chop’
   a. LX tˢʰuá dà, MC tˢʰʊí tàì, TP tˢʰu³³, YH tˢʰwá tɛ̀
   b. QH tʰɔ¹³ stʃa⁵⁵, LP tʰɔ¹³ ftʃa⁵⁵

10. ‘narrow’
    a. LX teʰá, {TP teʰɛ³³}
    b. TB ʂɔ⁵⁵ mɔ³⁵, LP ʃʃa⁵⁵, QH stʃa⁵⁵, JL teʰy¹¹ teʰɔ⁵⁵

11. ‘stab’
    a. LX teʰi, MC tʰʊí
    b. LP tˢʰʊ⁵⁵ ~ xɔ³³ teʰʊ⁵⁵

¹¹ Possibly loans from Tibetan བྲུག ‘dragon’ (Evans 2001b: 96).
(12) ‘rinse / flush’
   a. MC tʂʰuá
   b. LP tʃʰ ŋ₅₅

(13) ‘direction’
   a. YH dzí
   b. WD dzí

(14) #2745 ‘clear / clean’
   a. LX ɕó, MC, ēó tê
   b. WD şõ, NWZ şõʰ, TB şã⁵⁵ qি⁵⁵ ma⁵³, QH, şõ⁵⁵ ne⁵⁵, JL şã⁵⁵

(15) ‘learn, teach’¹²
   a. LX só, MX soú, TP tə⁵⁵ sy⁵⁵, YH ɕwí ‘teach’
   b. WD swè, NWZ suʰ süɛ̃ ‘teach’, DY swí ‘teach’, TB xə⁵⁵ suɛ̃⁵⁵, QH xə¹³ sy⁵⁵, JL su⁵⁵

(16) #1005 ‘raw’
   a. TP şe⁵⁵
   b. TB sə⁵⁵ sə⁵⁵ mə⁵³, QH sə⁵⁵ sə⁵⁵, LP sə⁵⁵ sə⁵⁵

(17) ‘obstruct’¹³
   a. YH hæ̀-ʑwé
   b. WD ɐ̀-ʐwì, LP khə¹³ ʐa⁵⁵, JL xa¹¹ ʐo⁵⁵

(18) #2221 ‘delicious’
   a. MC ʑé
   b. {DY rã̌}, TB rɛ̃⁵⁵, NWZ ʒĩ R, TB mɐ³⁵ tsə⁵⁵, QH mɐ¹³ tsə⁵⁵, JL mɐ¹³ ʑĩ³⁵

(19) ‘soup’
   a. MC ʐé
   b. {DY rã̌}, TB rɛ̃⁵⁵, LP ʂɑ¹³ ʐɑ⁵⁵, QH ʂɑ¹³ ʐɑ⁵⁵

(20) ‘sit on/hatch (egg)’
   a. MC né ‘hatch, brood’, TP χne⁵⁵
   b. TB tə⁵⁵ ȵi⁵, QH tə⁵⁵ ȵi⁵, {JL ʑí³⁵}

The following examples, (21-40), show a correspondence between Rma L and Prinmi L.

(21) ‘warm self by fire’ (first syllable is ‘fire’)
   a. LX mù lé
   b. TB ma³⁵ liâ⁵⁵, QH me¹³ lɔ⁵⁵, LP me¹³ lɔ⁵⁵, JL ma³⁵ lɔ⁵⁵

(22) ‘cat’
   a. LX mɑ̃{ŋù}, LX mɛ {ŋòu}, TP ma³⁵ ny⁵⁵, YH mɛ nɛ́
   b. NWZ mɔ³ tsiʰ, TB mu³⁶ tsə⁵⁵, QH mu¹³ tsə⁵⁵, JL mu¹³ nj⁵⁵

(23) #2472 ‘mushroom’
   a. LX mɑ̃ d̕, MC mɔ tsú ~ mɛ zù, TP ma³⁵ zu³³, YH mù xí
   b. WD mì, DY mrɛ, TB mi³⁵, LP mzì¹³, QH mzì¹³, JL mzì³⁵

¹² Possibly from Chinese 学 xué ‘study’.
¹³ This word is an alternating verb in WD.
(24) ‘plow (n.)’
   a. LX tò, MC tò kè, YH tù kwåé
   b. {LP tù³⁵}, JL tù³⁵

(25) #2252 ‘owl’
   a. LX y k₄ thù, MC kui tòn k₄ thù, YH mën k₃ wi
   b. JL k₄ thù³⁵

(26) ‘stone’
   a. LX gò
   b. WD gu đôn, NWZ gu³ bô³⁵, LP zgœ³, QH sgo³, JL guo³ lā³⁵

(27) ‘answer, reply (v.)’
   a. LX guà, TP ãgye³³
   b. LP tò³³ gui³⁵ski³⁵

(28) #2154 ‘left’
   a. MC gu ‘left (hand)’, TP ãgy³³, YH wà⁴-te³³ ‘left-side’
   b. SL we L, WD wèj, LP ua³, QH ua³, JL we³⁵

(29) ‘bundle’
   a. LX què, MC quà
   b. JL (t₃³⁵) qā³¹ ‘bunch / bundle’

(30) #5641 ‘gnaw’¹⁴
   a. LX là cā, TP ãqa²⁴œ³³, YH gù³ lé
   b. WD qā, DY ãqā ‘bite’, QH xa³³ qa³³

(31) ‘tread’
   a. LX te³huà nǐ, MC te³yà, TP te³yà³¹, YH ts³wè nǐwi
   b. {TB n₃³ te³o³³}, LP na³³ ts³wu³, QH na³³ ts³wu³

(32) #0615 ‘sweat’
   a. {MC ts₃hù}, TP ãtsùa³⁵, YH te³wi
   b. DY ãf³i, LP sk³i³, QH sk³i³

(33) ‘nephew’
   a. LX dzi q¹uá, MC dzi, TP dzi³¹
   b. NWZ djuR ‘nephew, paternal’, DY dyù, TB diu³⁵, LP diu³, QH diu³

(34) #0045 ‘lean (of meat)’¹⁵
   a. TP dz₄⁵⁴
   b. TB dz₄³⁵ ma³⁵, QH dz³³ ti³⁵

(35) ‘lock’¹⁶
   a. MC suà, TP qo³⁵ sau³⁹
   b. LP sa³, QH sa³

¹⁴ The WD ‘gnaw’ is only found in an example sentence in Daudey 2014:441. Thus, my grouping of it as /L/ is tentative.
¹⁵ Táopíng 241 is sometimes a reflex of *H and sometimes a reflex of *L. Without supporting evidence from other Qiang varieties, this set is speculative.
¹⁶ Possibly from Chinese 鎖 suǒ ‘lock’. 
(36) ‘easy’
  a. TP zie³¹, MC (pù) zè, YH zò
  b. TB ze³⁵ ze₅₈ m₃₅ LP jʃ[ɛ¹₃] jʃ[ɛ⁵₅], QH stʃ[ɛ¹₃] stʃ[ɛ¹₃], JL dzɔᵠ dzɔᵠ

(37) ‘give birth’
  a. LX i, MC zi
  b. WD zi

(38) #0449 ‘to exist’¹⁷
  a. LX ji, MC zi, TP ʒ³¹
  b. WD zi, TB ze³⁵, LP ʒə³¹, QH ʒə³¹, JL ze³⁵

(39) #0671 ‘hail (n.)’
  a. LX dà zi ‘snow, hail (v.), YH pə-ʐj lwilwi ‘hail’ (lit. snow-hail + round)
  b. TB ʐɛ³⁵, QH stʃɛ¹³ stʃɛ¹³, JL dʑə³⁵ dʑə³⁵

(40) #1716 ‘yawn’¹⁸
  a. LX hà hà pù, MC ʐà pù
  b. WD hû è, JL xa¹¹ xe¹¹

4.4.2 Rma – Tangut correspondence sets
Next, we examine forms which are possibly cognate between Rma and Tangut, but have no apparent Prinmi cognates. Examples (41-47) suggest a correspondence between Rma H and Tangut tone 2.

(41) ‘shibi’¹⁹
  a. LX sì pî ‘priest’, MC pî ‘priest’, YH ewi pî
  c. 瑚 3280 pj₃ 2.57 < *[S-pj-] ‘sorcerer’

(42) ‘be thirsty’
  a. {LX tsù tə-pià} ‘water directional-thirst’, {MC pià}, TP ʐp₃₅, YH tə-ʂ ámb ñ tə-ʂ ámb
  c. 瑚 4532 p₃ 2.56 < *C-S-pj₃

(43) ‘rice (raw)’²⁰
  a. YH kʰə ~ qʰə
  c. 瑸 5868 kʰie 2.8 < *kʰe

(44) ‘cough’
  a. LX tsʰú tá, YH tə-tsʰú
  c. 瑸 4615 tsʰ 2.51 < *S-tso

(45) ‘enclose’
  a. LX tsʰy ‘enclose (sheep)’, MC kʰui ‘enclose (sheep)’, YH teʰwi
  c. 瑸 2758 kʰwa 2.14

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¹⁷ The WD form carries a rising tone in isolation but has a falling tone when prefixed (Daudey 2014:298 fn. 308).
¹⁸ These forms should perhaps be discarded as they are sound symbolic. It is also possible that they are independent borrowings from Chinese 哈欠 hàqiàn ‘yawn’ (also sound symbolic). The second syllable in the Prinmi forms probably means ‘release’.
¹⁹释比 shìbǐ is the Chinese transliteration of the Rma term. This pre-Tangut reconstruction follows Gong’s law (Gong 1999; Jacques 2014:25). There is a similar Tangut form, 瑰 3439 pjiə < *S-pjɛ ‘magician, healer’, which has the opposite tone (Jacques 2014:168).
²⁰ See Jacques 2014: 112 ff. 34 for a discussion of this form.
(46) ‘live’\(^{21}\)
   a. LX ʂʊ
   c. 僎 2048 sjwụ 2.52 < *sjo, also written 0487 ʂwụ 2.52

(47) ‘owl’
   a. YH mìë kʰwi
   c. 媉 2656 mej 2.30

Examples (48-54) suggest a correspondence between Rma L with Tangut tone 1.

(48) ‘plate, dish’
   a. TP be³³
   c. 媬 3697 bji 1.11 < *[mbje]

(49) ‘drum’
   a. LX bù, MC bù, TP χbu³³
   c. 媠 5528 bar 1.8 < *r-mbaŋ

(50) ‘overflow’
   a. TP bə³³
   c. 媣 0190 bji 1.30 < *[mbj-] / 媥 0461 bju 1.3 < *[mbj-]

(51) #2465 ‘dark’
   a. LX ɦà-mù, MC mò, TP mu³³
   c. ɦàn 3925 mur 1.75 < *r-m- ‘darkness’

(52) ‘people, clan’\(^{22}\)
   a. LX mà, MC mà, TP ma³³, YH mə̌ ɹ
   c. 媊 0607 mjɪ 1.30 < *[r-m-] ‘people; clan’

(53) ‘feed, raise’
   a. LX mì, MC mù, YH mǐ
   c. 媫 4542 mji 1.11 < *mej

(54) ‘wound (n.)’
   a. LX qò mì, c. 媹 5628 mjɪ 1.64 < *S-mjat ‘wound, scar’

(55) ‘hold’\(^{23}\)
   a. LX tò ‘hold (in arms)’, MC hà tòu ‘hold closely’, TP χtu³³ ‘hold (baby) in arms’
   c. 媲 5486 tɔ 1.68 < *[S-tv]

(56) #1352 ‘female genitalia’
   a. LX tʰà bá ‘vulva’, TP tʰa³³ ba³³ ‘buttocks’
   c. 媩 5518 tʰwɪ 1.69 < *S-tʰu ‘vagina’

(57) #0251 ‘heart’
   a. LX cì mì, MC tiè, {TP χtie³⁵ mą³⁵}, YH ti mǐ ~ tʰi mǐ
   c. 媫 2518 njiij 1.39 < *njeeN

\(^{21}\) See Jacques 2014: 52 for discussion of this form.
\(^{22}\) The Rma forms are autonyms. The pre-Tangut form follows Nishida’s law.
\(^{23}\) Possibly borrowed from Chinese 牌 pài ‘plate’. Thanks to an anonymous reviewer for pointing this out.
(58) ‘solid, durable’
   a. LX gù
   c. 貝 2472 giwi 1.30 < *ŋgut

(59) ‘soldier’
   a. LX guà, MC dzyè, TP dzue
   c. 貝 1531 gia 1.20 < *[ŋjaC]

(60) #3333 ‘tail’
   a. LX suà kà, MC suà kè, YH sù kjé
   c. 鳁 4095 sji 1.11 < *[swa]

(61) #3559 ‘seed’
   a. LX dzuei, MC zui ‘pit, stone; bullet’, TP zuə³¹
   c. 貝 3164 zjwi 1.30

(62) ‘vapor’
   a. LX lè
   c. 鳁 3299 lwew 1.43

(63) #0695 ‘hand’
   a. TP lɑ³¹ χɑ⁵⁵ ‘shoulder’
   c. 鳁 3485 1.63 < *s-lak

4.4.3 Prinmi – Tangut correspondence sets

Next, we examine forms which have no attested reflexes in Rma, but which are cognate between Tangut and Prinmi. Given what we have seen thus far, we would expect Prinmi H and L to correspond with Tangut tones 2 and 1 respectively. Examples (64-73) suggest a correspondence between Prinmi H and Tangut 2.

(64) ‘wide / broad’
   b. WD pú H, DY ɸpə́ w, TB po⁵⁵ mə³, LP fpo⁵⁵, QH spo⁵⁵, JL po⁵⁵
   c. 鳁 3310 wa 2.56 < *[S-pv] ‘vast, wide, extensive’

(65) ‘leaf’
   b. {WD pɑ̌ }, NWZ sɑ L pɑ H, TB pa³ H, LP sɐ¹³ fpɑ⁵⁵, QH sɐ¹³ spɑ⁵⁵, JL pɑ⁵⁵
   c. 鳁 4567 bə 2.56 < *S-mbak

(66) #5646 ‘untie’
   b. NWZ pʰə¹¹ H, TB tʰə³⁵ pʰʐə⁵³, QH tʰə¹³ pʰʐɯ⁵⁵
   c. 鳁 5390 pʰie 2.8 < *pʰre

(67) #5556 ‘throw’
   b. JL nɑ¹¹ pʰɤ⁵⁵, nd¹¹ pʰɤ⁵⁵ ‘throw out’
   c. 鳁 2719 pʰɤ 2.25 ‘throw, abandon’

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24 cf. Tangut 貝 1907 giu² < *ŋgio ‘tendon’.
25 STEDT #3333 only includes the Qiang form.
26 This pre-Tangut reconstruction follows Gong’s law (Gong 1999; Jacques 2014:25).
27 This Tangut form is missing from STEDT #5646. STEDT includes Táoping /zã/ ‘untie’ which may not be cognate, since Táoping generally retains *pr clusters (cf. ʐi⁵⁵ ‘white’, pʰʐi³³ ‘to tear’).
28 This Tangut form is not listed in STEDT #5556.
(68) ‘sun’
  b. WD bu, NWZ bi\textsuperscript{hi}, TB bu\textsuperscript{53}, LP by\textsuperscript{55}, QH by\textsuperscript{55}, \{JL bi\textsuperscript{55}\}
  c. ꜳ 2449 be 2.20 < *mbe

(69) \#5713 ‘duck’\textsuperscript{29}
  b. WD bàe, NWZ ba\textsuperscript{hi}, \{TB ba\textsuperscript{35}\}
  c. ꜳ 3301 bɔ 2.25 < *mbv ‘mandarin duck’

(70) ‘sheep’
  b. NWZ tʰu\textsuperscript{hi} ‘sheep, male; ram’
  c. ꜳ 5716 tʰu 2.1

(71) ‘blind’
  b. \{WD qū\}, NWZ ku\textsuperscript{hi}
  c. ꜳ 0328 ku 2.4

(72) \#2531 ‘green, blue’\textsuperscript{30}
  b. WD ni ‘red, unripe, green, blue’, NWZ ni\textsuperscript{hi}, TB ni\textsuperscript{55} na\textsuperscript{55} ma\textsuperscript{53}
  c. ꜳ 0654 Ṯwar 2.76 < *ŋwv ‘dark green’

(73) ‘lamb kid’
  b. LP ʒɑ⁵⁵li, JL ji⁵⁵ tsɿ⁵⁵
  c. ꜳ 5987 ljij 2.55 ‘lamb, kid’

Examples (74-89) suggest a correspondence between Prinmi L and Tangut 1.

(74) ‘half’
  b. WD pʰu, NWZ pʰa\textsuperscript{8}, TB pʰa\textsuperscript{35}, \{LP pʰa\textsuperscript{55} tei\textsuperscript{11}\}
  c. ꜳ 3936 pʰa 1.17 < *pʰak

(75) ‘butterfly’
  b. LP pʰa\textsuperscript{13} la\textsuperscript{55}, QH pʰa\textsuperscript{13} la\textsuperscript{55}
  c. ꜳ 0538 pjā 1.20 < *S-pjā

(76) ‘fly’\textsuperscript{31}
  b. WD bàn, NWZ bjɔ\textsuperscript{8}
  c. ꜳ 2262 djow 1.56 < *mbjvm

(77) \#0503 ‘blow’
  b. WD mɑ, NWZ mʊ\textsuperscript{8}, DY mɔ, TB xɔ\textsuperscript{35} mɔ\textsuperscript{35}, LP kʰɔ\textsuperscript{13} mɔ\textsuperscript{13}, JL mo\textsuperscript{35}
  c. ꜳ 2128 mɔ 1.31 < *mvvt

(78) \#3560 ‘tail’
  b. DY \{mɔ\} lyɛ, TB mʊ\textsuperscript{35} liɛ\textsuperscript{55}, LP mʊ\textsuperscript{13} liɛ\textsuperscript{55}, QH mʊ\textsuperscript{13} liɛ\textsuperscript{55}, JL mɔ\textsuperscript{35}
  c. ꜳ 5677 mjiij 1.39 < *mjeɛj

(79) ‘choke’
  b. TB xɔ\textsuperscript{35} tui\textsuperscript{55}
  c. ꜳ 4016 tjwi 1.11

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\textsuperscript{29} cf. Tangut ꜳ 2449 be\textsuperscript{2} < *mbe ‘sun’.

\textsuperscript{30} As an anonymous reviewer pointed out, the form 0257 ꜳ Ṯwar 1.84 is far more common in texts and has the unexpected tone.

\textsuperscript{31} See Gong Xun (to appear) for a discussion of this Tangut form.
(80) ‘shoe’
   b. TB tɕyi³⁵, LP tsi³¹³, QH tsi³¹³, JL tsi³¹⁵
   c. 𘅗 1321 zji 1.67 < *C-S-tsja

(81) #0418 ‘joint’
   b. DY tɕ-ʦɕ̄, DY tsä, {LP tsi³¹³}, JL tse³¹⁵
   c. 𘅗 4739 tsw 1.87 < *r-ʦvk

(82) #3586 ‘feed’
   b. NWZ tsʰe⁸⁸, LP tʰə³¹³ stʰe³¹³
   c. 𘅗 4582 tji 1.67 < *S-trv

(83) #3604 ‘bridge’
   b. NZW dzə³⁵, TB dzə³⁵, LP dzi₁³, QH dzi₁³, JL dzə³⁵
   c. 𘅗 2584 dzow 1.54 < *ndzvm

(84) ‘heavy’
   b. WD lēj
   c. 𘅗 2737 ljìi 1.32

(85) #3560 ‘seed’
   b. WD lēj, TB le³⁵, {LP la³⁵⁵}, {QH la³⁵⁵}, JL lei³⁵
   c. 𘅗 5819 ljìi 1.11

(86) #0392 ‘forehead’
   b. NWZ lo⁸⁸, DY lò, TB lo³¹³, LP lo³¹³, QH lo³¹³
   c. 𘅗 0791 ljà 1.64 < *L-lja

(87) ‘graze (v.t.)’
   b. NZW li³⁵ ‘shepherd (v.)’, TB li³⁵
   c. 𘅗 0993 l’ew 1.43 < *l’v̄k

(88) ‘obtain’
   b. WD qi, NWZ ri⁸⁸
   c. 𘅗 1599 rjir 1.79

(89) #0231 ‘bowl’
   b. WD qʰwà, NWZ kʰwa⁸⁸, TB kʰua³¹³, LP kʰua³¹³, QH kʰua³¹³
   c. 𘅗 4189 kʰu 1.4 < *kʰo

4.4.4 Rma – Prinmi – Tangut correspondence sets

Next, we turn to the forms which have possible cognates in all three subgroups. Examples (90-117) suggest a regular correspondence between Rma H, Prinmi H, and Tangut 2.

(90) ‘pretend’
   a. MC pá pù ‘pretend, feign’, YH ɸɑ́ ɹ̄ ~ ʃɑ́ ɹ̄
   b. WD pù ‘to do’, NWZ pʊ ‘to do’
   c. 𘅗 1498 wjì 2.60 < *C-S-pja

32 This pre-Tangut reconstruction follows Gong’s law (Jacques 2014: 25).
33 STEDT #0392 includes only the Prinmi forms. The cognancy of the Tangut form is my own suggestion.
34 I believe the semantics of these forms is comparable cf. English ‘pretend’ ~ ‘act’ ~ ‘do’.
(91) ‘tree’35
a. {LX ci pʰu}, MC pʰò ~ pʰó, TP pʰɔ²⁵⁵, YH pʰû
b. WD bōŋ, LP sīː³³ vbô²⁵⁵, QH sīː³³ sbô²⁵⁵, JL sě¹¹ bû²⁵⁵

c. 莶 5814 pʰu 2.1 < *pʰO

(92) #2253 ‘flee’36
a. LX dà pʰó, TP pʰu²⁵⁵, YH dò phú
b. {WD pʰi}, {NWZ pʰĭR}, {DY pʧĭ}, LP kʰɔ¹³ pʰʧa²⁵⁵, QH pʰɔ²⁵⁵, JL pʰə²⁵⁵

c. 𘕰𘕰 5814 phu 2.1 < *phO

(93) #2450 ‘name’
a. LX zə̀ mû, TP χmə²⁵⁵, YH mə́ r
b. SL mɛ́ N, WD mæ̃́, NWZ mɑ̃, DY mɑ̃, TB mɛ̃⁵⁵, LP ma²⁵⁵, QH ma²⁵⁵, {JL mã³⁵}
c. 𗾽𗾽 2451 bọ 2.62 < *S-mb-

(94) #5656 ‘cloud’37
a. LX dá mû, MC dà mò, {TP χde³³}, YH dá
b. NWZ dĩ H, DY zdǐ́, LP zdĩ⁵⁵, QH sdĩ⁵⁵, {JL dẽ³⁵⁵}
c. 𗋑𗋑 2738 djj ².⁵⁵ < *s-ndim

(95) #2312 ‘weigh’38
a. LX tɕʰì tɕʰí ‘weight (grain)’, MC tɕʰé ‘weigh (grain)’, TP tɕʰᵉ²⁵⁵ ‘weigh’
b. TB tə³⁵⁵ tɕɛ⁵³ ‘weigh’ LP tə⁵⁵ tɕi⁵⁵ ‘weigh (food)’, JL tɯ⁵³ ke⁵⁵ ‘weigh (food)’
c. 𘆍𘆍 0909 ka 2.56 < *[S-kv]

(96) ‘separate (v.)’
a. LX qá tsh ‘separate, sever’, MC kiè ká ‘separate, sever’
b. LP xə¹³ khe⁵⁵, JL khə¹¹ khe⁵⁵ nə¹¹ ʃi¹¹

c. 𗷎𗷎 4480 kar 2.73 < *r-kat

(97) #5677 ‘strength’
a. {LX qù}, MC dzà qà, TP dzj²⁴ qà³³, YH qù ~ kù
b. WD qû, TB ka³⁵, LP qa³³, QH qa³³

c. 𗼥𗼥 3440 ka 1.17 ‘power, authority’

(98) ‘cuckoo’
a. LX qi pù, MC kuò pù
b. WD qi pù LP qei³⁵ pu³³, {JL kɯ³³ pu³³}
c. 鏁 2208 qiwi ².⁴⁰

(99) #1612 ‘house’
a. LX tɕé kù, MC tei, TP tei²⁵⁵ ko³³, YH tei
b. WD tjö, NWZ tjǐ³, TB teò²⁵⁵, LP tjò³³, QH tjɔ³³, {JL teĩ³³}
c. 鏩 2560 jij ².³³

(100) ‘stretch’
a. LX tsʰi, MC {tsʰi} ~ tʰi, TP sʰi³³ tʰĭ⁵⁵, YH hà-þʰó
b. LP kʰɔ¹³ tʃõ²⁵⁵, QH kʰɔ¹³ stʃõ²⁵⁵, JL kʰu¹¹ sã²⁵⁵ la¹¹

c. 鏹 5209 ji ².⁶⁰ ‘uphold, stretch’

35 The low tone in LX may be because it occurs as part of a compound in which the first syllable is ‘wood’.
36 This verb is an alternating verb in WD (Daudey 2014:110).
37 The TP form is irregular, but this may due to a voicing conditioned tone split (see Kirby 2001). See Jacques 2015 for a discussion of this word.
38 This Tangut form may be a loan from Tibetan ཤར skar ‘to weigh’ (Jacques 2014:141)
(101) 'be sour'

a. YH tswè
b. WD tsù, NWZ tsuᵢ⁵, DY tʃᵢ

c. 𗤰𗤰 2739 tśhjw ɨr 2.77

(102) #0227 'gall'

a. LX tsi, MC tei, TP ʂə⁵⁵
b. WD t̥, NZW kʰi¹, TB tʂə⁵⁵, LP tʂə⁵⁵, QH ʂə⁵⁵, {JL tʃi⁵⁵}

c. 𗤰𗤰 3582 kjɨɨr 2.85 < *S-krvvt

(103) #2536 'silver'

a. LX nù, MC nò, TP ʂuᵢ⁵⁵, YH wú
b. WD nò, NWZ jòh, DY nòu, TB nòᵢ⁵⁵, LP nâuᵢ²⁵, QH nâuᵢ³⁵, {JL nûrᵢ³⁵}

c. 𗤰𗤰 3852 ŋwo 2.42

(104) #1104 'weep'

a. LX ŋú, MC ŋú, TP ŋu⁵⁵
b. WD q́w, NWZ kwjH, TB xe⁵, LP ɕuə⁵⁵, QH ɕuə⁵⁵, JL kwe⁵⁵

c. 𗤰𗤰 3852 ŋwo 2.42

(105) #2414 'flea'

a. TP tsu⁵⁵ lù⁵⁵
b. WD ɬe³, NWZ ɬa⁵⁵, TB ɬa⁵⁵, LP ɬa⁵⁵, QH ɬa⁵⁵, JL ɬe⁵⁵

c. 𗤰𗤰 4565 lə 2.25 < *li

(106) #5577 'wait'

a. YH ʑì lwí
b. LP ɕa³⁵ liõ⁵⁵ ku⁵⁵

c. 𗤰𗤰 5522 lijiij 2.35 < *ljaŋ

(107) #0572 'shit'

a. {LX tsʰi}, MC teʰi, TP tʃʰi⁵⁵, YH ʃì
b. SL xei HL, NWZ kʃi⁵⁵, DY ɕqá, TB xe⁵, LP ɕqá⁵⁵, QH ɕqá⁵⁵, JL ɕe⁵⁵

c. 𗤰𗤰 2059 ljiij 2.60

(108) #5632 'who'

a. LX si, MC ʂì lè, TP si⁵⁵, YH si
b. WD hì, NWZ x₃⁴ gə¹, TB xe⁵, LP xe⁵, QH xe⁵⁵

c. 𗤰𗤰 0432 sjwɨ 2.28 < *su

(109) #0034 'meat / flesh'

a. TP tʃʰi⁵⁵
b. NWZ ɕi⁵⁵, DY ʃi⁵, TB ʂə⁵³, LP ʃə⁵⁵, QH ʃə⁵⁵, JL ʃi⁵⁵

c. 𗤰𗤰 2385 ʃu 2.2

(110) 'deity'

a. LX tʃʰi, MC sè, {TP tsʰie³³}, YH si
b. WD hì, NWZ xe⁵⁴, DY ɕè, LP ɕe⁵⁵ tʃì⁵⁵ ‘temple’, QH ɕe⁵⁵ tʃì⁵⁵ ‘temple’

c. 𗤰𗤰 4953 sji 2.10

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39 Daudey (2014:184) notes that WD [qw-] is a regular reflex of *ŋw.

40 Note, however that the by far most common word for ‘who’ in Tangut is 0441 𗖶𗖶 sjwɨ 1.30, with the opposite tone. Thanks to an anonymous reviewer for pointing this out.

41 The second syllable in LP and QH is ‘house’.
Having examined the correspondences for the high tones. We now turn to the sets with low tones. Examples (118-180) suggest a correspondence between Rma L, Prinmi L, and Tangut 1. 

(118) ‘year’
   a. LX pù, MC pù, TP pə³³, YH ə-pù ‘one year’
   b. WD pù, DY pì, TB pu⁵, LP pa¹³, QH pa³, {JL pi³}

(119) ‘pig’
   a. LX pià, MC pià, TP pə³³, YH pə
   b. WD teʷwè, NZW tʃʰə³, DY tʰə, TB tʃə⁵, LP pʃə¹³, QH pʰə³, JL tʃə³⁵

42 LX fiá zú ‘sit’ is missing from the STEDT set #3591, as are the Prinmi forms.
43 STEDT #1214 only includes the Prinmi forms. In TP the first syllable is ‘head’. The YH form appears to have undergone syllable coalescence: L-H \[LH\].
44 The MC form is coalesced: L-H \(~\) LH. Thanks to an anonymous reviewer for pointing out the cognate Tangut form.
(120) #1293 ‘pus’
   a. LX pù, MC pù
   b. DY ɸpì, LP fpv́, QH spv́, {JL pu₅₅}
   c. Ꙏ 5274 pə 1.68 < *S-pu

(121) #2548 ‘patch (v.)’
   a. LX pà, MC (tsu ş̃) p̃ts’hì, TP χpe₃³
   b. DY NWZ pʰuR, DY ɸpʰy̍, TB x₃₅ fpʰe₃⁸, LP x₃₀ mpʰe₃⁸, QH x₃₁ spʰe₁₃, JL pʰa₁¹ la₁¹ de₃⁵
   c. Ꙏ 3136 pja 1.64 < *S-pja

(122) ‘splash / sprinkle’
   a. LX phà, MC (tsu ş̃) ph̃ts’hì, TP χpe₃³
   b. DY NWZ pheR, DY ɸpʰy̍, TB x₃¹ phɛ̇, LP x₃⁵ fphɛ¹³, QH x₃¹ sphɛ¹³, JL pha¹¹ la¹¹ de₃⁵
   c. Ꙏ 3136 pjè 1.64 < *S-pja

(123) #2583 ‘price’
   a. LX phù, MC ph̃ e₃³, TP ph̃ r₃³
   b. SL ph₃, WD ph₃, NWZ ph₃, DY ph₃, TB ph₃, QH ph₃, {JL ph₃ qo₅₅}
   c. Ꙏ 1391 ba 1.17 < *mbaŋŋ

(124) #1409 ‘deaf’
   a. LX ȵì bò, MC bù, TP ȵi³¹ kie³³ bu²⁴¹, YH ȵí kwì bù
   b. WD da bõ, NWZ bõR, TB z₃ bõ³⁵, LP zd₃ bõ¹³, QH sd₃ bõ¹³, {JL zɑ¹¹ bũ⁵⁵}
   c. Ꙏ 2462 bowr 1.91 < *rmb-

(125) #1490 ‘spit (v.)’
   a. TP pʰe₃³, YH sò-pʰè
   b. WD pʰè, NWZ pʰe₃³, ‘spew’, TB pʰo₅₅, QH t₅₅ spʰe₁₃, {JL pʰy₅₅ qo₅₅}

(126) #2187 ‘bee’
   a. LX bù-iù, MC bù-zoù, TP ba₃ dzy₃³, YH bù zù
   b. {WD bu HL}, {NZW bi³}, {DY bi³}, LP bʒe₁₃ tʃə⁵⁵, JL bi₅₅ li₅₅
   c. Ꙏ 2462 bowr 1.91 < *mb-

(127) ‘hair’
   a. LX ʑu, MC mù, TP χm₃₃, {TP q₃¹ χm₅₅}, YH h₃
   b. WD quhù mé, NWZ kuH m̃₃, {TB ma₃}, {QH ma₅₅}, {LP ma₅₅}, JL m₃, mé₃, qʰuo¹¹ mé₃³ ‘head-hair’
   c. Ꙏ 2600 mjar 1.82 < *[r-m-]

(128) #0676 ‘to hammer’
   a. LX tuà liò ‘hammer (n.)’, MC tuà liò ‘hammer (n.)’
   b. WD t₃, TB x₃₅ ta₅₅, QH x₃₅ sta₁₃
   c. Ꙏ 5299 ta 1.17

45 This JL form may be irregular because it appears in a compound.
46 The JL form may have an irregular tone because it is in prefixed position. In NWZ, this same verb changes tone in prefixed position: pʰe₃³ vs. t₃₅ pʰe₃³. Note also that the first syllable of the YH form is the ‘downstream’ directional prefix and is not cognate with the ‘pre-initial’ *s- in the Tangut and Primi forms.
47 The Primi forms with the high tones may be related to the Tangut form Ꙏ 1888 bə ‘insect, maggot’ < *[mbv].
48 Note the irregularity in Primi. The Tangut form occurs in the compound Ꙏ 4543 Ꙏ 2600 mjar 1.84 mjar 1.82 ‘whiskers’ (Jacques 2014:169).
49 Possibly from Chinese 扌 ‘hit’. Thanks to an anonymous reviewer for pointing this out.)
(129) ‘drill (v.)’
   a. LX ȵò ‘drill, auger’
   b. JL ŋ⁵ by³⁵
   c. ꞯ 4909 nu 1.1 ‘drill, bore’

(130) ‘trip hammer for hulling rice’
   a. LX th ʰiò
   b. DY ʃtʃǐ ‘rice pounder’, LP ʃtʃi¹³
   c. ꞯ0868 tsowr 1.17 < *[r-Cv]

(150) #2686 ‘weave’
   a. LX teá, MC tià, TP tia³³, YH tê
   b. WD teë, DY têŋ, TB na³⁵ tec³³, LP tfeof³
   c. ꞯ0630 la 1.17 < *[C-tak]

(151) ‘small’
   a. LX tsù, MC tsù ~ tsú, YH tsɔ
   b. WD qʰɛ tsɛ̌ j, NWZ kɔ³ tsəj⁸, TB ka³⁵ tse³⁵ ma³³, LP qa¹³ tse¹³, QH qa¹³ tse³⁵
   c. ꞯ3798 tsəj¹ < *tsį

(152) #0458 ‘lung’
   a. LX tsʰu, MC tsʰou, {TP tsʰu⁵⁵}, YH tsʰu-pʰu
   b. WD tsʰu, NWZ tsʰu⁸, DY tsʰu, TB tsʰu¹³, LP tsʰy¹³, QH tsʰy¹³, {YL tsʰu⁵⁵}
   c. ꞯ5105 tsə¹ < *S-tsvt

(153) #0042 ‘fat’
   a. LX tsʰ ‘fat (of humans)’
   b. WD tsʰ, TB tsʰo³⁵, LP tsʰy¹³, QH tsʰy¹³, {YL tsʰu⁵⁵}
   c. ꞯ0984 tsʰwo¹ < *tsʰo

(154) #0230 ‘blood’
   a. LX sà, MX sà, TP sa³³, YH sɔ
   b. SL sɛ̌ j, WD sɛ̌ j, NWZ səj⁸, DY sà, TB sə⁵, LP sa¹³, QH sa¹³, JL sei³⁵
   c. ꞯ2734 səj¹ 1.36 < *səj

(155) #2658 ‘firewood’
   a. LX ei, MC sɛ, TP sie³³, {YH sɛ́}
   b. WD sɛŋ, NWZ səj⁸, TB sɛ⁵, LP siə¹³, QH siə¹³, {YL sɛ³⁵}
   c. ꞯ4250 səj 1.11 < *sɪN (cf. Hill 2015: XX)

(156) ‘hemp’
   a. LX sò, YH sɔ
   b. WD sù L, DY sâw, LP sau¹³, JL so³⁵
   c. ꞯ2456 se 1.8

(157) ‘sharpen, grind’
   a. LX sù, MC sù, {TP su⁵⁵}
   b. NWZ sù⁸, TB kɔ³⁵ suï⁸ QH kʰɔ¹³ syi³³
   c. ꞯ1670 swjij 1.36 ‘grind, pestle’

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50 This pre-Tangut reconstruction follows Nishida's law.
51 This form is also written as ꞯ2497 la 2.17 (see Jacques 2014:132).
52 Guillaume Jacques (p.c.) has suggested that this form is a Wanderwört also found in Naic language varieties. Note also the MC compound sà pʰié ‘hemp’.
(158) #2483 ‘black’
   a. LX ȵį ~ ȵį, MC nə̀, TP ȵi₃⁵ ȵi₁¹, YH ȵį
   b. SL nįè, WD nįè, NWZ nǐ₆, DY nāN, TB ȵe⁶₃ m₅₃, LP n₃ⁿ, QH n₃ⁿ
   c. 𬶨 0176 nja₃ 1.21 < *njaak

(159) ‘snivel’
   a. MC nə̀
   b. NWZ nā₈, DY nə̀ ‘snot’
   c. DidEnter 5731 nə̀ 1.63 < *S-nap

(160) #0596 ‘skin’
   a. LX ʃə piá, MC ʃə πiá, TP tfʰ₃¹ pa₃⁵, YH ʃə pəé
   b. {NZW ʃə}, DY rə jʃi, {TB ra₃⁵}, LP z₃¹₃, QH z₃¹₃, JL z₃⁵
   c. ߊ 1153 dʒi 1.30 < *ndri

(161) #0232 ‘bone’
   a. LX ʃə ká, MC ʃə kəù, TB ʃa₁⁹ kie₃₃, YH ɦə̀ pú ‘cave (mountain)’
   b. WD ʃə qá, NWZ r₃₁₃ kə₁, {DY rə qə}, TB re₃⁵ kə₃₃, {LP ʃa₃⁵ qa₃¹₃}, {QH ʃa₃⁵ qa₃¹₃}, JL ʃa₁¹ qa₅₅
   c. addGap 2778 njir 1.86 < *rjvt

(162) ‘mountain’
   a. TP ʃa₃₃ pu₃₃ ‘cave (mountain)’ YH ɦə̀ pú ‘cave’
   b. JL ʃa₁¹ pu₅₅ (cave)
   c. ߊ 1093 rər 1.80 ‘mountain’

(163) #1431 ‘horse’
   a. LX ʃə wù, MC wə, {TP ʃu₃⁵}, YH wɨ ~ wɨ
   b. SL ywɨ, WD gwi, NWZ guə₃, DY ʒuɗ, TB yu₃⁵, LP zgyɛ₃¹₃, QH sgyɛ₃¹₃, JL ʒu₃⁵
   c. /lg 0764 nji 1.74 < *rjaŋ

(164) #0307 ‘elbow’
   a. TP i₃ kye₃₃ kye₃₃
   b. TB ʒe₃₃ k₅₃, LP ʒe₃₃ k₅₃, {QH ʒe₃¹₃ k₅₃}
   c. ڔ 1298 kjiwr 1.79

(165) #2249 ‘fear; be afraid’
   a. LX qɔ ‘fear difficulty’, MC kò ‘fear’, TP qu₃⁵
   b. WD kə, NWZ kʃə, TB xe₃⁵, QH skie₃¹₃
   c. ԓ 2539 kja 1.64 < *S-kjar ‘fear, dread’

(166) #5398 ‘needle’
   a. LX ɣə, MC ɣə, TP ɣɛ₃₃, YH ɣə
   b. WD q’u, NWZ k₅ò, DY q’o, TB q’o₃⁵, {LP q’o₅₅}, {QH q’o₅₅}, {JL q’o₅₅}
   c. ߐ 4935 ya 1.17 < *C-kap

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53 This form may be a Wanderwört (see Sagart 1999:199).
54 The TP form is from an example sentence in H. Sun 1981:81. This word is listed as ɣɛ₅₅ in the Táoping lexicon. This word exhibits variation in LX ɣə ~ ɣɛ, as well as within the Prinmi varieties.
‘shoot (v.)’55
a. LX qʰà, MC tʂʰà, TP qʰa₃³
b. WD tʰà, NWZ kʰà, TB kʰɔ₃⁵ tʂʰa₃⁵, LP kʰɔ₁³ tʂʰa₅⁵, QH kʰɔ₁³ tʂʰa₅⁵
c. 楂 1922 kʰìa 1.18 < *[kraC]

#0229 ‘bitter’56
a. LX qʰà, MC qʰà, {TP qʰa₅⁵}, {YH kʰà ~ qʰà}
b. WD qʰè, NWZ kʰa₆, DY qʰà, TB kʰa₅⁵ mạ₃, LP qʰa₁₃, QH qʰa₁₃, {JL qʰa₅⁵}
c. 爸 4046 kʰie 1.9 < *[kraC]#0229 ‘bitter’56

‘fox’

‘clear (of water)’

‘circle’58
a. LX z̞̀ jé
b. TB rua⁵⁵ mə⁵³, {LP ʐuɐ¹³ ʐuɐ¹³}, {QH ʐuɐ¹³ ʐuɐ¹³}, JL ʐu¹¹ ʐuə³⁵
c. 罈 2757 rer 2.80

‘sew’

‘thick, sticky’

‘melt’57
a. YH dʐə̌
b. WD ɖʐæ̌
c. 照 3650 dʐə 1.68 < *[ndzv]

55 The LP and QH forms are irregular. This may be because these forms are prefixed. In DY, prefixed verbs invariably carry a H tone (Matisoff 1997:209-210, Jacques 2011, Daudey 2014). A similar process may be at work in LP and QH. The pre-Tangut form here is my own suggestion.

56 The pre-Tangut form is my own reconstruction cf. 照 1572 prïow 1.55 < *[prvm ‘white’].

57 This form is a semantic extension of the verb ‘scratch’ (Jacques 2014:125-126). Prinmi forms may be loans from Tibetan 西 ‘to write’. See Hill (2005) for the history of this Tibetan word.

58 This set is somewhat irregular. See Jacques 2014: 263.
(176) #1284 ‘penis’
   a. LX lià qò MC lià qê, YH lî
   b. DY ṭu dê ‘testicle’
   c. 輾 5106 leej 1.37

(177) #3569 ‘come’
   a. LX lò, MC ɲù, TP ly³³
   b. WD zà, NWZ ʒi³, TB ju³⁵, LP ʒì³⁵, QH i¹³, JL li³⁵
   c. 輾 3456 lja 1.20

(178) ‘return’
   a. LX lò ‘return to a place’
   b. LP xə¹³ lo¹³
   c. 輾 3502 lja 1.20 ‘return, transport’

(179) #5571 ‘pants / trousers’
   a. MC ʐɛ̀ tì gù gú ‘pant leg’, TP ɪɑ⁶⁵ ʃɿ³³
   b. WD ʑə̌ , TB ʑɨ³⁵, LP ʒə³⁵, QH i¹³,
   c. 輾 3192 laa 1.22 < *laak

The data above provide further evidence for the correspondence Rma L – Prinmi L – Tangut 1. The
following section deals with some of the irregular correspondences.

4.4.5 Some irregularities
While the data shown thus far suggest that the tonal correspondences are regular, there are some exceptions.
Note that in a few of the sets above, such as ‘be long’, the Táoping variety has a different tone from Lóngxǐ
and Miánchí. There are several possible reasons for this. First, there is some evidence that some varieties
have undergone tonal splits conditioned by segmental factors (see Liu 1998:120-126, Kirby 2001) and this
may explain some of the irregularities. Second, differences in the data may be due to differences in collection
methods. The Táoping data were collected by 孫宏 开 Sūn Hóngkāi (1981), whereas the Lóngxǐ and Miánchí
data are from Evans (2001a). Differences in the way the data were collected, such as whether forms were
elicited in isolation or within a carrier phrase, may have influenced the tone of the forms. Unfortunately, the
recordings underlying the transcriptions have not been made available, so it is not possible to verify the
accuracy of the transcriptions. Note also that within Prinmi, the 九龙 Jiǔlóng variety sometimes has an
unexpected tone. In many of the above sets, the Jiǔlóng form is the only Prinmi reflex which contradicts the
otherwise robust pattern of correspondence. More work is needed to understand the reasons for the relative
divergence of the tones in Jiǔlóng.

There are some sets which are clearly irregular and are yet unexplained. In most of these sets, Rma and
Prinmi have the same tone and Tangut has a different tone. Examples are given in (181-197). Note that
although these sets are ‘irregular,’ there is still regularity within and across Rma and Prinmi.

(181) #2796 ‘frog’
   a. TP dzua³³ pu⁶⁵ ma³³, LX zò-.piá, MC dzò-piá, YH dzù pié
   b. NWZ pʒ³³ di³³, DY rpo, LP fpa³³, QH spa³³, JL pu⁶⁵ de³³
   c. 輾 0499 pii 1.66 < *S-pa

59 Possibly from Tibetan ʰpʰc spal ‘frog’. Tangut 輾 2485 pii 2.65 > *[S-pj-] ‘tadpole’ has the expected tone.
The TP form in STEDT #0355, dʑi⁵⁵ 'foot', does not appear to belong in this set. In Prinmi, this form has the opposite tone when used as a measurement cf. Taoba tə³⁵ tʂhə³⁵ 'foot (measure)'.

The Tangut form is not included in STEDT. These may be borrowings from Tibetan phrom 'white' (also not in the STEDT set).

This set contains variation within both Rma and Prinmi. This Tangut form is also written bji 3142 biji 1.67, see Jacques 2014:96.

The YH, LP, and JL forms are compounds in which the first syllable is 'person'. The Tangut form may be a deverbal nominal from mjij 2.33 'die' < *mjaŋ (also written mjij 2.33) (Jacques 2014:178). See Hill 2015: 194 for a discussion of the Tangut form.

Tangut _inode_ 5127 twu 2.51 'genuine, true, real' < *[S-to], listed as an alternate of _inode_ 5128 twu 1.58 in Gong 1988: 63, has the expected tone.
Lastly, there are a relatively small number of sets in which Rma and Prinmi have opposing tones. Examples (198-201) give an exhaustive list of such sets. In examples (198-199) Tangut corresponds with Qiang and in examples (200-201) it corresponds with Prinmi.

(198) #3554 'snow'
   a. TP ʐpɑ³¹ ʈu³³, LX mù pà, MC pā, YH pā
   b. {WD pu}, {NWZ pu}, {TB pu}, {LP fp}, {QH fp}, {JL fp}
   c. 叠 4091.wj 1.67 < *C-S-pja

66 The Rma and Prinmi forms all involve some sort of compounding.
67 Tangut 義 0109 giij 'constellation' < *[S-ŋgr-] has the expected tone.
68 STEDT #0127 lacks the Tangut form.
Note that the Primi forms and the Rma forms seem to pattern more closely together than either does with Tangut. Lastly, there are three examples involving Tangut and either Rma or Primi with irregular correspondences.

While the irregularities presented in this section will need to be resolved or understood in later work, the robustness of the general correspondences presented in 4.4.1-4.4.4. outweighs the problems raised by the irregularities.

5. Conclusions

In summary, this paper has examined the different theories that have been put forward as explanations for the presence of tone in Rma and found them to be unconvincing. Liú (1998)’s proposal that tone arose from onset simplification cannot account for the presence of tone in varieties which preserve complex onsets. Theories of tone as innovation through reanalysis (Evans 2001a-b; Evans & Sun 2013; Stanford & Evans 2012) cannot readily account for the tonal contrasts found on monosyllables.

As an alternative to these theories, I posit that tone is not a subgroup-internal innovation in southern Rma. I have provided subgroup internal evidence for this theory by showing the regular correspondences between the H and L categories in the southern and central varieties of Rma. I have also explored subgroup-external evidence for this theory in the form of comparisons with two other tonal subgroups, Prinmi and Tangut, which are by most accounts closely related to Rma (see Bradley 1997; Ding 2014; Jacques 2008, 2012, 2014; Jacques & Michaud 2011; Matisoff 2004; Takumi 2012; Sūn 1991, 2001). The correspondences
between tonal categories for these three subgroups are rather striking and bolster the case for tone as a retention. Of the sets compared, 180/204 (88%) are regular. In 17 of the 24 irregular sets, the correspondence between Rma and Prinmi is expected, whereas Tangut has an unexpected tone. If we consider tone in Rma to be a secondary, subgroup-internal innovation, any parallelisms with outside subgroups must be coincidental. Yet, the large degree of overlap between the tones in Rma, Prinmi, and, to a somewhat lesser extent, Tangut seems to be too great to be coincidental.\textsuperscript{72}

The simplest explanation for these parallels is that Rma, Prinmi, and Tangut shared a common ancestor (later than PTH) which had either suprasegmental contrasts or the phonetic precursor to suprasegmental contrasts, and that suprasegmental contrasts found in (southern and central) Rma, Prinmi, and Tangut constitute shared retentions from this common ancestor or parallel developments following parallel phonetic conditions for tonogenesis.\textsuperscript{73}

Although prior work (Evans 2001a-b; Stanford & Evans 2012) has assumed that the non-tonal northern varieties reflect the state of the proto-language, if we reconstruct tone for proto-Rma, we are forced to conclude that the northern varieties were at one point tonal and underwent a process of tone loss. The possibility that the northern varieties were once tonal is considered by Evans (2001a), though he ultimately rejects this hypothesis in favor of the contact-induced tonogenesis hypothesis. Although there is a robust literature on tonogenesis, especially in the Southeast Asian context (Haudricourt 1954; Matisoff 1973; Mazaudon 1977; Pulleyblank 1978, 1986; Thurgood 2002, 2007; \textit{inter alia}), documented instances of tone loss are relatively few (see Ratliff 2015). I wish to point out here one possible way in which the northern varieties may have lost tonal contrasts.

One possibility is that what was once a prominent and culminative tone was reanalyzed as accent. Ratliff (2015:246) notes that the “reanalysis of a prominent tone, or a tone in proximity to toneless syllables, as an accent” is the “best-attested pathway for tone loss”. In the case of Rma, with its agglutinative morphology and toneless clitics and affixes, it is not implausible that culminative and positionally restricted tones became reanalyzed as accents. Because the major works on northern varieties do not mark stress-accent (see J. Sun 2003 on this issue), more research is required before any conclusions may be drawn about the links between accent and tone in Rma diachrony.

While more work remains to be done, the subgroup-internal and subgroup-external evidence point toward considering tone as a retention rather than a secondary, subgroup-internal innovation as has been assumed in previous works. Within this framework, there is still some uncertainty about the process of tone loss in the northern varieties, but these issues are less serious than the problems with the hypotheses of tonogenesis in southern and central varieties.

\textbf{References}


\textsuperscript{72} The probability of coincidental overlap of tonal categories across subgroups is an empirical question. However, calculating the probability is not straightforward. We would need to consider the number of tonal categories and their relative distribution, along with correlations between tone and segments. For example, although voice onset time and tone are orthogonal in Rma, H toned syllables are more likely to have voiceless in southern Rma (Evans 2001a).

\textsuperscript{73} There are some who believe that Tangut is the direct ancestor to Rma and/or Prinmi. However, sound changes unique to Tangut, such as Gong’s law, preclude the possibility that either of Rma or Prinmi are direct descendants of Tangut.

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